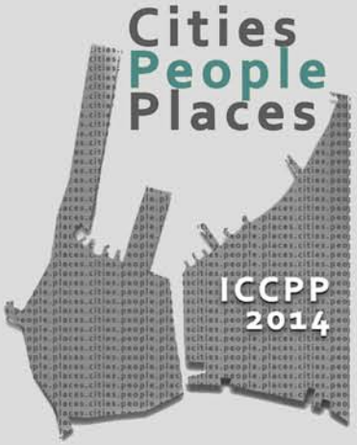
SECOND
INTERNATIONAL
URBAN DESIGN
CONFERENCE

ICCPP-2014

Cities
People
Places



Oct 31st - Nov 2nd 2014
Colombo - Sri Lanka

'Reinventing Cities and Places'

Proceedings

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University of Moratuwa, Sri Lanka

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'Re-inventing Cities and Places"

Edited by:
Dr. Ranjith Dayaratne
Dr. Janaka Wijesundara

Department of Architecture
University of Moratuwa
Sri Lanka



Editors: Dr. Ranjith Dayaratne and Dr. Janaka Wijesundara

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Department of Architecture, University of Moratuwa, Sri Lanka
Tel : +94 11 2 651 047
Fax : +94 11 2 651 047
Email : iccpp2014@uom.lk
Web : www.iccpp.lk

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ACKNOWLEDGEMENT

This second International conference on 'Cities, People & Places' (ICCPP-2014) organised by the Department of Architecture of the University of Moratuwa with its international partners demonstrates two significant developments. First, it is an acknowledgement of the relevance of the conference that cuts across the conventional boundaries of disciplines to spearhead the movement of interdisciplinary approach to the scientific study of cities. The idea of place was employed there to be able to talk to all stakeholders. Second, it also demonstrates clearly that the new partnerships established since 2012 have grown to a solid base now culminating in greater solidarity. It has already enabled the foundation of a network through the University of Moratuwa, focused on cities, people and places.

It is undeniable that these could not have been achieved without the tremendous support of many. First and foremost, the Department of Architecture of the University of Moratuwa, from the Head of the Department to the supportive staff have been working hard to bring this to fruition. In support, the international and national academic partners have also devoted their time and efforts wherever it was necessary.

Most significant however are the continuous and willing academics and intellectuals, who have recognised the relevance of the issues raised, and have decided to participate. We are thankful to the many authors from around the world who submitted very interesting abstracts and subsequently developed them to the fully pledged research papers we shared at this conference. If not for them, this event would have not really taken place. However, we are regretful to not have been able to accommodate all submitted papers to publish in the proceedings or to present at the conference. With the double blind peer review system implemented rigorously, the papers have reached a very high standard, thanks to the eminent members of the International Review Board. Needless to say that the papers reveal great insights into the cities, people and places from around the world, and will facilitate the re-invention of the cities for the emerging multi-cultural and complex societies.

From the initial stage of working out an appropriate theme to the holding of the students' workshop, many have contributed. Reviewing of abstracts once and papers again and to offer constructive comments to make the papers more meaningful are no easy tasks. Indeed, they are time taking serious engagements with no return benefits to the reviewers except contributing to the intellectual enhancement of a conference. We highly appreciate their contributions and hope that they will stay with us in the future.

We are grateful to the Chief Guest for the encouraging thoughts and gracing the occasion. The dignitaries at the opening ceremony gave the conference an aura of a highly intellectual gathering. The Vice Chancellor of the University of Moratuwa and his personal support has been an enormous encouragement for the event, and his graceful presence is much appreciated.

We greatly value the contribution of the Keynote Speaker Prof. Kimberly Dovey, Professor of Architecture and Urban Design at the University of Melbourne, Australia as an expert on 'places', the theoretical articulations and the insights he shared gave the 'cities, people & places' the coherence it needed. Two other key notes speakers Prof. Sarath Kotagama, University of Colombo, Sri Lanka and Architect Planner Dr. Locana Gunaratna, Gunaratna Associates, Sri Lanka provided other directions into the theme which we appreciate. We acknowledge the support of the Session Chairs and co-chairs for managing the event, paper presenters, Best Paper Award Selection Committee and all the other invitees for their invaluable commitment to advance these ideas through the conference.

We are also grateful for the organizations that have provided sponsorships, without which this event would have been difficult to organise. Last but not least, all our colleagues in the organizing committee and the supportive staff have done a tremendous amount of work behind doors to enable this event to happen. We specially thank them all for contributing to make this Second International Conference on "Cities, People & Places-ICCPP2014" a great success.

Ranjith Dayaratne & Janaka Wijesundara
Editors, ICCPP-2014
October 2014, Colombo.

FOREWORD

With this conference having been held in Colombo for the second time, 'Cities, People & Places' has established itself as a relevant, meaningful and intellectually stimulating opportunity to examine the deeper issues of architecture, urban design and other built-environmental disciplines within the framework of cities. People conceptualise cities as places and experience and dwell in the places that come into being. Places are constantly in transformation, and as Kim Dovey has put it, in the process of 'becoming', together with people. Our intentions in this series of confluences was to try and understand these reciprocal relationships between people and places in the context of cities and towards that end, the papers presented in this proceedings offer multi-faceted views and explorations across the built-environmental disciplines. The issues have ranged from purely functional aspects and city making technologies to quality of living and character of places. New themes have also emerged; that of violence in cities and of disasters and emergencies.

Neither the inventions of cities after the Neolithic Revolution around 7500 BCE, like Mesopotamia nor the recent re-inventions of modern ones in the 19th century would have envisaged to create the problems the cities seem to be posing today. In fact, the two basic necessities believed to be fundamental to city making; a good environment and strong social organization seem almost absent from many contemporary cities. On the one hand, cities are becoming crowded, polluted, and lacking in greenery, agricultural land and open spaces. On the other hand, cities have become mere conglomerations of millions of people, who do not know each other, do not trust each other and appear to resort to hostile behaviour violence and crimes in numerous subtle and manifest ways promoting individualism rather than communality. Undeniably, cities people and places do not seem to synchronize the way they should be. Tuning cities is not happening and one wonders whose task it would be to tune the cities so that cities and their places will enable people to dwell; in the words of Heidegger to 'dwell poetically'.

Creating fine-tuned cities and places is a fundamental objective of Urban Design. Achieving such an outcome involves community planning and design; understanding identity and character of cities and places; investigating into quality of public plazas and places; reflecting on experiencing the city and looking at and learning from great streets and public spaces. Modern world has added new dimensions such as technologically advanced spaces and digital culture. Hence planning and infusing technologies for cities, promoting social consciousness, promoting urban conservation and managing urban cultural heritage are all necessary for sustainable fine-tuning through urban design. The sub themes of this conference have attempted to organize the papers around similar categories for the convenience of understanding. However, they do not offer either a system of understanding or address these fundamentals conclusively. Nevertheless, they provide insights that are likely to help re-invent cities so that such attunements can happen.

In 2012, when the ICCPP was first launched, it was our intention to gather in Colombo; a fast developing Asian city, to look into the spaces and places of cities with a view to sharing our understandings and experiences of this complex human dimension of living in cities. It was envisaged that facilitating and constructing a holistic view of the cities would offer new directions of thinking. This second conference extended the many dialogues and conversations that began last year and helped achieve that objective. As we said at the beginning of the first conference, the meetings among people yield the most productive outcomes in society. This confluence is bound to catapult these ideas to a more meaningful future for cities.

Ranjith dayaratne & Janaka Wijesundara. Editors.

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Towards Creating Better Cities: Problems and Potentials of Transit Oriented Development as Community Development Tool in Dhaka

Nabanita Islam*
Department of Architecture, University of Asia Pacific, Dhaka, Bangladesh

Abstract

Peter Calthorpe saw Transit Oriented Development (TOD) as a neo-traditional guide to sustainable community design, rather than an excuse for new infrastructure development. Coming to Dhaka, it has become a mega city with more than ten million inhabitants, and its population is projected to reach 16 million by 2015. Lack of sufficient public transport facilities to support this growing demand and efficient transport management paired with increasing automobile dependency resulting into serious traffic congestion in addition to air pollution induced health hazard, reduced productivity and additional stress on city dwellers. Considering this situation the government of Bangladesh has identified priority issues such as improvement of mass transit system (buses and rail transportations). But in spite of all the detail technical guidelines regarding the transit networks, little evidence has been found regarding how the surrounding community is going to be affected or benefited due to this new transit infrastructures and how these changes can be guided. This is where this paper considers to critically investigating the problems and prospects of mass transit system in Dhaka and potential of TOD as a promising concept for strengthening the local communities. The investigation has been based on examining documented evidences such as national guidelines, international case study and informal social survey in one of the busiest influence zones along the proposed mass transit corridors. The findings focus on the positive perspectives of the local community supporting the TOD and some of the policy and institutional barriers that might hamper the benefits TOD application may yield in the context of Dhaka.

Keywords: Mass transit, Transit oriented development, community development, Dhaka

Introduction: TOD as a community development tool

"Historically, transit helped foster community, just as the automobile helped undermine it. The reason is that when most people took transit, they normally walked from their homes to the bus or streetcar stop. Other people from the neighborhood were doing the same, and as they walked at the tram stop they

*Corresponding Author: Nabanita Islam; E-mail- nabanita@uap-bd.edu

> met face to face. Since commuters tend to be creatures of habit they saw many of the same people each day. They met, talked, and got to know each other. They found a shared interest in the well being of the neighborhood. Transit itself was part of that well being. Often shops and maybe a bar or cafe opened near the shop, and a mini-community developed around it. All these influences helped a neighborhood become a community"
>
> Weyrich and Lind, 1996

Transport and the built environment are mutually dependent entities that have consistently pushed and pulled to create urban forms. The idea that transit might orient development and vis a versa is certainly not new (Carlton, 2007). Over the years, substantial amount of guiding principles and normative approaches have been designed for practical implementation of Transit - Oriented Development (TOD). Even though the literature regarding TOD is new, the concept is rather old. Researchers have analyzed over the years and within a large amount of literature the importance that high densities and mixed land-use have in the city's expansion, and the interconnection between demand and supply of public transport as an active element in the dynamics and the structure of urban system (Dragutescu, 2006). Peter Calthorpe was the first to pioneer and codify the concept of TOD in the late 1980's and, while others had promoted similar concepts and contributed to the design, TOD became a fixture of modern planning when Calthorpe published his provocative book "The New American Metropolis: Ecology, Community and the American Dream" in 1993 (Carlton, 2007). From that moment, the literature began to see this concept as a real solution in providing smart growth, turning this study in one of the most frequently cited (Dragutescu, 2006).

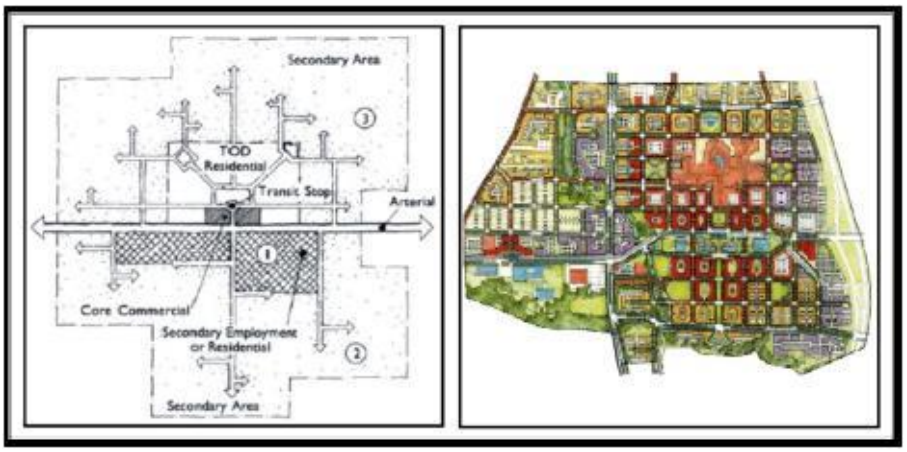


Fig.1: Conceptual design for TOD
Source: Calthorpe, 1993

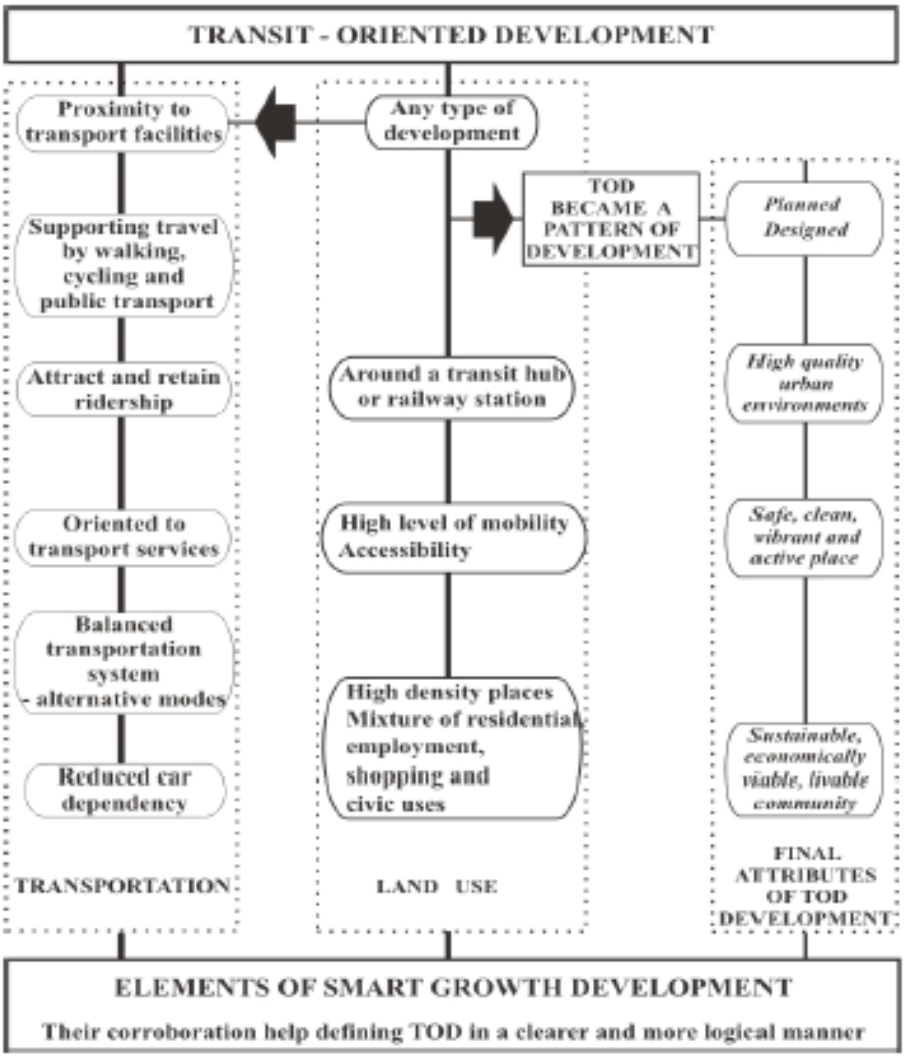
The concept of TOD varies in form in different locations. According to Cavero et al, in Europe, a transit station often represents more than a collection/drop-off point (Cervero, Ferrell and Murphy, 2002). It rather functions more as a centre-piece for community building – an organizing platform for creating "compact, mixed-use community centered around the transit station that, by design, invites residents, workers, and shoppers to drive their cars less and ride mass transit more (Bernick and Cervero,1997)

There is no generally accepted definition of TOD. It has been defined generally as "a mixed-use community that encourages people to live near transit services and to decrease their dependence on driving."(Still, 2002). Calthorpe saw it as a neo-traditional guide to sustainable community design. Beyond its definition of built form, it was also a community design theory

that promised to address a myriad of social issues. It was a natural evolutionary next-step from many familiar community design precedents (Calthorpe, 1993). As later TOD analysts explained, "These Transit-oriented developments have the potential to provide residents with improved quality of life and reduced household transportation expense while providing the region with stable mixed-income neighborhoods that reduce environmental impacts and provide real alternatives to traffic congestion."(Hank et al, 2004). Nevertheless, the definitions of TOD share some common traits as seen in the following table. Stakeholders and agencies provide different definitions that particularly concern their area of intervention. Some of them emphasize high density and mixture of uses, while for others the alternative public transportation system weights more to the disadvantage of the mass diffusion of automobile. But most of them strive for a high quality sustainable environment and a livable, active community (Dragutescu, 2006).

Table.1: Shared elements in defining TOD

Table 3 – Shared elements in defining TOD



Performance criteria of TOD

A clear vision of what TOD wants to achieve is compulsory in order to comprehend its role as a community development tool. Focusing only on physical qualities might block out TOD from creating locations that function differently from other conventional developments. Different

studies emphasize quite similar measurable point of reference that increase the purely descriptive definition of TOD (Dittmar and Ohland, 2004; Beltzer and Autler, 2002). According to the TOD researchers, the following attributes can be summarized as performance criteria-

Efficiency of location: Location efficiency is about turning driving from a necessity into an option and about placing homes in the proximity of public transport system. Homebuyers are encouraged to choose a location-efficient neighborhood through financial mechanisms.

Choice: The theory of choice is needed for generating the idea of a good life. The incontestable advantage that rich mix of choices brings is represented by the possibility of creating a wider range of options. Options to live in different housing types, options to shop other than one would shop at an auto-oriented retail centre, options to get around on foot, by bicycle or by public transport, enhancing the mobility of either seniors or children.

Value capture: Value capture is an issue that comes like a benefit of location efficiency, directly translated into savings for individuals – either local residents, or at regional and national level. Capturing value should be a key objective for TOD, leading thus to an affordable life for individuals.

Place making: In a successful Transit-Oriented Development, urban design needs to draw together the many strands of place-making into the creation of beautiful, healthy and pedestrian friendly places with their own distinctive identity.

Financial return: Planning for TOD requires a clear understanding of the types of return that each of the participants expect.

Balance between "Node" and "Place": Transit-Oriented Development must deal with the tension between node and place. That is, it must balance the transportation functions of the site with issues of place making and livability.

All the above criteria address development that maximizes the benefits of public transit while firmly placing the emphasis back on the users — community people. It also clearly marks a key difference from transit-adjacent development, which is simply development located next to transit corridors and stations (ITDP, 2014).

Learning from global precedents in TOD application

The literature shows that a fair amount is known about the inputs of Transit–Oriented Developments. There is, though less known about the outcomes. The complexity and constrains of the development and implementation processes of TOD still rely on case-study experience in order to advance knowledge and understanding. Transit-Oriented Development has gained and continues to gain a stable place in most of the United States' urban planning approaches -almost 100 TODs of various shapes and sizes currently exist across the United States. Most of the examples of TOD start with a vision and proceed to develop the execution through aggressive and inclusive station area planning, backed up by supportive zoning, infrastructure enhancements, and fiscal policies that reward smart growth investments (Cervero, 2004).

In Asian context, Singapore and recently Delhi have demonstrated huge success in executing TOD. For example, in Singapore, A mixed-use planning strategy puts work and home closer together, moderating the demand on transport systems. Policy makers have restrained traffic,

through road pricing, and have "managed" to maintain a safe, efficient, and environmentally acceptable movement of people, not just vehicles. This implies prioritization of infrastructure to protect movements of public transport and non-motorized transport against the unrestricted expansion of private motorized trips (as in Bogota, Colombia and Curitiba, Brazil through bus-way systems) (ADB, 2012).

Delhi has a different story to share. In spite of Delhi's recent investments in Public Transport Systems which include a world class Metro System and a planned BRT Network, Delhi has been unable to deliver efficient, comfortable and affordable mobility options to its citizens due to lack of emphasize on community centric transit policies or more precisely, TOD policies. The current lack of connectivity (in particular to Metro stations), abundant subsidized parking options as well as a lack of safety for walkers, cyclists and women in the city has resulted in public transportation being relegated to second or even last choice of travel. This has consequentially resulted in the ever increasing number of private vehicles plying in the city in spite of the existing transit facilities. The city has a very long history of auto-centric planning which prioritized segregated land uses, low density sprawl and large unworkable block sizes. The supply of extra wide roads with heavily encroached footpaths/ cycle tracks, discourage non-motorized travel modes and ensure that the citizen is auto-dependent. The result has been an exponential growth in private motor vehicle ownership, and a corresponding increase in pollution and congestion, with loss of man-hours and increase in urban poverty (ref: National Urban Transport Policy). This trend has been aggravated through the rampant construction of flyovers and grade separated interchanges within city limits. Congestion is still as it is, and such infrastructure has actually caused a reverse modal shift, by making travel more difficult for walkers and public transport users, consequently adding them to the private-vehicle using population and hence more congestion! In this alarming situation, it was imperative to undertake a rapid paradigm shift in order to move people away from private vehicles towards the use of public transportation. The strategies to achieve this paradigm shift included offering more attractive alternatives to the use of personal modes – low cost, comfortable, non-motorized transport, pleasurable walking experiences and very easily accessible and comfortable mass transportation with easy, convenient and comfortable intermodal transfers for last mile connectivity (UTTIPEC, 2012).

The existing and proposed transit scenario of Dhaka

Dhaka is the capital city of Bangladesh with the functions of administrative, commercial, industrial, educational and cultural centers. The Dhaka Metropolitan Area (DMA) has a population of 10.7 million (7.5% of the total population of the country in 2006). It is often called Mega City, which indicates a large population agglomeration with more than 10 million. More significantly, Dhaka has extremely high density of population. Some areas in the old city area have a population density of more than 1,000 persons per hectare, which causes serious traffic congestion and deterioration of living environment (GOB, 2010).

Currently the urban transportation in DMA mostly relies on road transport, where car, bus, auto-rickshaw, rickshaw, etc. are coexistent. An assessment of the existing urban transport system of Dhaka revealed that it suffers from major constraints such as fragmentation of organizational responsibility; inefficient regulatory frameworks; insufficient financial resources; poor allocation of road space; presence of too many low capacity and slow vehicles on major roads; poor traffic control, management and enforcement; underdeveloped public transport system; absence of adequate pedestrian facilities; poor linkage between land use planning and

transport development and finally, lack of emphasis on environmentally sound and sustainable transport development (Mahmud and Hoque, 2012). All these create serious traffic congestion in addition to health hazard caused by the traffic pollution including air pollution. So, the improvement of urban public transportation system for DMA has become a pressing issue to improve its traffic situation and urban environment.

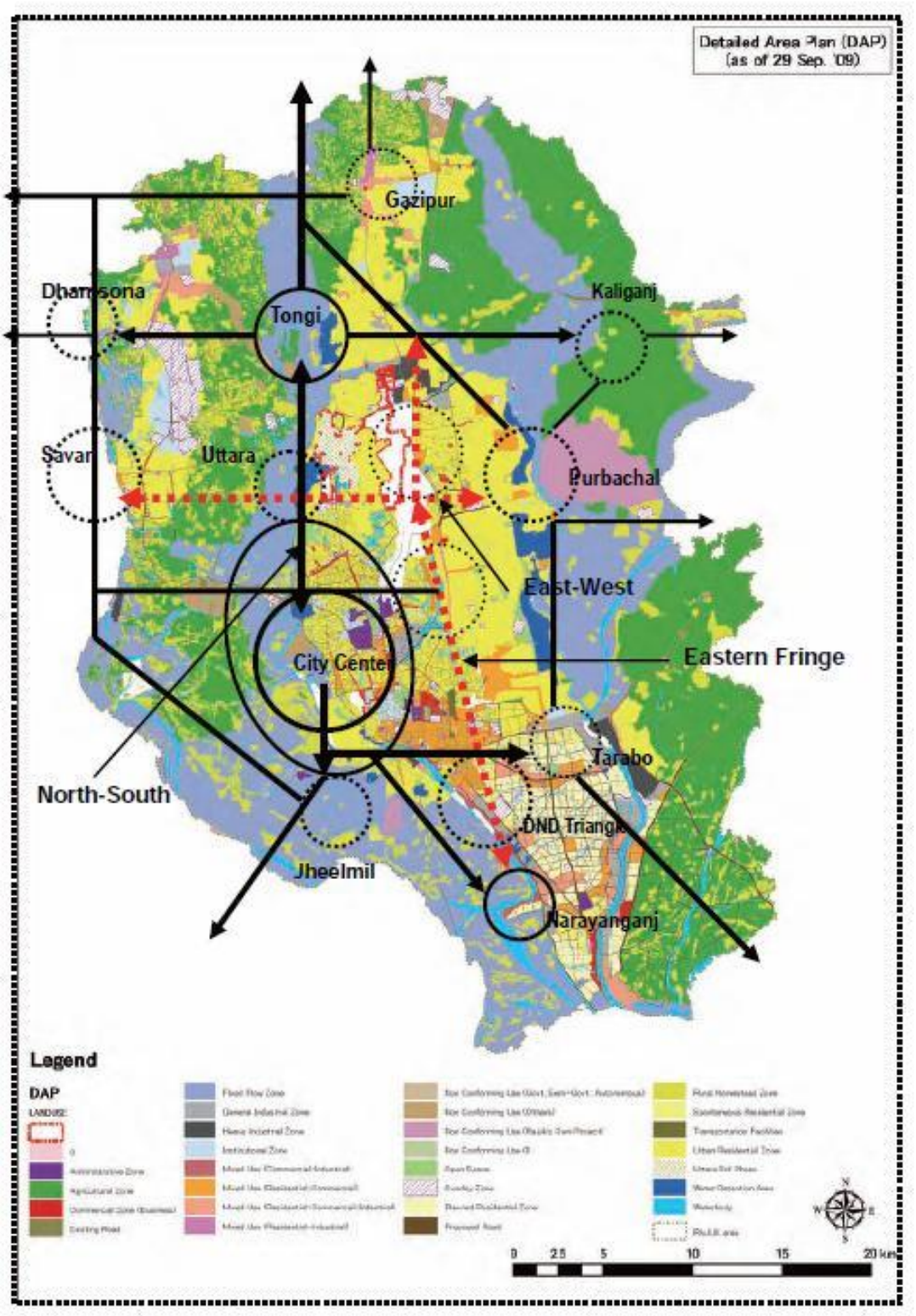


Figure 3 Proposed Future Urban Structure for Dhaka toward 2050

Considering this situation the government of Bangladesh formulated a 'Strategic Transportation Plan' (STP) in cooperation with the World Bank in 2005. The STP prepared 'Urban Transportation Policy' for 20 years (2004–2024), and identified priority issues such as improvement of mass transit system (buses and rail transportation, development of urban expressway and establishment of organization in implementation and maintenance/operation of the projects (GOB, 2010)

On the other hand, the Dhaka Urban Transport Network Development Study (DHUTS) undertook a further elaboration of the transportation policies stated in STP. According to the previous master plans like DMDP, it is proposed that Dhaka should be decentralized in population and employment opportunities from the inner city to the surrounding areas with satellite communities. Following the recommendations of the DMDP, the Government has developed satellite communities outside of DCC, such as Tongi, Gazipur, Savar and Narayanganj and more recently, Purbachal new town. DHUTS adopted this issue in formulating policies. These settlements will constitute a multi-core mega urban region centering DCC. Thus the future urban structure making multi-core mega urban region in Greater Dhaka Area toward 2050 is proposed in terms of three development axes along which mass transit corridors should be established: (1) Existing North-South Development Corridor, i.e., Tongi – Mirpur – City Center - Narayanganj, (2) East-West Development Corridor, i.e., Purbachal – Uttara – Savar, and (3) Eastern Fringe Development Corridor. The mass transit includes Buss Rapid Transit (BRT) and rail oriented Mass Rapid Transit (MRT), which will become a trigger to change the urban structure of Dhaka to multi core mega urban region. Mass transit development will provide a significant impact on urban activities. Fig.2 shows the overall development scenario for Dhaka in a timeframe from 2009 to 2050 (JICA, 2010).

Potential of TOD in Dhaka

According to experts, Transit Oriented Development (TOD) has the potential to offer smart growth scenarios, which can be found profusely in Dhaka city, but in an un-organized, discouraged and unprofessional layout. Mass transit is essential to sustain a traditional compact city like Dhaka having nodal characteristics. It is still possible to maintain 'rickshaws' in neighborhood 'nodes' (which is very compact), while interlinking nodal points by applying well-articulated mass transit-led Transit Oriented Nodal points/Development (Zaman, 2012).

Coming to the national guidelines, both STP and DHUTS demonstrates policies that might provide a way forward towards sustainable community development through TOD. In STP, pedestrians, public transport and non motorized transports have been prioritized along with significant policies to ensure their efficiency, safety and convenience for the city dwellers. However it has also identified the lack of integration between land use planning and transportation planning as a vital cause behind uncontrolled and unplanned development, non-compliance and a poor mix of land uses leading to inefficiencies in the transportation system. The results are larger distances between linked land uses such as between residential and work places and the need to provide long haul transportation systems and other infrastructure to serve the land use developments, complying to the basic concern of TOD (GOB, 2005).

DHUTS, on the other hand, established three visions to achieve socio-economic goal, each of which is the vital factor to improve the people's quality of lives.

a) Vision 1: To achieve a sustainable social and economic growth

Dhaka should be a drive force to achieve the growth of Bangladesh economy and it will function as socio-economic growth center in the country.

b) Vision 2: To ensure social equity

Development of urban transport should provide equitable benefits to all the people, not only to the selected social and economic groups.

c) Vision 3: To ensure a healthy and secure urban environment

Urban transport should contribute to ensuring a healthy and secure environment for all the residents (JICA, 2010)

Moreover, as the DMDP is expiring in 2015, a new project by RAJUK, titled Regional Development Planning (RDP), to revise the DMDP structure plan is underway with the financing from Asian Development Bank. These policies are supposed to guide further detailed planning for DAP. The main challenge will be to accommodate the additional population, ensuring quality of life and safeguarding the city's environment. Transit oriented development (TOD) is one of the main ideas to be implemented in this project, which will connect small and medium urban centers within the vicinity of Dhaka city with each other and the city itself (Shuvo, 2014). All these appear to create a lucrative background for applying the concept of TOD in Dhaka.

Understanding the socio economic forces: case study of a selected influence zone

Mass transit is a very new concept to the city dwellers, let alone TOD. In most of the cases the least they can apprehend is the benefit that they might yield in terms of safe, convenient transportation and easy communication. The future projection of how their habitable environment might be affected due to the transit infrastructures is still quite a blur picture to most of the people. Understanding the underlying socio-economic forces that might act as driving forces behind the future growth and change of the existing areas along the transit corridor thus becomes a vital step to further elaborate the possibilities and problems of TOD application in Dhaka. This step of the research was based on two parts- 1) Defining the study area, 2) Identifying the demographic pattern of the surveyed influence zone, 2) Identifying physical and socio-economic issues that might act as driving forces for potential implementation of TOD.

Moghbazar rail crossing is one of the busiest spots in Dhaka where the existing rail line crosses one of the major arterial roads of Dhaka. Two of the proposed mass transit corridors BRT 3 and MRT 4 will be intersecting at this point, turning it to be one of the busiest influence zones of all. Moreover, an ongoing flyover crossing the center point of the transit station is also under construction (Fig.4). Influence zone has been defined as a maximum up to 2000 m. wide belt on both sides of centre line of the MRTS Corridor, among which 800 m(10 min walking distance) has been considered as intense influence zone. This survey has been based on the intense influence zone of the Moghbazar station point. Hatirjheel, one of the prime water bodies of Dhaka, acts as a unique topographical element and a potential source of recreation for the city dwellers. But at the same this also acts as a catalyst for development control along the adjacent areas of the water body.

The informal socio economic survey was conducted on an average of 70 participants from each of the segment of the influence zone in spite of varying density in order to ensure an even comparison. Zone 1 has a long traditional history of posh settlements along Dilu road and now it has converted into one of the high density high income residential areas of Dhaka. But on the contrary, zone 2 and zone 3 portrays a lower density of development with smaller plot size and a

concentration of lower to middle income people. This is probably due to the poor connectivity to the arterial roads resulting into discouraging private developers' investment into the lands (Fig.4).The existing pattern of local trade in this area mostly consists of electrical, automobile and mechanical workshops, attracting automobiles from furthest areas of Dhaka. Proximity of job and educational facilities are the major identified causes behind the residency. Occupational pattern consists of an equal portion of job holders and businessman.

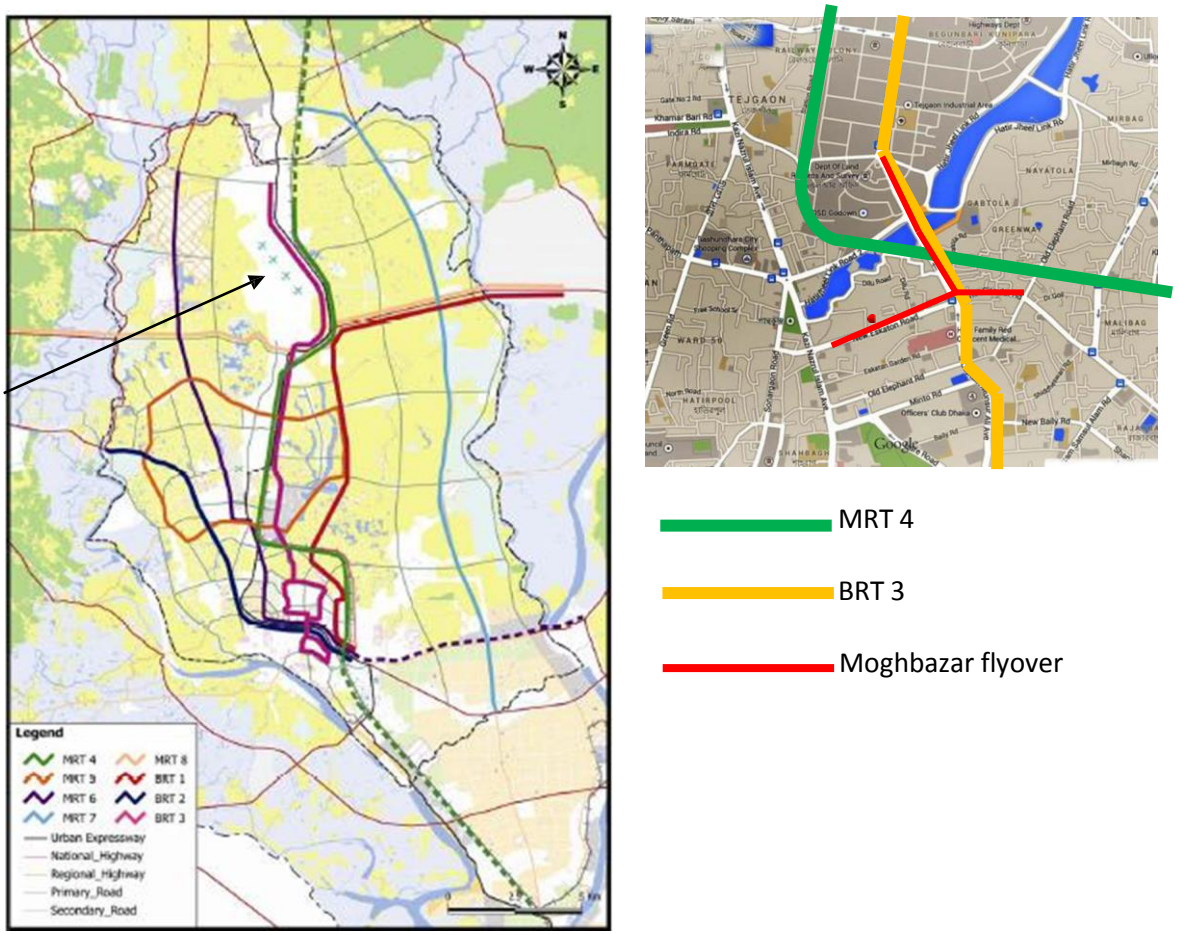


Fig.3: The mass transit routes in Dhaka and intense influence zone at Moghbazar intersection
Source: DHUTS, 2010, Author

Regarding the usage of public transport facility, 45% respondents prefer bus, whereas 32% prefer car as transportation choice. The reasons that could be identified behind lower level of public transport usage are less frequency (46%), overcrowding (33%) and lack of accessibility (20%). When asked about BRT and MRT, 85% of the respondents were quite positive. The pedestrian environment is derogatory as 90% of the respondents find it unsafe.

The social and recreational facilities are quite insufficient in this area. 99% of the respondents feel the lack of open green space and most of them compensate by going to Ramna park or Hatirjheel, but those are also not very convenient destinations for the local people since lack of security plays a big role in discouraging people to move around on foot.

The demand and desires of the local people derived through the survey emphasizes the need for community space, recreational facilities and open play ground mostly (Fig.5). Some of the added features that the local dwellers demand include safe, live and active community streets by

adding mixed use facilities within the residential fabric, safe and convenient pedestrian routes to reach the public transport facilities. The collected data invariably places the emphasis on retrofitting and redevelopment of the existing urban fabric and strengthening the socio economic environment taking the advantage of TOD suggested as in UTTIPEC, 2012.



Fig.4: Density, income and rent distribution across the three zones of the Moghbazar intersection
Source: Author

ZONE 3
Density= 96 du/hec
Area=9.1

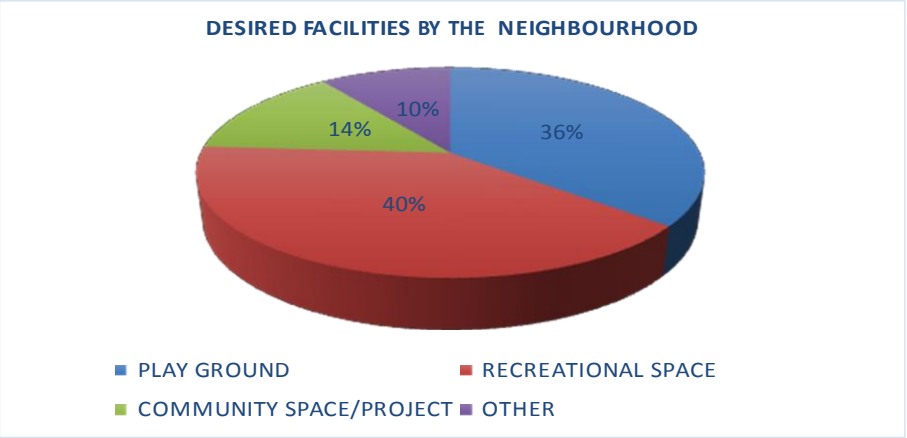


Fig.5: Desired facilities by the community people
Source: Author

Identified barriers

After all the above discussions, the question rises on what could be the barriers behind the implementation of TOD in Dhaka in spite of the prevailing national vision, policy and local demand.

- **Lack of community centric vision and quantifiable, objective strategies:** The vision and policies drafted in STP and DHUTS are very shallow and needs further elaboration in order to be effectively implemented. What proves to be alarming is that, unlike the TOD guideline of Delhi (UTTIPEC, 2012), the essential focus of STP lies mostly in establishing an efficient transport infrastructure rather than utilizing the infrastructures as improving the overall quality of life of the city dwellers such as, safe pedestrian environment, vibrant public realm. Regarding the DHUTS, there needs to be clear definition of the quantifiable scope of the drafted visions and practical physical measures for execution.

- **Organizational fragmentation and disintegration:** Disintegration among different executing authority stands as another crucial obstacle. Without considering the fact that urban transportation planning is intricately and integrally related with urban land use planning, this vital component of the plan has been taken away from RAJUK and has been vested with DTCA (Dhaka Transport Co-ordination Authority). Thus under the current situation, RAJUK is an organisation for town planning without the responsibility of transportation planning, and at the same time, the DTCA is an organisation for transportation planning without the responsibility of town planning (Shuvo, 2012). Surprisingly, significant disintegration has been observed among the different body responsible for execution of the transit corridors.

- **Lack of community participation** is another prime cause that derogates the possibility of integrating the community needs and desires with the development plans. The survey at Moghbazar influence zone clearly portrays community's desire for a better living environment in terms of safe and vibrant public spaces, pedestrian walkways and public transport. Unfortunately the mass transport facilities are on the way to be executed but without raising the awareness among the users on how these infrastructures are going to facilitate them or, on part of the executing bodies, how their intervention will affect the existing socio-economic environment. As a result, the infrastructures remains solely as dead elements that fails to facilitate the community needs. Above all, there needs to

be a huge paradigm shift in the pragmatic development planning process and shift the core of concern from being development oriented to community oriented.

The recommendations that might be summarised on the face of these barriers are-

- User centric planning visions
- Bottom up approach in development planning guidelines through active community participation
- Integrate land use planning and transportation planning
- Lateral integration among different planning and executing authorities
- Establishing a TOD standard as a post evaluation tool for proper monitoring of the executed decisions.

Conclusion

It is very unfortunate if the vital functioning of a dynamic city like Dhaka gets restrained due to the 'piecemeal' implications of whimsical thoughts and proposals in urban development, the scenario that is very apparent in case of transit oriented development in Dhaka. By adopting a more holistic and community centric approach to transport, it is possible to reconcile high mobility with high quality of urban life and in this case this paper strongly considers TOD as a potential means for achieving a sound and sustainable socio-economic atmosphere. The optimism lies in the belief that the future mass transit proposals in Dhaka will not remain as mere infrastructures, but also act as strong nucleus for community development.

Acknowledgement

The author thus takes this opportunity to express gratitude to the students of Level-4, Term-1 of Spring 2014 semester at the Dept. of Architecture, University of Asia Pacific, Dhaka for social survey on TOD.

References

Asian Development Bank, (2012) 'Cities at a crossroads: Unlocking the Potential for Green Urban Transport',viewed23August2014, http://siteresources.worldbank.org/EXTINFRA/Resources/UrbanMassTransport_Web.pdf

Bernick, M. & Cervero, R. (1997) 'Transit Villages for the 21st Century', New York: McGraw-Hill.

Belzer, D. & Autler, G. (2002), 'Transit Oriented Development: Moving from Rhetoric to Reality', the Brookings Institution Center on Urban and Metropolitan Policy: Washington, D.C.

Calthorpe, P. (1993), 'The Next American metropolis: Ecology, community, and the American Dream' Princeton Architectural Press.

Carlton, I. (2007), 'Histories of Transit-Oriented Development: Perspectives on the Development of the TOD Concept: Real Estate and Transit, Urban and Social Movements, Concept Protagonist', Working Paper, Institute of Urban and Regional Development University of California, Berkeley.

Cervero, R. Ferrell, C. and Murphy, S. (2002), Transit-Oriented Development and Joint Development in the United States: A Literature Review, TCRP Research Results, Digest Number 52, Washington, D.C.: National Research Council.

Ditmarr, H. & Ohland, G. (2004) The New Transit Town: Best Practices in Transit-Oriented Development, Washington: Island Press.

Dragutescu, A.E. (2006) 'A Different Perspective of Planning: Transit - Oriented Development', unpublished Thesis, the degree of Master in Environment Planning and Urban Project, the Faculty of Engineering, the University of Porto.

ITDP (2014) TOD Standard, Institute for Transportation and Development Policy, New York.

JICA (2010) Preparatory Survey Report on Dhaka Urban Transport Network Development Study (DHUTS) in Bangladesh, Japan International Cooperation Agency, Dhaka Transport Coordination Board(DTCB), Ministry of Communications (MOC), Government of the People's Republic of Bangladesh.

GoB. (2005) 'Strategic Transport Plan for Dhaka', Dhaka Transport Co-ordination Board, Ministry of Communication, Government of the People's Republic of Bangladesh.

Mahmud, S.M.S & Hoque, M.S. (2012) 'Transportation System Management: An Assessment for Implementation of General Tools in Dhaka City' in Civil Engineering for Sustainable Development: Proceedings of the 1st International Conference, Khulna: Bangladesh, March 23-24.

Shuvo, F.K. (2012) 'Bursting at the seams: Agonies of Dhaka urban life and a quest for urban planning solutions', Dhaka Tribune, 16 July.

Still, T. (2002), 'Transit-Oriented Development: Reshaping America's Metropolitan Landscape', On Common Ground, Winter, pp.44-47.

UTTIPEC (2012), 'Transit oriented Development: Policy, Norms, Guidelines', Delhi Development Authority, New Delhi.

Weyrich P. & Lind W. (1996), Conservatives and Mass Transit: Is it Time for a New Look?, a study prepared for the American Public Transit Association, the Free Congress Research and Education Foundation, p. 25.

Zaman, Q.M.M. (2012) 'Points to Ponder: Thoughts for a Sustainable Dhaka', The Star, Vol.11, Issue.51, 28 December.

Creating Public spaces for All: Learning from Public spaces in Colombo

Anam, Abdul Azeez[*]
City School of Architecture, Colombo, Sri Lanka

Abstract

In the wake of heavy investment on public space in and around Colombo it is the responsibility of designers to ensure that public funds are utilized for the creation of context-appropriate public spaces which satisfy the expectations of all its users.

A study was carried out to understand the difference in use and enjoyment of public space by the different socio- economic groups that constitute society today to help decipher the values they associate with it.
The cases chosen for the study were Galle Face, Independence Square (IPS) and Diyatha Uyana.

The analysis of qualities provided at each place in conjunction with the composition of its users and their opinions, helped identify the attributes of public space that appealed to different socio-economic groups.
The study proceeded to identify commonalities and differences in preference amongst these urban social groups, to understand if public space may be neutral; so it suits all, irrespective of our differences.

Keywords: urban, public space, spatial quality, neutrality, socio-economic group, inclusivity.

Introduction

The power of public spaces is not to be undermined. They are indispensible tools for attaining social cohesion, economic return, and cultural inclusivity. In fast-paced urban environments, teeming with life and vehicular traffic, public spaces present an escape from our impelling daily routines in addition to being the reservoirs of nature we fiercely seek for healthier lives.

Urban populations are formed of numerous inextricably linked social groups; each possessing a unique perspective of the city they live in; including its public realm. The values therefore which are attached to a public space are rarely static. They can neither be derived from public record or theoretical writing, but 'may be understood by paying attention to the often seemingly trivial contests over the use and enjoyment of it', however big or small the public space may be. (Goheen, 1998, p.15)

In Colombo, peaceful times have resulted in the replacement of the expectation of safety from public space by that of quality; quality which is evident in the recent developments in public space in Colombo. At this pivotal juncture in time, it is the duty of designers to fulfil these expectations across all urban social groups. For the purpose of research however, the social

[*] Corresponding Author: Anam Abdul Azeez; E-mail- anam.a.azeez@gmail.com

groups chosen for study are those formed by differences in socio- economic status. The following queries formed the basis for research,

"Do different socio-economic groups perceive public space in the same way? Do they appreciate the same qualities in a public space, or do they see differently?"

The objective of the research stemmed from the conviction that all city-dwellers, irrespective of socio-economic status must be treated with respect by providing for their needs in a public space. A public space must not be exclusive, as they are places for all, irrespective of differences in gender, age, ethnicity or socio-economic standing.

Research was begun by defining the term 'urban public space'. Literature on the subject was studied to understand the need for public space in a city and its numerous benefits. Two ideals of good public space were identified. The first attributed success of a public space to its democratic demeanour; the second was heavily biased toward good design detail.

A model was thus derived illustrating these findings (Refer Fig. 1). This model, a union diagram defined 'good public space' as one that is accessible, well-designed in terms of comfort and activity and has a representation of diverse social groups amongst its users.

The three public spaces identified as case studies were subsequently analysed against the benchmark set by this model. Key Attributes 01 and 02 were critically evaluated by map reading, physical visitations, observation and photographic studies of the location. Key Attribute 03 was assessed by interviews conducted of users at each location. This helped comment on the inclusivity of the public space under study, an attribute considered essential for its definition as a good public space.
These interviews also extracted the likes and dislikes of the users of each space with reference to Key Attribute 01 and 02.

The scope and limitations of the research were as follows,

- The context identified for the study was predominantly urban. Public activities in an urban context are limited as they reflect the busy lifestyle led by city-dwellers. A wider area of study that encompasses sub-urban and rural contexts would yield different results as regional differences in lifestyle would demand different public activity. This regional variation in public activity was not considered here.
- The study focuses on the qualities of local public space in relation to their appeal to diverse socio-economic groups. The use and qualities of public space preferred by a city dweller however are also influenced by physiological factors (gender, age and well-being), psychological factors such as previous experience and other factors such as culture. These were not investigated due to time constraints.
- The judgment of socio-economic status is an intensive exercise based on numerous variables. For the purpose of the study however, the differentiation in socio-economic status is based on three variables, i.e. educational attainment, occupational prestige and income.
- Grouping of individuals by socio-economic status is a matter of great sensitivity in society today. This study is not meant to be misinterpreted as an attempt to 'label' people. It is instead a genuine attempt to establish solidarity despite the differences that

are rooted within our social system; possibly an outcome of the caste system that prevailed in ancient Sri Lankan society.

Creating good Public space for All

Theoretically, the attributes of successful public space maybe grouped into two distinct perspectives. The first refers to good public spaces as 'Spaces of neutrality' as defined by Richard Sennet. The second advocates good design detail as the core of successful public space; typical of Jan Gehl and William Whyte.

This concept of public space referred to by Sennet draws from none other than the Athenian 'agora'. Many activities occurred simultaneously within the agora. It was a place in the city for the tolerance of difference.
Richard Sennet argues that architects should focus, when designing public spaces, on how to build community amongst the people who differ, where citizens would care beyond the 'boundaries of their own individualized sphere'. (Pasca, 2012)

Residents of a metropolitan area depend on one another for a range of goods and services that make daily life possible. These are intricate networks of mutual dependencies across time and space, and sometimes across distinctions of race, culture, and socio-economic class. In such settings, citizens may understand their interests as being intertwined in ways that demand co-operative activities, but do not challenge their distinctive values, traditions, and aspirations in any fundamental way. Appropriately structured city spaces encourage fruitful public encounters across various dimensions of difference. (King, 2004, p.99)

William H.Whyte states that, 'it is hard to design a space that will not attract people. What is remarkable is how often this has been accomplished'. (Francis, 2003, p.xii)
In evaluating thousands of public spaces around the world Project for Public spaces (PPS), an organization founded by William H.Whyte, dedicated to the study of public spaces globally, has found that successful ones have four key qualities. (PPS, 2012)

They are,

1- Access and linkages.
   A successful public space is easy to get to and get through. It is visible both from a distance and up close. The edges of a space are important. Accessible spaces have a high parking turn over and are convenient to public transit.
2- Comfort and image.
   Comfort and image are key to a space's success. Comfort includes perceptions about safety, cleanliness and the availability of places to sit.
3- Uses and activities.
   Activities are the basic building blocks of a place. Having something to do gives people a reason to come to a place and return.
4- Sociability.
   Often considered the most difficult qualitative aspect to achieve, sociability is the characteristic of a space which makes it welcoming to the community it serves, thereby establishing a strong sense of attachment to it.

Jan Gehl defines the three key attributes of successful public place as Protection, Comfort and Enjoyment. (Gehl, 2010)

The views of Richard Sennet, William H.Whyte and Jan Gehl combined maybe represented in the union diagram illustrated below,

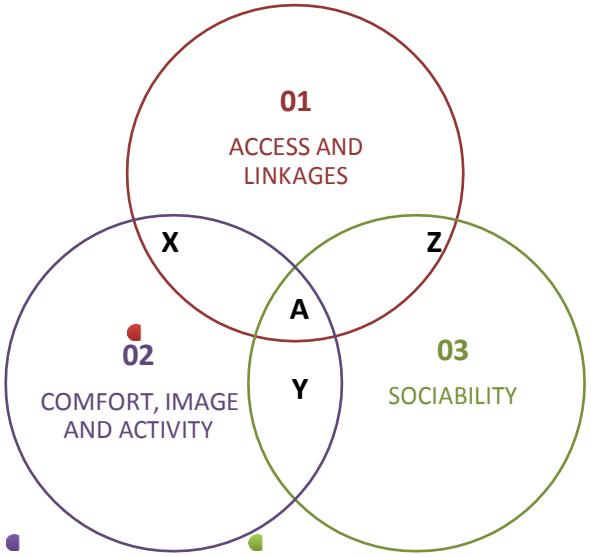


Fig. 1: The Key Attributes of successful public space. (Author, 2013)

Where,

A: Good Public space or 'Neutral public space.
X: A space where accessibility and quality is exclusive to a social group; cannot be considered truly 'public' by definition.
Y: A space that is not accessible despite providing comfort to all social groups fails as a public space.
Z: An accessible space, devoid of quality fails as a public space.

An ideal public space would have convenient accessibility and exemplary quality of space designed to appeal to the diverse social groups that make up today's society, such that its ultimate users are a rich, healthy composition of society.

A public space that has a reasonable representation from each attribute therefore may be classified as a 'good public space'.

Each of the Key Attributes was further broken down into a set of criteria that may be assessed when studying a public space. This formed the basis for the analysis of the case studies; Galle Face, IPS and Diyatha Uyana.

Table 1: Data Collection Method (Author, 2013)

Key Attribute	Qualities associated with Attribute	Evaluation Criteria	Data collection method
01. Access and Linkages	Accessibility	▪ A legible environment. ▪ An environment accessible to all.	Map reading, physical visitations, observation and photographic studies.
	Connectivity and Permeability	▪ Presence of links to attractions beyond space. ▪ Presence of visual links- views to and into the space from near and afar.	
02. Comfort, Image & Activity	Perception of safety	▪ Protection from vehicular traffic, crime and violence. ▪ Protection from unpleasant sensory experiences.	Physical visitations, observation and photographic studies.
	Pleasant to use	▪ Possibilities for walking, sitting and standing. ▪ Possibilities for hearing, seeing and talking.	
	Activities to suit users' needs	▪ Possibilities for play, recreation and interaction. ▪ Presence of activity by day and night. Provision/ presence of temporary and/ or seasonal activity.	
03. Sociability	Versatility of space	▪ Presence of diverse socio-economic groups and their preference in quality.	Observation and interviews.

The examination of the socio-economic profile of users at each of the three cases identified was carried out via the conduct of interviews.

A sample size of 30 was maintained at each location, with the random sampling technique being adapted for choice of interviewees. Interviews were conducted on three consecutive weekends, between 04:00-06:00 pm.

The interview schedule included questions aimed at extracting educational attainment, occupational prestige and monthly income of users to enable classification by Socio-economic status (SES).

Categories for occupation included Un-skilled labour, Skilled labour and Professional employment based on the categories of employment indicated in the Economic and Social Statistics Report prepared by the Central Bank of Sri Lanka for the year 2012.
SES was therefore defined as follows,

- **High SES:**

Education: Tertiary education.
Occupational attainment: Professional.
Monthly income: Greater than LKR 50,000.

- **Middle SES:**

Education: Secondary education.
Occupational attainment: Skilled workers.
Monthly income: LKR 15-50,000.

- **Low SES:**

Education: Primary- Secondary education.
Occupational attainment: Un-skilled workers, or Unemployed.
Monthly income: Below LKR 15,000

SES in the local context is more strongly associated with educational attainment and occupational prestige, and most often, monthly income did not reflect either.
The interview proceeded to ask users "What do you like about ?" and "How often do you come here" with reference to the public space in question to help identify the qualities of space that appealed to this social group. Travel distance and mode of transport was inquired to establish the influence of location and ease of access to the public space, if any.

Case 01: Galle Face

The Galle Face stretches for half a kilometre along the Western coast of Colombo's financial district. This five hectare ribbon of land between the Galle Road and the Indian Ocean is the largest open space in Colombo. It is a popular recreational destination amongst both locals and tourist for flying kites, indulging in street food or simply immersing in its rich ambience.



Fig. 2: A panoramic view of the Galle Face Green (iloveyoucolombo, 2013)

During the war large sections of Galle Face were cordoned off and security was tightened restricting access and discouraging visitors. One of Colombo's most popular public spaces became desolate. Today, in peaceful times, Galle Face Green is entirely open to the public once again, and had regained its former glory.

Analysis of Galle Face against the definition of 'good public space' (as seen in Fig. 1) revealed that it satisfactorily fulfils Key Attribute 01 & 02 but falls short at Key Attribute 03 as it users do not constitute a fair representation of all SES but are biased towards the Low and Middle SES.

The word cloud below illustrates the most commonly used words by visitors when asked **"What do you like about it?"** with reference to the location under study. This inquiry helped identify the qualities of space that appealed to this social group. Responses received make constant reference to the qualities of space identified in Table 1: Data Collection Method (Author, 2013).

The most frequently used words in responses received are connoted by a larger font. Responses received in Sinhalese and Tamil were translated to their English equivalents to allow their representation in the word cloud.



Fig. 3: Word cloud: Qualities which made respondents like Galle Face (Author, 2013)

The five most predominant qualities of space that surfaced in responses received are further listed and presented graphically below.

1- Its location; ease of access to and from it.
2- The presence of the vast ocean; its sight, sound and the breeze generated by its presence.
3- The vast open space; the ability to gather in medium-large groups for recreation. Privacy was never cited as a concern.
4- The activity available; kite-flying, pony-rides and vendors selling street food. An energy considered unmatched at any other location.
5- The ambience by night.

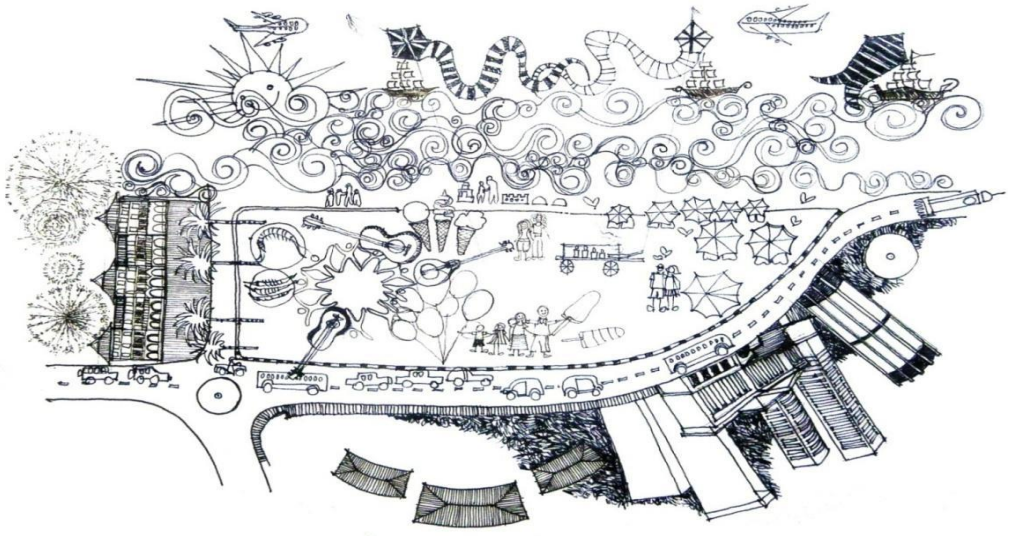


Fig. 4: Sketch illustrating the findings at Galle Face (Perera, 2013)

Case 02: Independence Square (IPS)

The IPS is home to the Independence Memorial, the monument of freedom. Located in Colombo 07, an urban context strongly associated with institutional, cultural and recreational activity, it has long been established as a popular public space owing to its ability to offer tranquillity in the heart of the city.


5


6

Fig. 5: Strong axes lead to the Independence memorial enhancing its grandeur (Daily News, 2009)
Fig. 6: The Independence Memorial (Explore Sri Lanka, 2011)

Analysis of IPS against the definition of 'good public space' (as seen in Fig. 1) revealed that it satisfactorily fulfils Key Attribute 01 & 02 but falls short at Key Attribute 03 as its users do not constitute a fair representation of all SES but are biased towards the High SES.

The word cloud below illustrates the most commonly used words by visitors when asked, **"What do you like about it?"** with reference to the location under study. This inquiry helped identify the qualities of space that appealed to this social group. Responses received make constant reference to the qualities of space identified in Table 1: Data Collection Method (Author, 2013)



Fig. 7: Word cloud: Qualities which made respondents like IPS (Author, 2013)

The five most predominant qualities of space that surfaced in responses received are further listed and presented graphically below.

1- Its location; ease of access to and from it.
2- The predominant natural environment, which offers tranquillity in the heart of the city.
3- The privacy offered; a combination of narrow pedestrian pathways and wide open spaces allows for varying degrees of privacy.

4- The activity encouraged; primarily the parallel walking and cycling tracks for parents to exercise while their children cycle alongside them.
5- The level of maintenance; its cleanliness.

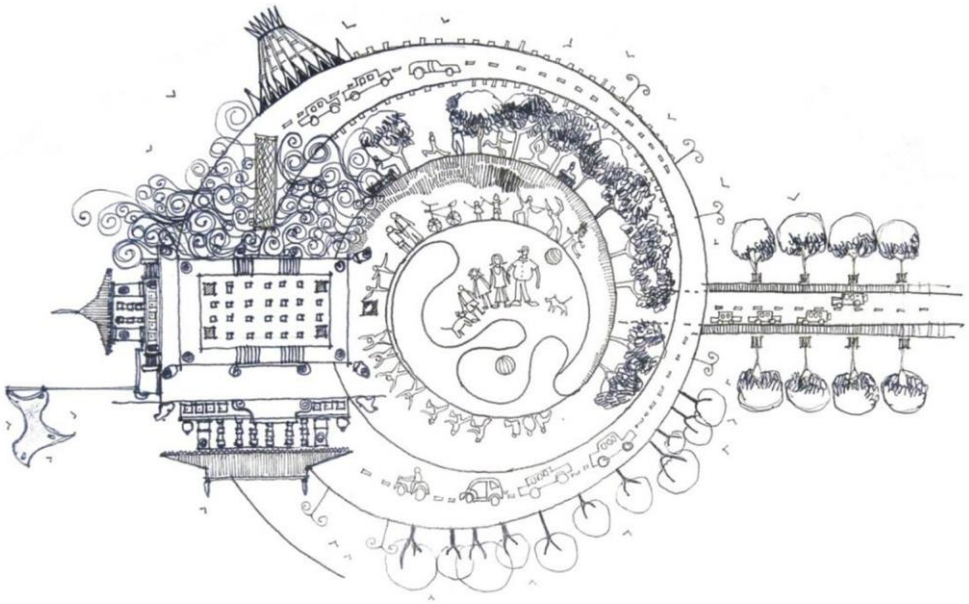


Fig. 8: Sketch illustrating the findings at IPS (Perera, 2013)

Case 03: Diyatha Uyana

Diyatha Uyana, an urban park bordering the Diyawanna Oya in Battaramulla was opened in September 2012. In addition to being a dedicated horticulture trade zone, it comprises of walking tracks and seating for the public overlooking the serene waters of the lake. A fountain overlooking the main access road (Sri Jayawardenapura Mawatha), bathed in constantly changing colours of light is a popular feature.

Since its construction by the Ministry of Defence and Urban Development in conjunction with the Sri Lanka Land Reclamation and Development Corporation, Diyatha Uyana has gained immense popularity amongst the public.



Fig. 9: Diyatha Uyana by day (Defence, 2012)

Analysis of Diyatha Uyana against the definition of 'good public space' (as seen in Fig. 1) revealed that it satisfactorily fulfils Key Attribute 01, 02 & 03. As the users of Diyatha Uyana do not constitute a biased segment of society. It may be concluded therefore, that by the definition of a good public space, it is the better of the three discussed.

The word cloud below illustrates the most commonly used words by visitors when asked **"What do you like about it?"** with reference to the location under study. This inquiry helped identify the qualities of space that appealed to this diverse social group. Responses received make constant reference to the qualities of space identified in Table 1: Data Collection Method (Author, 2013)

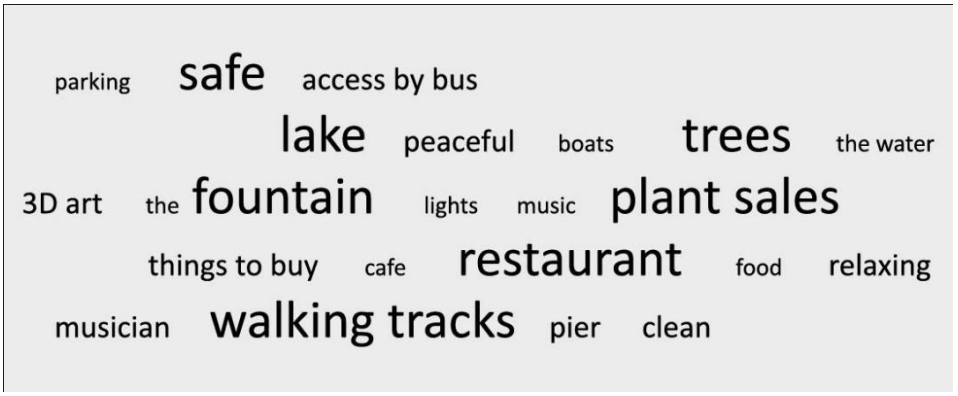


Fig. 10: Word cloud: Qualities which made respondents like Diyatha Uyana (Author, 2013)

Analysis of responses revealed a contrast in the qualities of space that appealed to this sample. The five most predominant qualities of space that surfaced in responses received are listed below. The contrasting views presented within a single quality are included to illustrate the diversity in views.

1- Its location; ease of access to and from it.
2- The predominant natural environment, which offers tranquillity in the heart of the city.
3- The privacy offered.
    a. Wide open spaces.
    b. Narrow pedestrian pathways.
4- The activity encouraged.
    a. Exercise along walking and jogging tracks.
    b. Plant sales and a musical fountain.
    c. The restaurant with a combination of indoor and outdoor seating.
5- The level of maintenance; its cleanliness.

This case study proved that the qualities of space provided at Diyatha Uyana appeal to a wider cross section of society, whilst Galle Face and Independence Square provided qualities preferred by more specific socio-economic groups.

These qualities are illustrated in the sketch below,

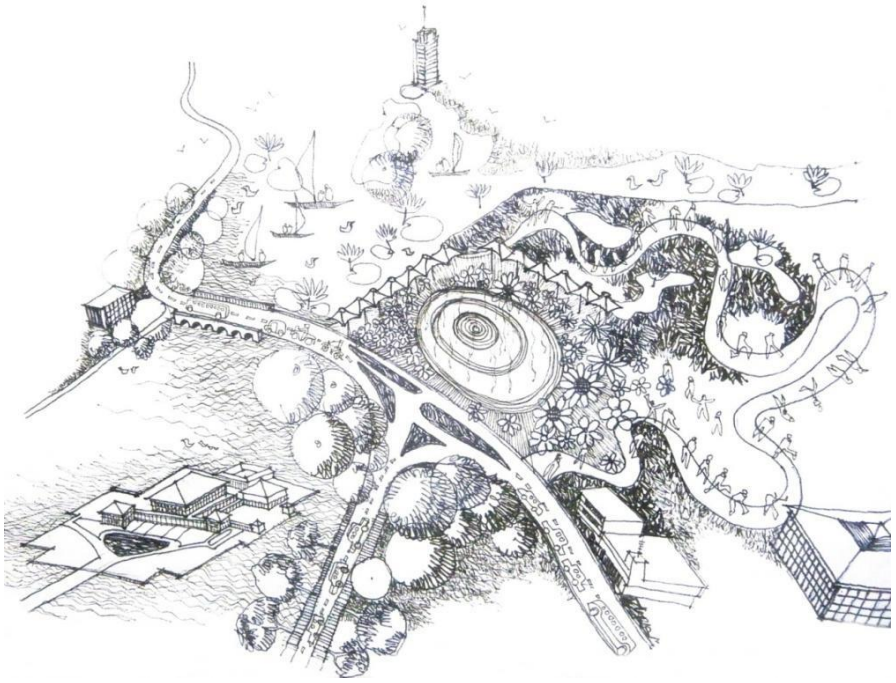


Fig. 11: Sketch illustrating the findings at Diyatha Uyana (Perera, 2013)

Conclusion

As per the definition of successful public space illustrated by 'Fig. 1: The Key Attributes of successful public space (Author, 2013)' it may be concluded that Diyatha Uyana is the most successful public space of the three cases discussed. Diyatha Uyana is accessible, well-linked, comfortable and brimming with activity enjoyed by a cross-section of socio-economic groups. This characteristic allows it to also be defined as the most neutral of the cases discussed.

The democratic perspective of a 'public space for all' is neither manifest in Galle Face or Independence Square. Does this make them any less successful as public spaces? A visit to either of these public spaces would dismiss this uncertainty, as both locations are relished by people; and have been for years.

The concept of a neutral space is a Western ideal. In such contexts the design of public space caters to a public amongst which there is minimal financial disparity in terms of employment. Socio-economic policies (such as those governing minimum wage) in developed nations, ensure to a great extent a level standard of living.

In Colombo however, the metropolis of a developing nation, significant socio-economic disparity exists. This is apparent in the cases studied. These socio-economic differences are further enhanced by the stratification of society by social class: a result of the association of certain social groups with colonial powers that imbued superiority and the caste system which prevailed in ancient Sri Lankan society. The lack of neutrality at Galle Face and IPS can be attributed to this trait as both public spaces offer comfort to a distinct social group.

Each socio-economic group prevalent in society today appreciates and anticipates uniquely different qualities from it. In today's context, the success of the most recent case, Diyatha Uyana stems from its ability to simultaneously foster the presence of different socio- economic groups

whilst offering each their expected sphere of comfort. This may be defined as the essence of successful local public space in today's context.

The research conducted helped identify qualities of a public space that appeal to all:

- Ease of access to the location.
- Its association with nature. The ability to connect with the natural environment; see it and hear it.
- Protection from the sun and rain, typical of the local climate, and
- Protection from traffic, crime and violence. The urgency for protection from mass terrorist attack has given way to the need for protection at a personal level from threat of rape, sexual harassment, kidnapping and murder, which have risen in the recent past. Safety is pivotal to the success of any public space.

Differences lie however, in the preference for qualities such as,

- Possibilities for walking, sitting and standing.
    - ❖ Those belonging to Low-Middle SES prefer wider paths for walking in groups, clustered seating for heightened interaction and standing in congregation,
    - ❖ Whilst those belonging to Middle-High SES prefer narrow pedestrian tracks which allow for walking as a means of exercise- most often a solitary act. Privacy is a consistent request as association in large groups is not a common trait amongst them.
- Possibilities for play, recreation and interaction.
    - ❖ The possibility for walking, jogging and cycling most often surfaces as preferred activity amongst those belonging to Middle-High SES, versus the possibility for mere relaxation or activities such as kite-flying, playing cricket and football.
- Activity provided.
    - ❖ Those belonging to Low-Middle SES prefer the presence of a lively commercial component such as vendors dishing out street food, selling toys, kites and balloons for children,
    - ❖ Whilst more subdued activity, such as the presence of cafes and coffee-houses are preferred by the Middle-High SES.

This variation may further be expressed in terms of the differences in,

- Context and location.
- Symbolism of space.
- Permeability of space.
- Scale of space.
- Time of usage.
- Lifestyle of user.
- Facilities available.
- Scales of affordability.
- Preferred group sizes for interaction, and
- The influence of western ideals on the attitudes of city-dwellers.

These factors set foundation for further investigation on the subject.

References

Francis,M. (2003) Urban Open space- Designing for user needs. Washington: Island Press.

Gehl,J. (2010) Cities for People. Washington: Island Press.

Goheen, P. (1998) 'Public space and the geography of the modern city', Progress in Human Geography, 22 (4), Studieris [Online] Available at: http://studiereis.fondsbkvb.nl/wp-content/uploads/2010/06/Goheen-Peter-G-Public-space-and-the-geography-of-the-modern-city.pdf (Accessed: 03 February 2013)

King,Loren.A. (2004) 'Democracy and city life', Politics, Philosophy and Economics, 3(1), Sage Journals [Online] Available at: http://ppe.sagepub.com/content/3/1/97.abstract (Accessed: 10 February 2012)

Pasca, Marinela.P. (2012) The role of the architect in the production of democratic public spaces [Online] Available at: http://maad2011.files.wordpress.com/2012/04/marinela-petrina-pasca.pdf (Accessed: 03 February 2012)

Project for Public Spaces (2013) What Makes a Successful Place? Available at: http://www.pps.org/reference/grplacefeat/ (Accessed: 04 September 2012)

Towards Creating Child-friendly Cities: Allocation of Urban Spaces to Children in Mashhad, Iran

Bahar,Manouchehri*
Faculty of Art and Architecture, Science and Research Branch, Islamic Azad University, Tehran, Iran
Katayoon, Alizadeh
Department of Geography, Mashhad Branch, Islamic Azad University, Mashhad, Iran

Abstract

Children are the future contributors and decision makers of the world. They are equal citizens with the same rights as adults and are valued as citizens of today, rather than future citizens or citizens of tomorrow. The day is coming when the majority of the world's children will grow up in cities and towns. Every year, the world's urban population increases by approximately 60 million people. Most of this growth is taking place in low- and middle-income countries. Asia is home to half of the world's urban population. It is now thought that six out of 10 of our future children will grow up in cities, in poverty, at risk. Yet, most cities are largely unfriendly to children and have governments that take few steps to address children's needs and assess children's priorities.This paper aims to review the urban facilities per capita assigned to children in the urban spaces of Mashhad city. In this study, the desired information collected by referring to the documents and based on these information the conclusion has been made. The findings indicate that the rate of facilities per capita assigned to the spaces for children in the development plans of Mashhad do not meet the needs of this part of community. Therefore, pay attention to the needs of children in the development plans of Mashhad and moving toward child-friendly city can be provide better living conditions not only for children but also for all citizens.

Keywords: Child-friendly City, Children, Urban Spaces, Urban Development Plans, Mashhad

Introduction

Children are the future decision makers of the world (Malone, 2010). They are equal citizens with the equal rights as adults and are valued as citizens of today, rather than citizens of tomorrow or future citizens (Tranter and Pawson, 2010; Penrith City Council, 2012).

The day is coming when the majority of the world's children will grow up in urban areas. Already, half of all people live in cities. By mid-century, over two thirds of the world population will call these places home (UNICEF, 2012). It is now thought that six out of ten of our future children will grow up in cities, in poverty, at risk and Projections suggest that by 2025, six out of ten children will live in urban areas in low- and middle-income nations (UNICEF, 2004; Satterthwaite et al., 1996).

*Corresponding Author: BaharManouchehri; E-mail- bahar.manoochehri@yahoo.com

Among various groups living in a community, children more than others, lack political and economic power, so they deserve special attention (Kingston et al., 2007). There are many more urban children now, and hundreds of millions of them live in the kind of deep poverty that is a challenge to health, life and future prospects (Bartlett, 2002). Because children are the most vulnerable to environmental and social damage, in terms of both their likelihood of personal harm and the constraints these place on their capacity to reach their fullest potential, they are exposed to the greatest risk (Malone, 2001).

Yet, most cities are largely unfriendly to children and have governments that take few steps to assess children's priorities and address children's needs,so policy makers, social workers and urban planners need to pay special attention to the rights and interests of children (Riggio, 2002; Nikku and Pokhre, 2013). Child-friendly city (CFC) can helps urban planners in achieving this goal.Child-friendly cities movement has been developing throughout the world as a growing number of city governments in low-, middle- and high-income countries (Riggio, 2002). A child-friendly city is a sustainable city, a city that focuses on a quality of life and soft factors(Eisinger, 2012). Receiving basic services such as health care and education, meeting friends and playing are the child-friendly cities indicators. In order to achieve these fundamental factors in a child-friendly city, urban spaces for children are required.

This paper aims to reviewing the urban facilities per capita assigned to children in the urban spaces of Mashhad, Iran. The purpose of this paper is devoted to the study of children's urban per capita in urban development projects in Mashhad, from the beginning till today and the existing condition. It is obvious that the most urban services for children include kindergartens,elementary schools, parks,sports and games' space, children's library,sports fields and open space, which the per capita amount of these spaces has been discussed in this article.

Literature Review

The background to many recent child-environment studies is UN Convention on the Rights of Children, CRC (Nordström, 2010). In 1989, the United Nations ratified the Convention on the Rights of the Child, which places the relationship between children and their societies and cities on new ground. The Convention recognized that children have basic rights as persons, in harmony with the Universal Declaration of Human Rights, but in addition, they have special requirements for protection and provision, given their vulnerability and requirements for healthy growth. The articles of the Convention, therefore, can be divided into three groups: those to ensure the protection of children, provision for their basic needs and participation in decisions that affect their lives, to the level of their ability (Chawla and Salvadori, 2003).

Building on the Convention, Agenda 21 (the Program of Action from the United Nations Conference on Environment and Development in 1992) recognizes children and youth as main actors who must be involved in participatory processes of environmental management and decision making. In a further step, the Habitat Agenda (the Program of Action from the Second United Nations Conference on Human Settlements in 1996) identifies children and youth as critical resources for the creation of sustainable settlements (Chawla and Salvadori, 2003).

Several definitions of what constitutes a child-friendly city appear in the academic and policy literature (Penrith City Council, 2012). It is also recognised that there are no standard models of what a child-friendly city is – each society needs to define that for itself (Penrith City Council, 2012). In some contexts, especially in the Global North, emphasis seems to be on physical and environmental issues such as safe and green environments, developing parks and green spaces,

improving recreational areas, child participation and controlling traffic in order to make streets safer for young citizens. In the Global South and Low-income countries, the focus is more frequently on increasing access to basic services (Riggio and Kilbane, 2000) and to prioritize service delivery in education, health, nutrition and child protection (Nikku and Pokhre, 2013).
UNICEF defines a Child-friendly city as "a local system of good governance committed to fulfilling children's rights" (UNICEF, 2004). It is a city, or more generally a system of local governance, committed to fulfilling children's rights, including their right to:

- Influence decisions about their city
- Express their opinion on the city they want
- Participate in family, community and social life
- Receive basic services such as health care and education
- Drink safe water and have access to proper sanitation
- Be protected from exploitation, violence and abuse
- Walk safely in the streets on their own
- Meet friends and play
- Have green spaces for plants and animals
- Live in an unpolluted environment
- Participate in cultural and social events
- Be an equal citizen of their city with access to every service, regardless of ethnic origin, religion, income, gender or disability (UNICEF, 2004; Malone, 2001)

The International Secretariat of CFC initiative has identified nine principal building blocks for local administrations aiming to become "child-friendly". They are:

(1) Child participation at all stages of planning and implementation
(2) Child-friendly legislation
(3) A child rights strategy
(4) A coordinating mechanism or agency for children
(5) Assessment of policy and program impact on children
(6) A budget and resources for children
(7) A regular report on the state of children in the city
(8) Awareness-raising and capacity-building on child rights
(9) Independent advocacy for children (UNICEF, 2004)

At the operational level, Child-friendly spaces attempts to integrate primary and fundamental services in health, primary education, child care and psychosocial development into a protective environment that is both family-focused and community-based (UNICEF, 2004). Children are seen and heard in a child-friendly city. Their active participation as citizens and rights-holders is promoted, ensuring the freedom to express their views and making sure that their views are taken seriously (Mayor of London, 2004).

In terms of urban planning, a good city for children should undergo the following terms:

- The Physical and social organization in a child-friendly city, should be based upon the trust, fairness and justice and promote them. In this case, it is necessary to create a space which is associated with the presence of an adult to ensure the safety of child. The public spaces should be planned and designed in such a manner that enhance the relationship between people in terms of age and social class.

- The chance of observing people, adults and children in terms of various activates and occupations is a social attraction for children.
- Adults' involvement to support the children of city and neighborhoods as well as theirs.
- Creating the safe urban spaces free from any commuting hazards, that let children to discover and observe their neighborhoods and neighbors.
- A clear, health and comprehensible urban environment where children are able to walk readily.
- Paying attention to valuable social and cultural roles and participating children in social events and rituals.
- Proximity of the work place and home, and accessibility of children and parents is necessary.
- Creating the enthusiastic elements for children in urban spaces and avenues.
- Events and ceremonies that enhance the national, religious and historical feelings and interests in the society and its traditions.
- Type of urban texture, attractive buildings, color, materials, figure and formation of buildings which exciting for children are important in urban design (Shieh, 2006; Lennard, 1997).

Considering urban spaces that are suitable for childrenis one of the main features ofa child-friendly city. The urban space should share value related to natural environment and associate children with natural elements such as; water, plants, trees, animals, birds and insects. Children could learn in such a way and love the nature and preserve it (Lennard, 1997).

Extensive efforts in the field of community life in cities have been made to improve the children conditions in various points of world. We could mentioned to creating great neighborhood parks in New York for improving the physical and mental health of children and developing the outdoor opportunities especially for low-income families during the years 1995 to 1997 as well as researches such as the effect of physical environment on children and improving the conditions in cities, the alphabets of life in city including Multi Media technologies in the city neighborhoods -Manhattan, New York- leading by the neighborhood schools, the initiative of creating the large green spaces for sports and plays in residential developments and maintaining the streets and passages (www.web.gc.cuny; Shieh, 2006).

Another important point in the field of community life is the design of appropriate spaces for children. Space is an infinite fact which is defined through limitation, focus and activity. Space, as an urban factor, is a place for activity and in terms of urban planning, the spaces are associated with buildings surrounded. The urban spaces are special elements with aesthetic values, which play a vital and active role. According to this definition, parks, open spaces, squares, public places such as parks and open sport spaces are considered the urban spaces. On the other hand, the space is defined upon the type of usage. The urban spaces are an organized, arrayed, and regulated structure for human activities (Tavasoli & Bonyadi,1990; Shieh, 2006; Butterworth, 2000).

Children in urban spaces are encountered with diverse population in terms of age groups, cultural and social level. The road between home and schools is located through such spaces and most of leisure time is spent there. If children are not supervised or guided properly, there is no restriction about what perceived in such spaces. The urban spaces have a leading role, while it can play an instructive role for children or a destructive role. Related to this latter perspective, they are considered the expressive tongue of city and the most important relation factor to

various class of society (Sadoughian Zadeh, 1996; Harris et al., 2000). Foremost, neighborhoods and their interior spaces, should be planned to develop the level of the healthy social relationship. Todays, the urban planners are well aware that constructing a suitable urban spaces for children are not practicable and parentrs explicitly, express their concern over the plays of children in avenues and pedestrians located at the distance between home and school. We should construct spaces that children be able to communicate through their childhood emotions and characteristics and spend time over there in tranquility (Economic and Social Research Council, 1997). Le Corbusier, the famous architect, has planned a readily and efficient initiative that emphasesthe presence of children in city. In his suggestive city, playing spaces, and residential complexes are planned in suitable locations.

In Iran, the concept of child-friendly cities does not have a long record. It can be probably said that the first serious attention to this issue took place, after the earthquake in Bam in 2003 in a way that UNICEF with the cooperation of the other institutions defined the each child-friendly research with the purpose of “collective participation” of the children and set a goal for it. The project of child-friendly city has been planning in Tehran since 2009 in Tehran Municipality’s Office of Community Participation and through the required studies of this city in the next ten years, it will approach the criteria, which has been notified in the Legislation in this area by the City Council of Tehran.

Research Methodology

Research methodology in this study is a descriptive-analytic approach, which by referring to related documents, urban development plans and the theoretical bases of the pundits is trying to study the spaces dedicated to the children in the city. The considered case study is the city of Mashhad. In this regard, three urban land use, include educational, sport and green space land use are reviewd in two master plans of Mashhad and according to the Development Project Studies of Mashhad the Distribution of these land uses were specified on the map. Data collection instruments has been included of library studies of existing documents, related sites and books, Khazeni and Mehrazan Master plans of city of Mashhad and the information contained in the Institution of the Development Projects Studies of the city of Mashhad. Based on these information the conclusion has been made.

Findings

Children in the Urban Spaces of Mashhad City

The urban planning in Mashhad is not suitable for children. The city is not walkable for adults or children’s commuting. The area of pedestrians get smaller and smaller every day for enhancing the traffic movement; therefore, there is no solution for the child about how travels the distance between the home and the school. In all neighborhoods, the type of land use draws the attention to economic benefits; therefore, no attention paid to children housing requirements such as sport open spaces, green spaces, libraries and social centers for children. In spite of the fact that, the kindergartens can play a constructive role in child social education, they are more likely to use for nursing the child. In this respect, the kindergartens instead of proper sprawl in city and neighborhoods, mostly located adjacent to administrative centers or next to the main and busy streets, where proper for a car to stop for a moment.

Another important problem is the absence of amenities and child well-being services in neighborhoods and open spaces. The most important recreation elements for children in

Mashhad are parks and green spaces. Despite the fact that the number of parks was added during the recent decade, the distances between the parks and the residential areas are long. The green spaces are more likely to be taken advantage when there is enough opportunity for parents for recreation. Whilst children, as for the population and building density and sense of enclosure, need to use such spaces. The sport spaces are so limited and the number of children's cultural centers lack the required equipments – considered a part of pubic cultural centers- is so little. The number of child libraries, the institute of intellectual development, is so low. Artistic training and entertainment centers are limited and children are entitled to pay the charge to the private sectors.The science centers of children -the Science World- is the same and child-friendly films are produced in limited numbers. The artistic and cultural museums are centralized and don't spread over urban districts of Mashhad properly.

The Distribution of Urban Facilities Associated with the Children in the City of Mashhad

One of the features of child- friendly cities, in achieving sustainable development of the future cities is devoting proper spaces to the children in the cities. The main urban facilities for children includes educational spaces (pre-school, elementary school and guidance school), green spaces (parks and gardens), children's sport and play spaces, children's library, sports playground and open spaces. Per capita provision and the extent of the area of the spaces assigned to each land use are the important parts in any urban development plan, which in Iran, this area and per capita are mentioned in urban master plans. In the city of Mashhad since the beginning till now, two master plans called Khazeni Master Plan and Mehrazan Master Plan has been provided and implemented which have been discussed about the per capita study assigned to the applications mentioned in these plans and the existing status. Khazeni Master Plan of the city of Mashhad has been placed on the agenda since 1967 and during March 1970 and April 1971, its first and second stages was done and approved (Khazeni Consulting Engineers, 1971). In fact, this plan is the first master plan approved by the city of Mashhad and now it is also the basis of action for a major part of the city. After that, Mehrazan Master Plan was approved in 1993 (Mehrazan Consulting Architects and Planners, 1993). In this regard, three urban land use, include educational, sport and green space land use are reviewd in these two master plans.

1- Educational Land Use

Among children's rights, which attracts attention in the child-friendly cities, having appropriate education is important; therefore, paying attention to create educational spaces in the cities is important in this field. Educational land use per capita has been studied in the city of Mashhad in two master plans, Khazeni and Mehrazan and in the current situation and has been compared with the standard per capita. It should be noted that the target group in this study are the children who are aged between 0 to 14 years old; therefore, the response scale to this age group is at the level of the neighbourhood and region, which includes kindergarten, elementary school and guidance school. The proposed per capita for the educational land use in Khazeni Master Plan is 10.55 square meters, which this figure has been calculated with calculations of the area and city scale land use (High school and university) and the mentioned per capita has not separately been calculated for the neighborhood and the region. Therefore, we cannot have the correct analysis of the extent of the realization of this urban per capita in the current situation for the children. The proposed per capita of the educational land use in Mehrazan Master Plan on the scale of the neighborhood and the region is 1.43 square meters (Mehrazan Consulting Architects and Planners, 1993).

The standard of urban per capita of educational land use in different countries varies and depends on population. Through the study of the standard per capita of the governmental organizations in Iran and the proposed per capita of various references, it can be observed that the proposed per capita is much lower than the standard per capita. Now the educational land use per capita in the city of Mashhad is 1.21 square meters, which from this rate 0.35 square meters is related to the educational land use of the neighbourhood scale and 0.39 square meters is allocated to the educational land use of the region scale, which again compared with the standard per capita, the lack of a major space for children is obvious.

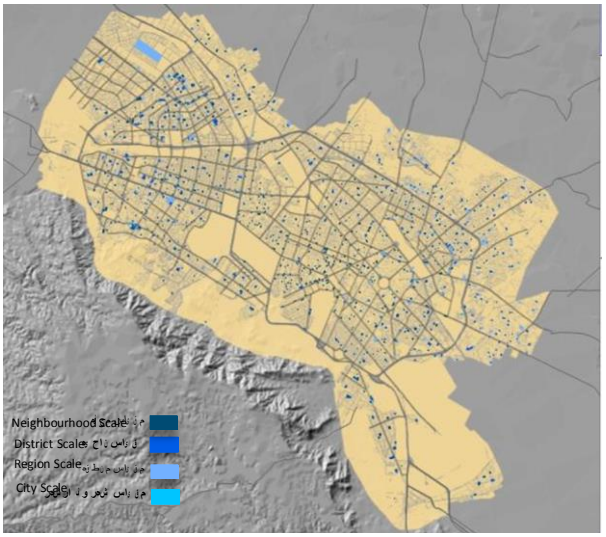


Fig. 1: Distribution of Educational Land Use
Source: Development Project Studies of Mashhad

Table 1: Educational Land Use Per Capita

Current Situation	Mehrazan Master Plan	Khazeni Master Plan	standard educational land use per capita / Organization of Renovation of schools	Scale of Function	Function	Land Use
0.35	1	10.55	5.54	Neighbourhood	Kindergarten and Elementary School	Educational
0.39	0.43		6.18	Region	Guidance School	





Fig. 1: The high school and primary school in Mashhad: educational land use
Source: author

2- Sport Land Use

Children spend less time playing outside than they used to, and while outside, they are chaperoned more often (Gaster, 1991; Hillman et al.,1990; Karsten, 2002; van der Spek and Noyon, 1995). In the Khazeni Master Plan none per capita has been proposed for this important urban land use. In Mehrazan Master Plan the proposed per capita of 2.19 square meters for sport land use has been offered, which from this amount, 1.54 square meters is specified for the target group of this research that includes sport playground, sport hall, indoor swimming pool and a small stadiums. The present per capita of this land use in the City of Mashhad is 0.4. By studying the standard per capita, it can be observed that the sport land use per capita in the City of Mashhad both in the development plans and the current situation is less than the standard per capita.

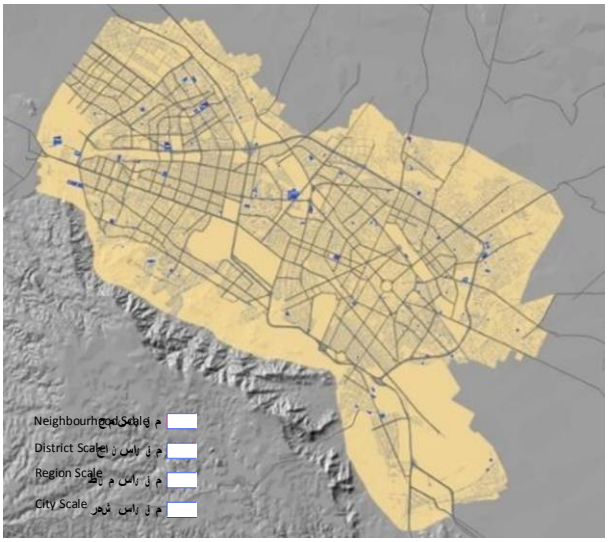


Fig. 2: Distribution of Sport Land Use
Source: Development Project Studies of Mashhad

Table 2: Sport Land Use Per Capita

Current Situation	MehrazanMaster Plan	KhazeniMaster Plan	Standard per capita		Land Use
			Site Planning	Time Saver	
0.4	1.54	–	5	4.5	Sport

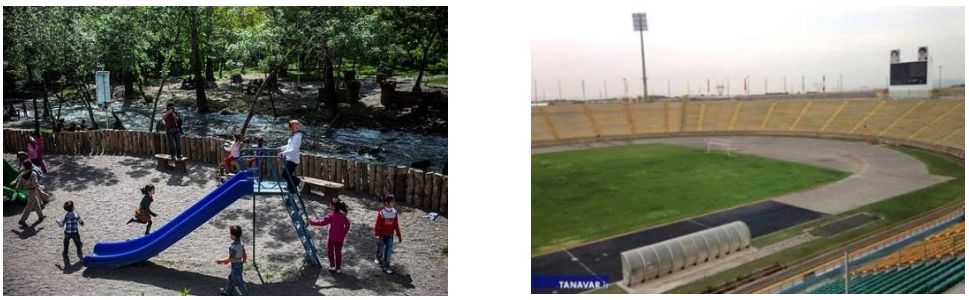


Fig. 2: The playground and Stadium in Mashhad: sport land use
Source: author

3- Green Space Land Use

Various researches on the effect of green area on children's behavior have been conducted. Recent studies have also shown positive associations between access to local parks and playgrounds and children's physical activity (Timperio et al., 2004; Epstein et al., 2006; Roemmich et al., 2006). The environments and open spaces (such as green spaces) have a significant role on the children's behaviors and perceptions and providing their growth and creativity.

In the Khazeni Master Plan the green space land use per capita has been considered 10.55 square meters, which this per capita has not calculated separately for the neighborhood, the district, the region and the city, therefore, we cannot have a correct analysis of the per capita amount assigned to the children in this plan. In Mehrazan Master Plan, the proposed per capita for the green space land use has been proposed of 12.53 square meters, which from this amount 4.4 square meters is for the target group of this study, which includes children's parks, local parks, regional parks and the city parks. The green space per capita of the City of Mashhad currently is 2.62 square meters, which 1.5 square meters of it is on the scale of the present study. By studying the standard per capita, it can be observed that the green space land use per capita for children in the City of Mashhad both in the development plans and in the current situation is less than the standard per capita.

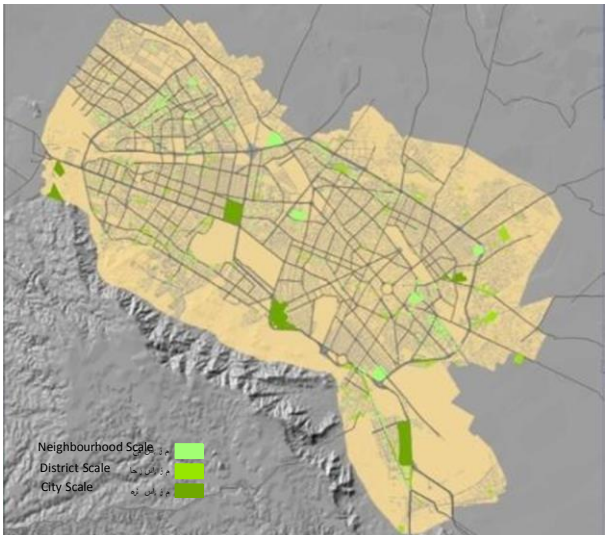


Fig. 3: Distribution of Green SpaceLand Use
Source: Development Project Studies of Mashhad

Table 3: Green Space Land Use Per Capita

Current Situation	Mehrazan Master Plan	Khazeni Master Plan	Standard per capita Urban Land Use Planning	Scale of Function	Function	Land Use
0.91	1.27	10.55	4	Neighbourhood	children's parks and local parks	Green Space
0.59	1.52		5	Region	regional parks	
1.12	1.61		–	City	city park	





Fig. 3: The parks in Mashhad: green space land use
Source: author

Conclusions and Recommendations

UNICEF and the United Nations Human Settlement Program collaborated for 15 years in the field of child-friendly cities plan in order to create a ground for partnership, which place the children at the centre of the agenda of urban programs and by provide services and creating child supportive spaces gives them the childhood which they deserve; therefore, paying attention to these plans and the global achievements in the field of child-friendly cities should be put on the agenda of urban plans. It seems in the current situation, the question of child-friendly city is not be taken into consideration seriously. Children are generally ignored in urban development plans and it can even be said that constructions and development projects implementation in the cities often reduces the children's playground and insecure the public space for them more than before. Nowadays, it is emphasized on this issue that playing and in particular lively plays is essential for the proper growth of the child, but the need of children to play has always encountered with numerous obstacles, especially in crowded and densely populated areas of the city and creates many restrictions for them.

One of the main objectives of the land use planning is the response to a variety of needs of the residents of the area through the establishment of hierarchical activities and different land uses in the assigned spaces. Accordingly, the required levels of the urban land use in the neighbourhood, district, region and city scales and beyond on the basis of the upstream projects' per capita is calculated, in order to estimate the lack of the required service levels in the current situation and provide programs to eliminate the possible deficiencies in the services. But since

the proposed per capita criterion for Khazeni Master Plan has been on the scale of the entire city, the calculation of the shortage of land uses' levels specialized for children is not reliable. The proposed per capita of the Mehrazan Master Plan has been used, because the land use per capita has been suggested through the separate skeletal divisions. The findings suggest that per capita amount allocated to the spaces specified for children in the development plan of the City of Mashhad in comparison to the population of the children does not meet the needs of this class of the society. In Mashhad, thousands of children are busy playing, who do not have appropriate play conditions, equipment and instruments and there is also no center to introduce to the citizens and parents, plays, play culture, play standards and appropriate toys. So in order to eliminate the need of the children for appropriate play instruments, to create relationships between peers, identifying new phenomenon and to encounter new issues for the children during the play, to correctly train the use of the toys, to promote the children's health and to train the life skills and lifestyle through games and toys and finally, to promote the culture of playing in the family, City of Mashhad needs to set up toy houses and consider the per capita of this application in the urban development plans, so that in addition to achieving the children's cognitive development, mental, emotional and of children's physical objectives, it improves the families' performance in playing with children.In total, according to figures and statistics obtained from the study of the existing levels and per capita and proposing the upstream projects, in the existing situation we encounter serious deficiencies for the children, in order to provide the needs of this population now and in the future. Naturally these deficiencies over time with the increase of population and according to the population capacity in Mashhad will be more and more crucial, which will require planning and optimal design to upgrade the quality of settlement and to increase the levels of services.

References

Bartlett, S. (2002) 'Building Better Cities with Children and Youth. Building Better Cities with Children and Youth'. Environment and Urbanization, Vol.14, no.3, p. 3.

Butterworth, L. (2000) 'The Relationship between the Built Environment and Wellbeing: a literature review'. The Prepared for the Victorian Health Promotion Foundation. Melbourne, Australia, pp. 1-35.

Chawla, L. & Salvadori, I. (2003) 'Children for Cities and Cities for Children: Learning to Know and Care about Urban Ecosystems', pp. 294-314.

Epstein, L.H., Raja, S., Gold, S.S., Paluch, R.A., Pak, Y. and Roemmich, J.N. (2006) 'Reducing sedentary behavior: The relationship between park area and the physical activity of youth', Psychological Science, Vol.17, no.8, pp. 654–659.

Eisinger, A. (2012) 'Agenda for Child-friendly Neighbourhood Planning', Policy Recommendations for European Cities to Support Children and Young People, p. 5.

Gaster, S. (1991) 'Urban Children's Access to their Neighborhood: Changes over Three Generations', Environment and Behavior, Vol.23, no.1, pp. 70–85.

Harris, M., Grimshaw, A., Ravetz, A., Solomons, N., Liebheit, M., Greasseni, C., Walker, N., Ward, C., Dibb, M. (2000) The Child in the city: A Case Study in Expermental Anthropology, Prickly Pear Pamphlets, pp. 42-44.

Hillman, M., J. Adams and J. Whitelegg (1990) One False Move . . . A Study of Children's Independent Mobility. London: Policy Studies.

Karsten, L. (1998) 'Growing up in Amsterdam: Differentiation and Segregation in Children's Daily Lives'.Urban Studies, Vol.35, no.3, pp. 565–581.

Khazeni Consulting Engineers. (1971)Main Study of Mashhad's Master Plan. First Mashhad's Master Plan, Mashhad: Ministry of Dwelling and Urban Planning.

Kingston, B., Wridt, P., Chawla, L., van Vliet, W., Brink, L. (2007) 'Creating Child-Friendly Cities: The Case of Denver'. Municipal Engineer, p.2.

Lenanard,H.L. (1976) The Good City for Children in Making Cities Livable , California, USA. pp. 116-172.

Malone, K. (2001) 'Children, Youth and Sustainable Cities', Local Environment: The International Journal of Justice and Sustainability, Vol.6, no.1, pp. 5-12.

Mayor of London. (2004) 'Making London Better for all Children and Young People: The Mayor's Children and Young People's Strategy'. Queen's Walk, London: Greater London Authority.

Mehrazan Consulting Architects and Planners. (1993). Master Plan for the City of Mashhad. Tehran. Iran.

Nikku, BR. & Pokhrel, R. (2013) 'Crafting Child-friendly Cities: Evidence from Biratnagar Sub-metropolitan City, Eastern Nepal'. Asian Social Work and Policy Review,vol 7, pp. 135–150. Nordström, M. (2010) 'Children's Views on Child-friendly Environments in Different Geographical, Cultural and Social Neighbourhoods'. Urban Studies, Vol.47, no.3, pp. 514–528.

Penrith City Council. (2012) A Child-friendly City Strategy. Basis for a Debate on Child Participation in a Local Context.

Riggio, E. (2002) 'Child-friendly Cities: Good Governance in the Best Interests of the Child'. Environment and Urbanization, Vol.14, p. 45.

Riggio, E. &Kilbane, T. (2000) 'The International Secretariat for Child-friendly Cities: a Global Network for Urban CHILDREN'. Environment and Urbanization, Vol.12, p. 201.

Roemmich, J.N., Epstein, L.H., Raja, S., Yin, L., Robinson, J. and Winiewicz, D. (2006) 'Association of access to parks and recreation facilities with the physical activity of young children', Preventive Medicine, Vol.43, pp. 437–441.

Sadoughian Zadeh, M. (1996) 'High Rise Building and Urban Space'. Tehran: Centerof Studies and Planning. Ministry of Interior. Issue 59.

Satterthwaite, D., Hart, R., Levy, C., Mitlin, D., Ross, D., Smit, J. & Stephens, C. (1996) The Environment for Children: understanding and acting on the environment hazards that threaten children and theirparents.London: UNICEF/Earthscan.

Tavasoli, M. & Bonyadi, N. (1990) Designing Urban Spaces, Tehran: Planning and Architecture Research Center of Iran.

Timperio, A., Crawford, D., Telford, A. and Salmon, J. (2004) 'Perceptions about the local neighbourhood and walking and cycling among children', Preventive Medicine, no.38, 39–47.

Tranter, P. & Pawson, E. (2001) 'Children's Access to Local Environments: A case-study of Christchurch, New Zealand', Local Environment: The International Journal of Justice and Sustainability, Vol.6, no.1, pp. 27-48.

UNICEF. (2012) 'Children in an Increasingly Urban World'. The State of the World's Children. Chapter 1.

UNICEF. (2004) 'Building Child-friendly Cities, a Framework for Action'. Florence, SC: Innocenti Research Centre.

Van der Spek, M. &Noyon, R. (1995) 'Children's Freedom of Movement in the Streets', The Netherlands Journal of Housing and the Built Environment, Vol.10, no.4, pp. 313–30.

Learning from Precedents: Emerging Urban Planning Practices towards Livable Communities in Dhaka

Nawrose Fatemi, Nabanita Islam *
Department of Architecture, University of Asia Pacific (UAP), Dhaka, Bangladesh

Abstract

The objective of this paper is to reveal the shift of thoughts in city planning in terms of livability demonstrated in one of the newly planned satellite towns of Dhaka city. Ever since the emergence of the term 'livable cities' back in 1980's by IMCL (International Making Cities Livable LLC), considerable amount of research and practice have been oriented towards understanding how the contemporary cities should grow or be planned for livability, in terms of physical, socio-economic and cultural aspects. Cities around the globe demonstrate diversified vision, policies and strategies for achieving these desired goals. This paper takes Dhaka city as a case study to critically investigate the intentions and attempts of urban planning and design practice focused on the livability aspects of the city. The human settlement of Dhaka city can be traced back as early as the 12th century. Till then, the city received attention, negligence, natural calamity, political instability and went through a number of philosophical views as well as planning proposals for its development. In all its efforts, the intrinsic components of livability were much less emphasized due to the major thrust on city's physical constraint, limited land resources along with negligence in detail area and neighborhood planning. But recent efforts in one of the newly planned satellite town Purbachal shows evidence of change in the traditional paradigm of planning practice. The ultimate objective of this paper is to reveal the points where the proposed master plan of Purbachal succeeded or failed to embrace the principals of livability learnt from earlier precedence of greater Dhaka city. The findings of this paper have been extracted from the studio exercise of Urban Design Studio of the Department of Architecture, University of Asia Pacific. The study was mainly based on case study, examining documented evidence and map & model study along with expert interview.

Keywords: Livability, Livability dimension, Livability Indicators, Livable Community, Satellite townships, Planning Initiatives

* Corresponding Author: Nabanita Islam; E-mail- nabanita@uap-bd.edu

Introduction

The term 'livability' was called into existence in the 1970s when a 'new ideology of livability' had been adopted by The Electors Action Movement in Vancouver (VanZerr & Seskin, 2011). This approach focused more on humane, socially progressive and aesthetic policy and replaced the dominant growth centered discourse. The result was that a shift took place from a focus on the city's economy to the city's people (Kaal, 2011). A decade later urban planners had picked up the concept and used it to study rapidly growing cities and suburban areas. In the reports the traditional 'economic growth assumption' as a tool to measure quality of life was being challenged by some regions that had tried to make communities more 'livable' (VanZerr & Seskin, 2011). These cities were not only focusing on creating economic development, but also on improving the quality of life by taking care of the environment, the infrastructure and by enhancing community cohesion.

On a contrasting note, Dhaka, one of the fastest growing mega cities of today's world, apparently differs to a large extent in meeting these essential components of a livable city. However, planning initiatives like DMDP has attempted to address some of the underlying causes like overpopulation, decentralization and increasing housing demand by proposing satellite towns on the peripheral areas of Dhaka. PURBACHAL is one of them. A substantial shift in planning approach from the earlier precedents can be observed in this newly planned township. But yet, there remain doubts on whether PURBACHAL truly holds the potential of becoming a role model of livable environment in the context of Dhaka. Thus this paper attempts to reveal the shift of thoughts in city planning demonstrated in PURBACHAL and the points where the proposed master plan succeeded or failed to embrace the principals of livability learnt from earlier precedence of greater Dhaka city.

Understanding Livability

Most researchers have reported livability as a concept that is difficult to define and measure (Wheeler, 2001; Balsas, 2004; Heylen, 2006). The term livability is an umbrella to a variety of meanings, which depend both on the objects of measurement and on the perspective of those making those measurements (Heuvel, 2013). Livability refers to the living conditions of a place and reflects people's perception of the place to be fit for living or not. Though the interpretation of livability varies with time and place but the concept seems to share terms like 'quality of life', 'well-being' and 'life satisfaction' all across (Lyndhurst, 2004).

Livability, being a very subjective notion, argues various opinions of how to assess the quality of life because each person has different values on the important aspects of one's life (Carmichael et al. 2007). In the US, livability refers to overall 'quality of life' and 'well being' whereas in UK, livability focuses strictly on local environment i.e. cleanliness, safety and greenery (Lyndhurst, 2004). Wheeler (2001) argues that the most important element in discussions of livability is the subjective experience of living in particular places. According to Heylen (2006), livability refers to the environment from the perspective of the individual and also includes a subjective evaluation of the quality of the housing conditions. In a simpler form, livability encompasses the characteristics of urban environments that make them attractive places to live (Throsby, 2005). He pointed out that such characteristics could be divided into tangible features, particularly with regard to the availability of public infrastructure and intangible features, such as sense of place, local identity and social networks. In Balsas's (2004) work on city-centre regeneration, livability has come to mean the ability of a centre to maintain and improve its viability (the capacity to

attract continuous investment) and vitality (to remain alive). Table 1 summarizes the various components that contribute to livability.

Dimensions and Indicators of Livability

Another crucial consideration concerns the aspects of the environment to be measured. The living environment experienced by inhabitants can be depicted from various perspectives, each representing a different facet of their lives. Lynch (1998) was among the first to examine the criteria of a good settlement. A good settlement is a place that is responsive to the human context as well as connects human values to actions that affect the spatial, physical city. Defining a good settlement is the core concern to understanding livability and is also crucial for achieving livable places.

The livability index is a system that monitors quality of life for a given environment using carefully selected social, economic, and environmental indicators (CII, 2010). Though, there is a worldwide concern for improving quality of life and standard of living, but no consensus on what constitutes the most appropriate index. The selected indicators must represent the social, economic and environmental needs of the local community (Carmichael et al. 2007). Omuta (1988), in his attempt to measure the objective and subjective quality of life to determine the livability of various neighborhoods in Benin City, utilized five broad dimensions: employment, housing, amenities, nuisances and socio-economic factors. The Economist Intelligence Unit's livability rating quantifies the challenges that might be presented to an individual's lifestyle across 140 cities worldwide. Each city is assigned a score for over 30 qualitative and quantitative factors across five broad categories: stability; healthcare; culture and environment; education; and infrastructure (Gerrardbown, 2006). Other global measures include Mercer's Quality of Living Survey, the International Living Quality of Life Index and the United Nations Human Development Index. The Australian Unity Well-being Index measures personal well-being (e.g. standard of living, health, safety, community inclusion) and national well-being (e.g. social conditions, state of environment, business and national security) (Woolcock, 2009). These indices produce a quantifiable measure of livability at a broader level rather than at the residential areas, building or dwelling level.

Table 1. Summary of Livability Dimensions and Indicators (Leby & Hashim, 1990; modified by authors)

Livability dimension	Theme
Social dimension (social relations)	behavior of neighbors (nuisance) inclusive community and social interaction healthcare and wellbeing cultural conservation education sense of place
Physical dimension (residential environment)	environment quality and stability open spaces and recreational facilities maintenance of built environment infrastructure
Functional dimension (facilities and services)	availability and proximity of social amenities universal accessibility employment opportunities
Safety dimension (crime & sense of safety)	number of crime number of accidents feeling of safety and risk management
Economic dimension	economic vitality and viability business and national security

Peter and Lesley Brenner (2007) developed a Livability Planning Checklist for municipalities of Tasmanian cities to assess whether a proposed development fulfills the requirements of up to date livability standards. The checklist includes nine broad categories of livability indicators – social interaction; economic viability; tourism and recreation; wellbeing for all; environment; safety and risk management; national and international treaties and guidelines; technical details; climate change. Table 1 summarizes the various attributes towards achieving livability.

Global Practices in Promoting Livability

The Economist Intelligence Unit's livability rating quantifies the challenges that might be presented to an individual's lifestyle across 140 cities worldwide. These cities demonstrate diversified vision, policies and strategies for achieving these desired goals. The objectives and strategies vary according to contextual differentiation. For precedent study, this paper prefers those countries that have the similar context as Dhaka in terms of population density and socio cultural complexities and diversities, namely Singapore city, Kualalampur and new town Kolkata.

Table 2. Principles of Livability Practiced in Different Asian Countries

SINGAPORE CITY, SINGAPORE	KUALALAMPUR, MALAYSIA	NEW TOWN KOLKATA, INDIA
Plan for long-term growth and renewal	Distinctive local characters	New areas to absorb future metropolitan growth
Embrace diversity, foster inclusiveness	Excellent physical and virtual connectivity	Quality of wetland and water bodies
Draw nature closer to people	Good mix of development density and uses	New Business District to complement and supplement the metropolitan level functions
Develop affordable mixed-use neighborhoods	Vital and high quality public realm: a place of social learning and socialization	Land for setting up of non-polluting, inoffensive and non-hazardous industries
Make public spaces work harder	Placing a value to everyone in community : Dialogue & Listening	protection of the newly grown unplanned existing settlement areas from flooding and drainage congestion
Prioritize green transport and building options	Affordability and choices: multiple functions	planned infrastructure facilities
Relieve density with variety and add green boundaries	Attractive business environment and diverse economic Opportunities	new areas for setting up regional level centers
Activate spaces for greater safety	Wisdom & knowledge of the urban community are appreciated	an environment-friendly and aesthetically attractive new urban settlement
Promote innovative and nonconventional solutions		
Forge 3P partnerships		

Existing Livability Condition of Dhaka

To the greatest disappointment of the city dwellers, once again, the Economist's updated Global Livability Index has ranked Dhaka as the second least livable out of 140 world cities surveyed in its annual rankings. The ratings are based on 30 factors, across five board categories -- stability, healthcare, culture and environment, education and infrastructure. While this survey's methodology may contain some flaws, it is beyond doubt that Dhaka is highly unlivable and, that without major change, is in danger of becoming less attractive to residents and businesses. Sneaking critically into the underlying reasons behind this failure brings forward a number of intriguing causes that have been unnoticed or more rightly termed, neglected over years.

Booming populace: Since independence no effort has been focused on the most crucial aspect of the city, and that is its booming populace. Scope and plan of a city's infrastructure, road communications system , environment, and ranges of many other factors, are designed as according to the need of a specific number of inhabitants or more correctly stated, a projected density slab specified differently for different areas of the city. According to World Bank (2007) every year around 300,000 - 400,000 people added to the existing population of Dhaka, making the 400-year-old city vulnerable. No one is there to restrict and control this human flood and therefore the city fails to cater to the needs of more than it can bear. Moreover the absence of projected population and density slab further aggravates the prevailing chaos of the city.

Unplanned urbanization: The human settlement of Dhaka city can be traced back as early as the 12th century. Till then, the city received attention, negligence, natural calamity, political instability and went through a number of philosophical views as well as planning proposals for its development. In all its efforts, the intrinsic components of livability were much less emphasized due to the major thrust on city's physical constraint, limited land resources along with negligence in detail area and neighborhood planning. Following is a summary of the major features of the planning proposals (Table 3) ranging from British period till date.

Table 3: Planning Initiatives for Dhaka Mega City (Kabir & Parolin 2012)

1917: British colonial period **Dacca Town Planning Report,** By Sir Patric Geddes	The development plan proposed by Geddes emphasized **to conserve the character of any area while making plans to accommodate growth.** But that plan was never adopted formally or no efforts were made for implementing the same
1948: Pakistan period **East Pakistan Planning Sub-Committee**	The physical plan for the city's expansion suggested **improvement of roads, new roads construction, new residential area, an industrial area, 'New Market' shopping centre and hotel development.** These schemes were later adopted in the 1959 master plan
1959: Pakistan period **Dacca Master Plan,** By Minupria & Macfarlane	The first comprehensive master plan defined the **land use pattern, zoning, water bodies, flood prone and buildable zones**. In order to discourage the excessive growth of Dhaka, it formulated a national planning policy for **decentralization by expansion of industry and commerce in other towns** with an additional 4481 acres of land zoned for industry and several new housing schemes to accommodate 402,700 persons; suggested extended residential areas on the reclaim land in the south to accommodate growth and **cultural conservation of the old part of the city**. The implementation process is marked by breach and deviation than adherence to the plan by changing land use pattern.
1981: Bangladesh period **Dhaka Metropolitan Area Integrated Urban Development Project,** By Shankland Cox Partnership	The impetus for this plan was **the storm water drainage and flood problems** of Dhaka metropolitan area, and it proposed **long term growth strategy for urban expansion**, **north-south corridor (mass-transit) and institutional re-arrangements**.
1995: Bangladesh period **Dhaka Metropolitan Development Plan** By Mott Macdonald in association with Culpin Planning Ltd.	The plan proposed new **peripheral expansion of low lands on the east and west by encroachment on suburban and the agricultural land, northern area designated for wealthier groups of population following existing trends of growth**, **more roads and highways to link with the sprawling new developments, leading to a vision of low rise, low density city form, with long journeys to work**. These proposals were meant to reduce traffic congestion in the older parts of the city.
2005: Bangladesh period **Detail Area Plan**	Detailed Area Plan project area was divided into five groups and 11 locations on the basis of geographical location and settlement pattern. Some very good proposals were adopted, for example: (i) densification of existing built-up areas, (ii) **accelerating development within existing fringe areas, (iii) development of planned new areas, (iv) development of dispersed new satellite towns at flood-free locations, (v) gradual dispersal of commercial activities to existing suburbs and new growth areas, (vi) augmenting, identifying and securing sites for major recreational uses and (vii) developing long term primary road network and national link commuter rail network.**

Referring to the livability indicators summarized in Table 1, a critical observation might be drawn regarding the dimensions where the planning initiatives of Dhaka succeeded or failed to adopt the essence of livability-

- Though 1959 Dacca Master Plan proposes cultural conservation for the older part of the city, there's no indication of the strategies guiding foster of cultural environment, community development and social interaction in other parts of Dhaka. Somewhere these intrinsic elements of a livable environment left much to the responsibility of the city dwellers. On the other hand, the fact that distribution of social facilities like health care, education, employment and open spaces according to social clusters and their proximity to residential areas promote physical, mental wellbeing and a socially inclusive community; and in absence creates lack of safety ,crime is not regarded in these guidelines.
- Apart from addressing water bodies, flood prone and buildable zones in 1959 Dacca Master Plan, preservation of environment and urban ecology at micro level has been a least thought out issue in all the planning guidelines. Proposals for transportation infrastructure like mass transit, roads, commuter rail and expansion of residential areas formed the major focus in most of the guidelines, but in a very non-coordinated manner where the guidelines have no clear indication regarding how these different layers of master plan will complement and interact with each other and how the proposed infrastructures will facilitate and guide the growth of the communities.
- The expansion and distribution of commercial zones has a strong deviation from the way it links to the residential zones of the city, putting the emphasis of all the planning guidelines towards a zonal planning approach contrary to the contemporary mixed use theory of planning that essentially promotes a strong livable community.

The Case of PURBACHAL Satellite Town

According to the previous master plans like DMDP, it is proposed that Dhaka should be decentralized in population and employment opportunities from the inner city to the surrounding areas with satellite communities. Following the recommendations of the DMDP, the Government has developed satellite communities outside of DCC, such as TONGI, GAZIPUR, SAVAR and NARAYANGANJ and more recently, PURBACHAL new town. These settlements will constitute a multi-core mega urban region centering DCC. PURBACHAL new town has been undertaken as the first priority project among all the other satellite communities.

This research has been based on data extracted from the studio exercise of Urban Design Studio of Fall 2013 of the Department of Architecture, University of Asia Pacific. The study was mainly based on case study, examining documented evidence and map & model study along with expert interview. The major limitation of the research was the lack of data regarding socio-economic and spatial environment since the studied township is yet to be developed in a long term phase. In absence of detail urban design guideline and a realistic scenario to be surveyed, most of the assumptions, criticisms and findings were predominantly planning process focused and based on documented evidences.

Purbachal is the biggest Planned Township in the country. The Project area comprise of about 6150 acres land located in between the SHITALAKHYA and the BALU River at RUPGONJ THANA of NARAYANGONJ district and at KALIGONJ Thana of GAZIPUR district, in the north-eastern side of Dhaka. The Township will be linked with 8 (eight) lane wide express way from the Airport Road/PROGATI SWARANI crossing. The distance is only 6.8 km (Fig. 1) RAJUK intends to plan and develop the area as self-contained New Township with all modern facilities and opportunities.

Objectives of this project includes-

- To reduce the pressure of population in Dhaka city by creating opportunity of residential accommodation of the city dwellers in the vicinity of the city.
- To maintain the balance of environment by proper urbanization. To create environment friendly and sustainable atmosphere.
- To reduce the existing acute problem of housing.
- To expand civic facilities by urbanization to the nearby and surrounding areas gradually.
- Development of new township and to expand economic facilities.
- To mitigate future housing demand.

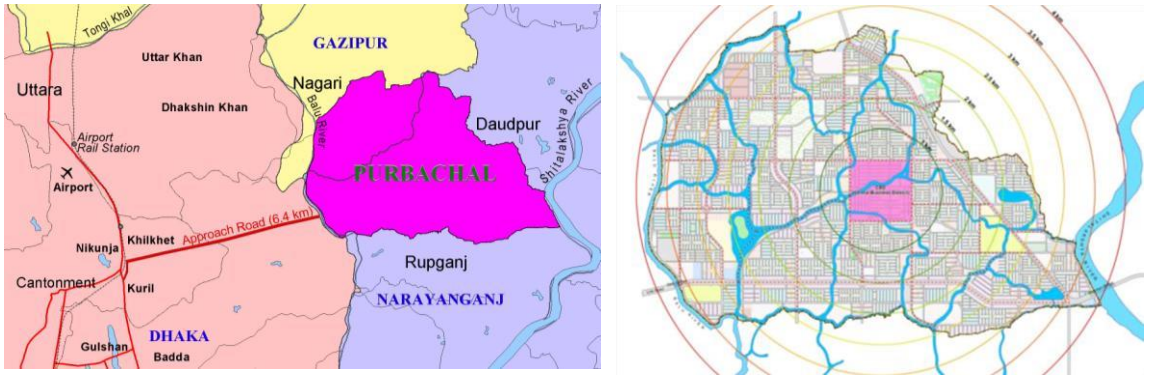


Fig. 1: PURBACHAL Location Map and Central CBD Location at PURBACHAL

The undulating topography of PURBACHAL acted as the starting point for planning decision. The low areas have been dedicated to form a network of canals that would facilitate the storm and flood water drainage and also acting as a pedestrian connectivity and recreational belt for the whole township. Then, in a very contrasting approach, a rigid grid iron pattern road network has been added to the master plan. Interestingly, the master plan, which apparently seems to derived from the concentric zone theory (because of the dominant central location of CBD), later on appears to be multiple nucleic development model because of the even distribution of secondary commercial centres and their surrounding residential plot distributions. This particular aspect of development is quite rare in the earlier planning precedents in Dhaka.

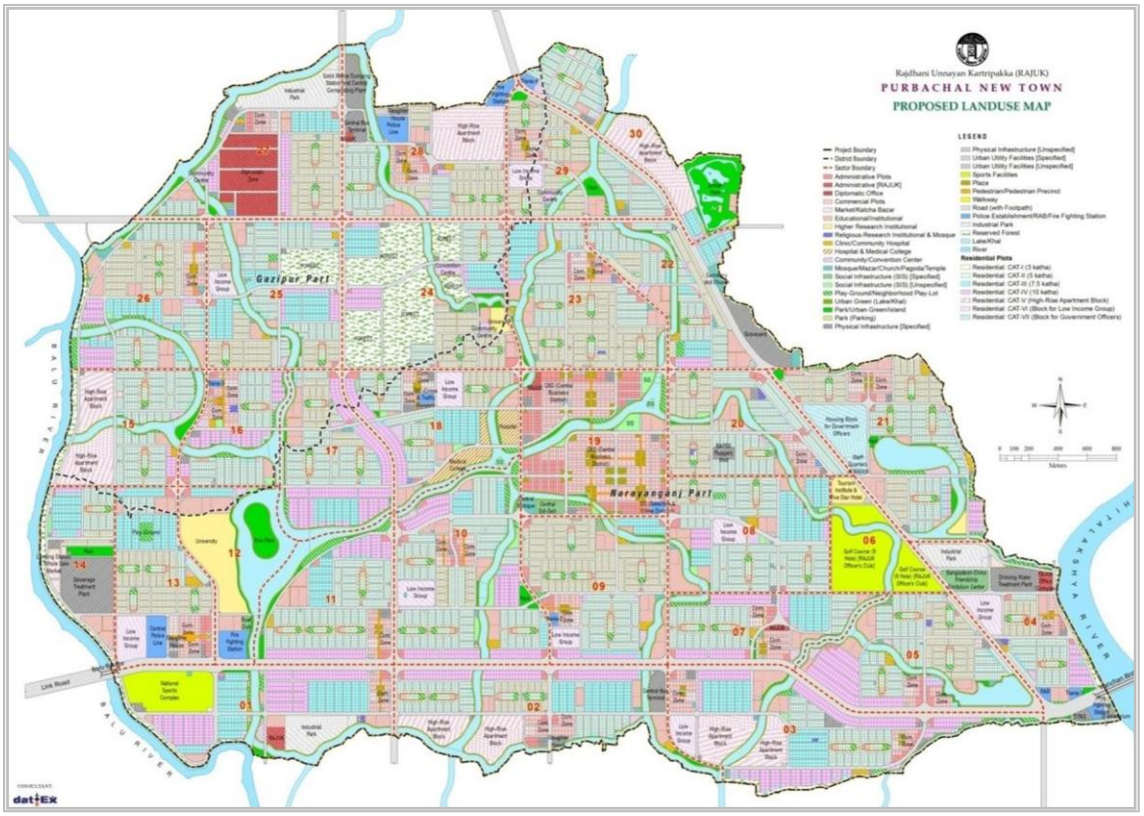


Fig. 2: Proposed Land Use Plan of PURBACHAL Area

Table 4: Statistics of Proposed Land use

Land Use	Percentage used	Intl. standard
Administrative, Commerce, Industrial Park, Diplomatic Area, Institutional Area	9.60	5-10%
Residential	38.74	35-40%
Road, Footpath, Pedestrian and Walkway	25.90	25%
Forest, Eco-park, Green Belt and Urban Green	6.60	5-6%
Sports Facilities & Physical Infrastructure	4.80	2-3%
Lake/Canal	7.10	5-6%
Health, Education, Social Infrastructure (SIS), Urban Utility Facilities & Others	7.26	5-10%

Any town or city development requires having a clear indication of a systematic hierarchy of population level for facility and administrative management and preserving a sense of place. This essential feature of planning process has been missed out in all the national planning guidelines. However, PURBACHAL planning guideline proposes a clear structure of varying scale of social clusters and their corresponding social structures such as- Housing, Neighbourhood, Community, District and Division level. Also, unlike the earlier precedents of planning practice in Dhaka, PURBACHAL positively differs in land use proposals where the percentage of land allocated for each use has followed the international standard (Table 4).



Fig.3: Accessibility of Nursery School (250m)

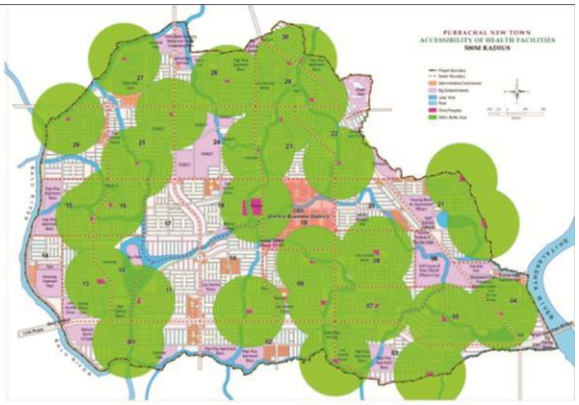


Fig.4: Accessibility of Health Facilities (500m)

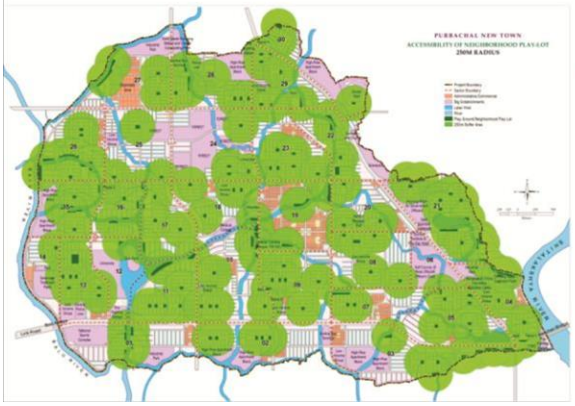


Fig.5: Accessibility of neighborhood play lot (250m)

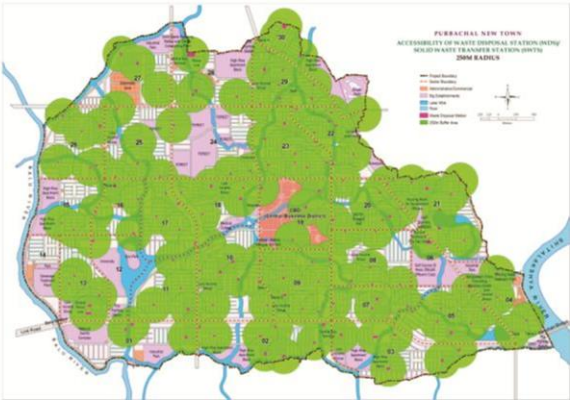


Fig.6: Accessibility of waste disposal station (250m)

While the distribution of social infrastructures has a very unstructured and uneven distribution in DCC area, PURBACHAL introduces a successful planning policy by distributing all the essential components like nursery school (Fig. 3), health facilities (Fig. 4), neighborhood play lot (Fig. 5) and utility facilities like waste disposal station (Fig. 6) at 250 m and 500 m walking distance from residential neighborhoods, ensuring a pedestrian dominated, safe and vibrant community. Also the continuous network of pedestrian walkways and adjacent green chunks further emphasizes the character of a sustainable and livable community environment.

As well as tackling polluting industries and improving law and order generally, the government needs to urgently facilitate major improvements, particularly to the state of housing and transport infrastructure. Poor infrastructure is the biggest factor underscoring the city's low ranking and needs to be addressed as a high priority. Having better transport connections and improving energy supplies across the country can help ease pressure on Dhaka by enabling more relocation of industry and housing. But it is not only major developments that have to take place, it is also necessary to get back to basics. Many of the day-to-day challenges afflicting residents need to be tackled far better by city authorities. Road conditions can be readily improved by better enforcement of traffic laws and by reforming the city's bus networks. There is also no excuse for not vastly improving the state of garbage collection and waste recycling in the city, or for protecting green spaces.

Contradictions and Barriers

All the features discussed earlier puts forward quite an optimistic picture of PURBACHAL. But then again, the question arises, whether the planning process could address all the loopholes identified in the earlier planning precedents. The investigation of this paper extracts some of the alarming issues that might impede the overall livability issue in PURBACHAL and might turn it into a storehouse of Dhaka's prevailing crisis.

- **Realistic Estimation and Future Projection of Served Population and Relevant Density:** This very issue formed the starting point of our discussion on Dhaka's livability and once again we had to get back to the same issue. Though there is an approximate calculation of total population based on the plot numbers, unit numbers and occupants per unit, not from the actual density of population needed to be catered.. As stated, PURBACHAL is supposed to reduce the population pressure on Dhaka, it was essential to have a clear indication of the capacity of population that this township is able to serve efficiently and up to which level this township will be allowed to be densified. Density is another issue that has been skipped narrowly, just like the previous planning initiatives. Though there is a proposed F.A.R for each of seven types of residential plots, but that does not seem to be taking the advantage of the current F.A.R. rules and which might drastically change due the market forces. And since there's no realistic projection of future expansion, the population density might cross the tolerable threshold.

- **Affordable housing:** Affordable housing is one of the acute crisis in current Dhaka city. Cities like Singapore and KUALALUMPUR have stressed on affordable choice of housing and uses in their livability proposal (Table 2). PURBACHAL town planning claimed to solve this problem too. But the mechanism for distribution of housing is not clear enough to guide the whole process. First of all, 88% of the residential land-use is allotted for private development. There's no indication of public mass housing. It has been clearly mentioned that these plots are going to be allotted to private individuals by RAJUK. Rest of the 12% land is allotted for low income groups in land chunks located in infeasible locations. The distribution mechanism is not at all clear. Without even distribution of housing among different socio-economic groups, livable environment will remain as a far reaching object.

- **Employment and trade opportunity:** Job opportunity is one of the major pull factors for people willing to shift to new settlements. In case of PURBACHAL, the definition of job market is not clear enough to create an impetus for the new settlers, apart from a few government offices, educational institutes and light industries. The greater CBD and the secondary commercial chunks are yet to define the nature of jobs they might provide.

- **Less priority in public transportation:** In a time when global effort is towards promoting more and more green, sustainable public transportation (Table 2), PURBACHAL differs to a large extent by promoting 80% private vehicle, leaving 20% provision for public transport. The low income group people will use mainly bus and minibus. The Consultant considers that about 3% people will use the bus and about 2% people will use the minibus.

- **Lack of urban design guidelines:** Vital and high quality public realm for social learning and socialization and greater safety have been considered vital for ensuring livability at both city and neighborhood level (Table 2). Successful place making requires detail urban design guideline which is apparently missing in PURBACHAL planning guideline.

Conclusion

The shift of thoughts in city planning demonstrated in PURBACHAL and the planning decisions where the proposed master plan succeeded to embrace the principals of livability learnt from earlier flaws of greater Dhaka city is undoubtedly praiseworthy. However, the major policy decisions reflect the similar drawbacks that are found in previous planning practice of Dhaka. As one of the prime satellite township, PURBACHAL still holds immense opportunity to become a role model of livability for many more townships in future, provided that it addresses the alarming flaws identified through this paper's investigation.

Acknowledgement

The author thus takes this opportunity to express gratitude to the students of Level-4, Term-1 of Fall 2013 semester at the Dept. of Architecture, University of Asia Pacific, Dhaka for extracting data on Purbachal based on case study, examining documented evidence and map & model study along with expert interview.

References

Balsas, C.J.L. (2004) 'Measuring the Livability of an Urban Centre: An Exploratory Study of Key Performance Indicators', Planning, Practice and Research, vol. 19, no. 1, pp. 101-110.

Brenner P. & Brenner L. (2007) Livability Planning Checklist, Livability Initiative wake up call for Tasmanian urban planning, Australia.

Carmichael, A., Gleason, D., Lehrmitt, R., & Luppino, C. (2007) City of Westminster Livability Index, London: Worcester Polytechnic Institute.

Confederation of Indian Industry (CII) (2010) 'Livability Index 2010: The Best Cities in India', Confederation of Indian Industry, Northern Region, India.

Gerrardbown (2006) Capitalizing on Melbourne's Status as One of the World's Most Livable Cities, Livability report: Committee for Melbourne.

Heuvel, N. V. D. (2013) A Conceptual Analysis of Livability and the Translation of Livability Into Policy: A Case Study of Bogotá; Livability as a Guide for the Policy of Three Mayors in the Period From 1995 To 2007, Unpublished Thesis, Department of International Relations, Graduate School of Social Sciences, Universiteit Van Amsterdam, Netherlands.

Heylen, K. (2006) 'Livability in Social Housing: Three Case-Studies in Flanders', Housing in an Expanding Europe: Theory, Policy, Participation and Implementation: Paper Presentation at ENHR Conference, Government Malaysia, Slovenia: Ljubljana, July 2-5.

Kaal, H. (2011) 'A Conceptual History of Livability: Dutch Scientists, Politicians, Policy Makers and Citizens and the Quest for a Livable City', City, vol. 15, no. 5, pp. 532-547.

Kabir, A. & Parolin, B. (2012) 'Planning and Development of Dhaka – A Story of 400 Years': In Cities, Nations and Regions in Planning History development, Proceedings of the 15th International Planning History Society Conference, Brazil: Sao Paulo, 15-18 July.

Leby, J.L. & Hashim, A.H. (1990) 'Livability Dimensions and Attributes: Their Relative Importance in the Eyes of Neighborhood Residents', Journal of Construction in Developing Countries, Vol. 15, no.1, pp. 67-91.

Lynch, K. (1998) Good city form, Cambridge: The MIT Press.

Lyndhurst, B. (2004) Livability & Sustainable Development: Bad Habits & Hard Choices, Final Report for the UK Office of the Deputy Prime Minister, London.

Omuta, G. E. D. (1988) 'The quality of urban life and the perception of livability: A case study of neighbourhoods in Benin City, Nigeria', Social Indicators Research, vol. 20, no. 4, pp. 417–440.

Throsby, D. (2005) 'Cultural Heritage as Financial Asset in Strategies for Urban Development and Poverty Alleviation': In Integrating Urban Knowledge & Practice, Proceedings of the International Conference, Sweden: Gothenburg, 29 May–3 June.

VanZerr, M. & Seskin, S. (2011) Recommendations Memo #2 Livability and Quality of Life Indicators, Least Cost Planning Working Group and Least Cost Planning Projects Management Team.

Wheeler, S.M. (2001) 'Livable Communities: Creating Safe and Livable Neighborhoods, Towns and Regions in California', Working Paper 2001–2004, Berkeley: Institute of Urban and Regional Development, University of California.

Woolcock, G. (2009) 'Measuring Up?: Assessing the Livability of Australian Cities,' In State of Australian Cities: National Conference, urban research program, Griffith University, Queensland.

World Bank (2007) 'Dhaka: Improving Living Conditions for the Urban Poor', Bangladesh Development Series, Paper No. 17, Dhaka.

Place Making Journey: Transition in urban public open spaces from Ancient to Modern Age

Seemantini Soraganvi*
SMAID Architecture College, Anand, Gujarat State, India

Abstract

Urban planning and design has proven to be an important element in shaping life styles, solving problems and giving new ways of living in the urban arena. The quality of urban life is one of the big goals that the field tries to reach. Urban open spaces are known to enhance the quality of urban life. So, every city needs these spaces. The planning and design of urban open spaces have been practiced in different parts of the world in different ways. The practice and use of these spaces differed from place to place as well as from time to time. A good approach in the planning and designing of these spaces is to first study the past and current trends of urban open space usage in a place. The paper covers a general history and development of urban Square from Ancient to Modern Age and tries to demonstrate transition occurred in design. The development and current use of this space will indicate the direction of urban open space trends in the city. This will in turn help the future approaches in planning and design of such spaces. So, the paper includes the sustainable approaches for design of urban squares for better community interaction in urban life.

Keywords: Urban Square, study, past and current trends, transition sustainable approaches

1.0 Introduction

The effects of fast changing economic and social conditions have increasingly become significant on how people use and shape their environments. The urban population has been dramatically increasing worldwide and consequently physical structure of the cities changes constantly, mostly in negative ways. As the population increases, the demand for infrastructure and facilities also increases. Privatization and decentralization are the two major concerns on the future of the cities and open public spaces.

Public squares are one of the significant public spaces in an urban environment. Urban squares are open public spaces which reflect the cities' identity and the communities' cultural background. They are where people of the community gather and "urban life" takes place since the ancient times. As the fundamental component of the city structure, urban squares contribute to the image and prestige of the city. According to Levy (2012), Public Square is that "on a square, citizens are not connected to manifestations of nature, but to the heart of urban

*Corresponding Author: Seemantini Soraganvi; E-mail- seema sorganvi@yahoo.com

culture, history and memory". In the last few decades, many urban squares have lost their function and role due to the changes in use of public spaces. Hence, designing urban squares as both public and open spaces now require more importance and attention. Designing urban squares should be a part of urban design. Otherwise they become disconnected and meaningless, rather than being an integral part of the city.

In this Research paper Author used the word place making, "Place making is not just the act of building or fixing up a space, but a holistic approach to creating vital public destinations that promotes community commitment and involvement"[1]. The place making journey which I mean to express here is, I begin with world history of public squares, to understand how these spaces came to be and why they have changed. Then analyzes the transition in public square Piazza Navona, a city square in Rome, Italy. The study starts with the historic reconstruction of the square evolution. Concentrating on the events that caused meaningful changes in their characteristics from the moment of their creation until the day. The selection is based on three criteria Firstly the square still exists and widely recognized as very busy and active place. Second, the square was to be located in the cities of considerable size where people are presented with a range of alternative places to visit. Third, the square should also participate in the contemporary urban fabric and network of interrelation of the city. Finally, I will discuss sustainable (Long lived) strategies for Design of squares fits for all the Squares in the World.

2. Historical Background of Squares

Ironically public open spaces have been considered as a powerful component of urban fabric and means of transforming communities. At first, the squares were established at the crossroads of important trade routes where exchange of goods as well as ideas took place. The principal form of these public spaces derives from the Greek agora.

The Greek 'agora' was the first urban open space typology. Democracy played an important role in shaping Greek cities. Agora was an open place in the city centre where political, social and economic activities took place. Greek agoras were public spaces for all kinds of gatherings; such as political meetings, athletic and musical games, theatre performances and commercial activities. The geometrical form of the agora was usually square or rectangle.

Similarly, the Roman Forum was a large open space where people gather for political, economic and social activities. According to Mumford (1961) the Roman forum was the combination of agora and acropolis since it included more activities (such as Designing Urban Squares 515 shrines, temples, the hall of justice and the council houses) with more formal order. Especially, during the republican period, the forum was the heart of the city. In it were located the courts, the major state temples, and the Rostra where leaders addressed the people [3].

Following the collapse of Roman Empire, basilicas were transformed into churches and both cathedrals and churches became the focus of daily life in the middle ages. Most of the open public spaces were shaped around religious buildings. During this period commercial activities took place also in public spaces [3]. Therefore in middle ages, open public spaces were used mainly for religious ceremonies, and as marketplaces. In some European countries civic squares and piazzas emerged during this period [4].

1. www.pps.org.

There were some apparent changes in city morphology. With the changing economical, political and philosophical perspectives, approaches to planning and design of the towns shifted with the influence of rationalization during the Renaissance. Formal designs and plans were very common in this period. Symmetry and order were the essential principles in design of the squares. Italian piazzas are the very well-known examples of the Renaissance public squares [5]. Monuments and fountains were added to the design to create aesthetically pleasant environments. Piazza Navona is a city square in Rome, Italy. It is built on the site of the Stadium of Domitian, built in 1st century AD, and follows the form of the open space of the stadium. Axial order, balance and hierarchy became main design principles during the Baroque period. In this period, open spaces were designed to create visual and ceremonial effects[6].

3. Squares in modern period

In 19th century, industrial revolution caused dramatic changes in urban design and planning. The establishment of broad railway networks leaded to population increase in urban areas which stimulated growth of cities. New industrial areas were developed near cities and labor class began to move into cities to dwell. As the bourgeoisie raised, women became more participant in the city life. The emerge of shopping arcades, shopping streets, bazaars and department stores created a new form of public space, especially for women. The changing social, economical and political structure of the city also affected city morphology[10]. Increased population meant more needs, more services and more waste. The city structure began to deteriorate. At the end of 19th century, concerns for environmental deterioration and community well-being triggered the parks movement. Instead of streets and squares, huge green areas emerged as new public places. Population increase in urban areas continued during 20th century and cities become more and more expanded, heterogeneous, and fragmented. Private automobile ownership showed a rapid increase and cities become motor vehicle dominant environments. As a result pedestrian movement and freedom were limited. In the second half of the 20th century, many urban squares turned into crossroads especially in developing countries (Figure 1). New consumer habits and trends also caused decline in open public space use. Shopping malls have become new leisure centers. At the end of the 20th century, following the spread of internet use, virtual environments appeared as new “social platforms”*8+.



Fig 1: Kizlay square in Ankara Today



Fig 2: Kizlay square in Ankara 1940

(Source: www.sozluk.ankara)

4. Transition in Piazza Navona- City square in Rome, Italy

Renowned worldwide for its beauty and architectural integrity, the first records from the area corresponding now days to piazza Navona date from the Roman Empire. When first Caesar and then Augustus ordered the construction of a temporary wooden enclosure for the practice of sports. Under Nero it had evolved in to an amphitheatre for the celebration of a Roman tournament, similar to the Greek Olympic Games. Domiziano in 86 B.C. was responsible for the construction of the "Agoni Capitolini" (Fig 3) an enormous stadium made of marble and surrounded entirely by roads. The last mention of stadium being in good condition come from the 5th century. During all this time, the stadium had been the centre of all the great celebration of the people of the Urbe. However, with the decadence of the Roman Empire and the Barbarian invasions, the whole area was abandoned and the stadium gradually decayed into a disconnected shape of piece of marble.



Fig 3:"Agoni Capitolini" in Ancient Rome (Ambrogio Brambilla and Nicola Van Aelst, 1582-1599)



Fig 4: Toer and mansions of noble families around "Campus Agoni"(Aleandro trozzi,1474)

During the Medieval period the ruins, partially covered by vegetation, were called "Campus Agonis"(Fig 4). Its location midway between attracted some attention to it resulting in the construction of some Christian chapels (Fig 5). Three chapels were erected on top of ancient Roman oratories. The area was continually benefited by revitalization of the city and strengthening of the church. Its surrounding roads became more and more significant routes, until it was finally transformed in to a residential and commercial center for the nobility and cleric.



Fig 5: 1.-Church of S. Giacomo degli Spagnuoli.2-Palazzo Orsini .3-Church of S.Agnese (Mario Cartaro,1576)

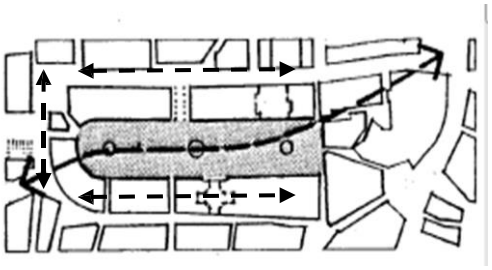


Fig 6: Showing Interior stadium and surrounding road 1623.

The competition among the different families for the possession of the area was responsible for the construction of palaces and towers, which gave a stronger definition to the space. However,

all the building main façade faced the outside, since the main reason for their existence was the adjacency to an important road system. The interior of the stadium remained untouched. Its elevated position in relation to the surrounding routes, as well as the permanence of significant part of the ancient wall, prevented circulation from cutting across its space (Fig 7). Finally the market was established in the internal area, which gradually assumed a stronger position in relation to the external road, Little by little the surrounding building changed the location of their door, having the main entrance through the square.



Fig 7: Fountain dei Fiumi and Church of Agnese with new façade in Baroque style(G.B Moore1873)

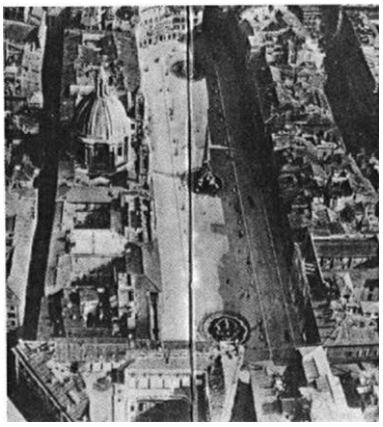


Fig 8: Aerial view of piazza Navona in the beginning of the 19th century. G.B Moore 1873)

The preservation of the area had been threatened since 1873 by many regulatory proposals. The houses along the curved edge, requiring demolition for safety reasons, were reconstructed in the same fashion of the original ones. In the same period the two fountains were remodeled according to new aesthetic taste (Fig 7).

Within this last interpretation of its form, a new chapter in the history of piazza Navona started at the end of the 19th century. This new period was marked by the transference of the main civic center of Rome to Piazza Colonna. The square was deprived of part of its meaning and use. The market alone was not able to attract people as before and maintain the traditional character of the square. It needed to be transferred to another site in order to allow the square to recuperate the original lure, and be characterized by a new image. The construction of Corso Vittorio Emanuele brought a large flux of people and traffic into adjacencies, simulating commercial activities of a more sophisticated nature.

While the interior space of the square became devoid of activities, the city experienced the beginning of a modern era of expansion and increase in traffic volume. The proposed incorporation of the square in the main transportation system of the city disregarded both of the previous interpretations of it form: a place containing activities and a place surrounded by circulation. By introducing circulation in its enclosed space the plan would probably destroy the cohesion of its form, as well as the characteristics that had supported its survival during so many centuries. The decision ultimately made to reinforce traffic along the peripheral avenue and to reserve the interior for other kind of activities respects and emphasizes the traditional patterns of use [16].

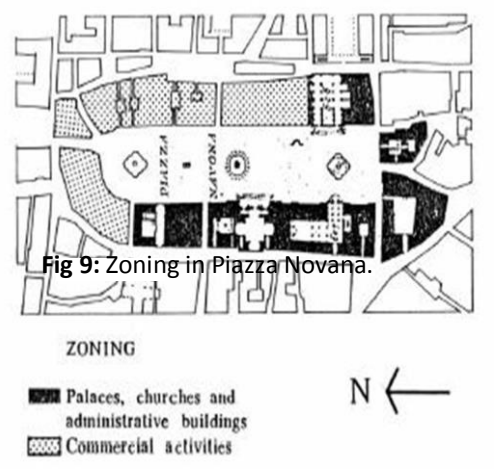


Fig 9: Zoning in Piazza Novana.

(**Source-** Franco spinoshi piazza Navona,Rome 1970)

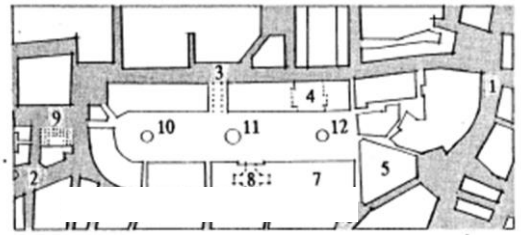


Fig 10: Plan of Piazza Novana Now

1) Corso Vittorio Emanuele
2) Via Zanardelli
3) Corso del Rinascimento
4) S. Giacomo degli Spagnuoli
5) Palazzo Braschi
6) Piazza Pasquino
7) Palazzo Pamphily
8) Church of S. Agnese
9) Piazza S. Apollinare
10) Fountain dei Calderari
11) Fountain dei Fiume
12) Fountain del Moro

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Even though in the present century, the scenery has been physically protected, the performed activities have been drastically transformed through the centuries. Religious holidays and important political and religious events were always celebrated there. Many activities have continually contributed to the unique atmosphere and reputation of the square: numerous forms of commerce, small industries, carnival parade, race, horse circus. Piazza Novana revive the color, light, movement and noise of the old times. Nevertheless, it still preserves the traditional warmth and dynamic which are expressed through activities more adequate to the modern way of life. Its various café and restaurants are a favorite place for evening social meetings, whereas it s perimeter suggest a good track for the weekend jogging[19].



Fig 11: Piazza Navona in present Days
Source**:** http://webs.wofford.edu/davisgr/i2006/intinerary.htm

5. Findings from the Study of piazza Navona square

The study of Piazza Novano square reveals that,

- The same form can be interpreted and used in different ways (A place containing activities, A place surrounded by circulation etc).
- Action is contained within its internal space it is itself is an objective: People go to the square with the specific purpose of joining the activities which are happening there.
- The activities enclosed by the square must be sufficiently attractive to justify the confluence of pedestrian.
- In a square neither form nor use can be pointed out separately a decisive aspect, Together they perform a very significant role: They relate to each other in a reciprocal basis: the form of a square can enhance or inhibit some type of activities (depending on it dimension, shape and degree of definition) while activities can induce major change in it physical organization.
- The relation of square with the city: Piazza Novana, for instance, during the Roman Empire was a place for celebrating important civic events. This function has been perpetuated and partially explain it transformation in the 12^{th} century into a residential and commercial center for the nobility.
- There is an emphasis on the length of the space which is reflected in the bold, horizontal treatment of the facade.
- A public square can be dominated by a vista or void rather than a building or piece of great sculpture.

5. Considerations while Designing of Urban Square

It is quite challenging to define universal design principles that would sustain for longer time and fit for all the squares in the world. On the other hand it is possible to identify some basics that would help designers and planners through the design process. Today's cities are multi-cultural and multi-ethnical more than ever. Therefore public realm is more heterogeneous today and designers and planners need to find ways to create places that serve for "everyone" in these culturally diverse communities.

Keeping in mind that today's urban environments are more complex and diverse, some sustainable design strategies which are key learning from above study for public squares are presented below.

5.1 Public Realm

Design of urban public realm involves two dimensions; functionality and visual appearance. Functionality refers to the activities and the degree of activities fitting to that place. On the other hand visual appearance is about form, image and aesthetics.

5.1.1 Function

Public spaces need to be accessible to all groups. People should be able to make connections between the place, their lives and the world. Vitruvius when writing about the design of the forum said it should be proportionate to the number of inhabitants, so that it may not be too small a space to be useful, nor look like a desert waste for lack of Population'*13+. The evening parades in cities like Florence, together with the many other outdoor community activities, demand the concentration of design effort in the development of the public domain. In the centrepiece of the 'public realm', the place where the major public works, the major public expenditure and the greatest civic art is located. It is only when the main square of most old towns is reached that one has really 'arrived'; all the streets lead naturally to this focal point. Some examples are, St Peters Rome- Centre piece of public Realm, Campo, Siana, Times Square in New York city.etc which are still working and attracting many people.



Fig 12: Campo-Public Square in Siena showing people involvement.



Fig 13: Piazza del Popolo, Rome showing people involvement

(http://www.livablecities.org/articles/european-square-conference-report)

5.1.2 Form

A public squares form is influenced by the surrounding environment. Even though the word "square" points out a form itself, a public square can be in any form such as rectangle, square, circle, triangle or amorphous [Fig 14]. Despite this there are some rules that apply to most squares. The squares are always of the enclosed type. Almost always important buildings are not free standing but built into the walls of the square. Objects on the square (wells, fountains, monuments) are placed outside the main streams of movement over the squares. In towns that have grown organically squares are never geometrical [18].

- Enclosure; closed and protected space
- The centre should be free
- Monuments that are placed on the perimeter
- Existence of the elements of surprise
- Attractiveness of architectural façades
- Concavity and aesthetic pavement

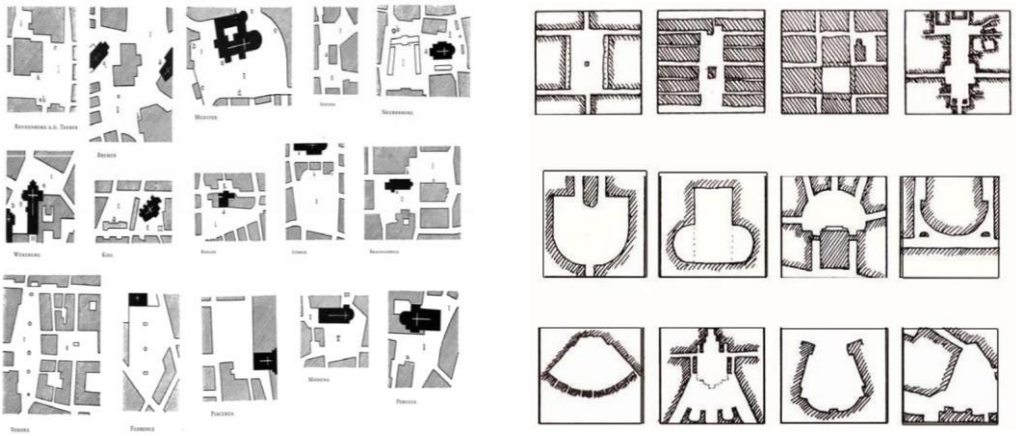


Fig 14: Different Forms of Public Squares

http://dx.doi.org,http://predmet.fa.unilj.si/siwinds/s1/u2/su1/

Zucker suggests five types of urban square forms [15]

- The closed square: it often has a regular geometric form. The only interruption to the closed.
- Square is the streets that are leading to it.
- The dominated square: the space is directed to a building or a group of buildings.
- The nuclear square: it has a central feature which creates a tension that keeps the whole together.
- Grouped squares: individual squares linked organically and/or aesthetically.
- The amorphous square: it is unorganized and formless when compared to other types.

5.1.3 Location and size

- The first factor to be considered in design of urban squares is the location and the size of the square. Throughout the history squares and plazas have always been at the intersection of main routes of transportation and pedestrian traffic[12].
- Since human presence and activity is the essence of public squares they should be easily accessible (both physically and visually) to public and should be created in central locations within the city.
- Decentralization is one of the problems faced in contemporary cities, which makes it difficult to select central locations, since there are too many. Therefore it should also be noted that links and connections between different squares within the city should be established in order to sustain continuity of urban form.
- Size is another aspect of urban public square design. It is often thought that public squares must be large in size. However, the size should be determined according to the location, surrounding uses, and activities nearby.
- Squares surrounded by taller and dense buildings may appear smaller than they actually are. A ratio of 1:2 and a maximum of 1.5:2 between building height and space width can be successful to create a strong sense of definition of space.
- Edges are also important in creating the sense of definition of an urban square. According to Alexanderet al. (1977) “if the edge fails, then the space never becomes lively.

5.1.4 Activities

- Urban public squares are venues for various activities that help social cohesion and individual restoration.
- Generally, urban public squares are not designed to serve for any special type of activity. On the contrary they should be designed to provide opportunity for different kinds of activities at any time.
- Activities aiming to attract people should never dominate the character of the square. Besides, designers should ensure involvement and participation of all social groups within a public space.

5.1.5 Landscaping

- Generally, hard surface dominates the landscape of an urban square. Therefore selection of pavement materials is great of importance in the design phase in terms of both visual appearance and functionality.
- Various materials (e.g. stone, concrete, brick etc.) can be used in public square design. Pavement materials must be durable and aesthetically appealing.
- Focal areas can be created by changing the color, form or texture, as well as pavement material itself.
- Water surfaces are landscape elements commonly used in public squares to create a focal point or aesthetically pleasing views.
- Seats/benches, outdoor luminaries, trash bins, and direction signs are the most used site furniture items in open public spaces.

5.1.6 Focal Point Elements

Focal points elements might be useful to attract users while contributing to the square's identity and image. A focal point can be created by using any design element (e.g. water fountain) or public art works (e.g. sculptures, monuments).

6. Conclusion

Today as public spaces decline, concerns for the vitality and liveability of the cities increase. People are the main ingredients of the city and without public spaces it is impossible to establish a physical and mental connection between public and urban environment.As the square constitute the public domain therefore, must be coordinated and based on perception of the people.

In this Research paper the literature study of squares from history to modern reveals that, place making act was happening from ancient times and also this study helped to understand transition occurred in design of squares. In the ancient times the squares were the heart of the city. They are not only used as a interacting places but also for multifunctional purpose as a market place, for cultural activity, as a leisure purpose and also for social gatherings slowly in modern era these squares turned in to crossroads.

The outcome by studying the transition stages of Piazza Novana reveals that, the same Form can be interpreted and used in different ways. Initial provisory enclosure for the practice of sports during the Roman period has been transformed into residential and commercial centre In the

Medieval period. In the Renaissance period Resulting construction of 3 chapels surrounding roads were developed. In the 19th century peripheral roads concentrated the main uses: a connection between the city, a route for official and religious parade and central space become more dominated commercial and civic activities were developed and fountains were constructed in the central part. The process of transformation experienced by a square, which have affected use and relation to the urban environment .It exert, therefore, a direct influence on the way a square is perceived at any given period.

So finally we conclude that, the study of Piazza Novano helped us to understand, though the square exists from ancient time till at present also it maintained its character so the success of a square is just related to how it was formed, what contains it or what it contains, but also what happens within it. Looking towards modern change in squares we need to find the answer to this question is we retaining its character or expediting its decay? Its existing condition reveals that we are certainly not doing enough. A conscious effort has to be made to provide a better relationship between people and the square. Besides the literature review, I recommended some design basics in creating successful urban public squares which will help for design of urban squares for better community interaction in urban life.

"Successful urban squares are designed for people to walk in, stand in, sit in, dance in and to Perform in, and to look at other people participating in these activities"*10+

References

Book – single author / multiple authors:

5+ İlkay Y. (2007)The political struggle on and at public space. Master of Science thesis, Middle East Technical University.

[6] Zeka B. (2011)The humanistic meaning of urban squares: the case of Çayyolu urban square. Project. MSc Thesis, Middle East Technical University, Ankara.; 241 pages.

Book chapter:

[7]. Murat Z. Memluk, Designing Urban Squares,, chapter 19.

[19]. George Gmelch Urban Life Readings in the Anthropology of the City Fourth Edition Union College Walter P. Zenner State University of New York at Albany.

[13]. Urban design: street and square third edition Cliff Moughtin chapter 4.

[18].Kostof, Spiro,(1992) 'The City Assembled: The elements of urban form through history', Thames and Hudson.

Bacon, Edmund (1975, 1978, 1992): 'Design of cities', Thames and Hudson Ltd, London.

Journal article:

[1][2]. Pak. J. Engg Transformation of Urban Open Spaces of Lahore: From Charing Cross to Faisal Square.

[3] Xing N. and Siu KWM. (2010) Historic definitions of public space: Inspiration for high quality public space. The International Journal of Humanities; 7(11) 39-56.

Website documents:

[8] Anonymous. Urban Squares. 2009. Available from: http://www.healthyplaces.org.au/userfiles/file/Development%20type/Development%20Type%20-%20Urban%20Squares.pdf

[10]. http://webs.wofford.edu/davisgr/i2006/intinerary.htm

[15]. http://dx.doi.org/10.5772/55826

Conference paper:

[12].Creating a public square in a challenging media age. A White Paper on the Knight Commission Report on Informing Communities: Sustaining Democracy in the Digital Age.

[16].Thesis Piazza Novana, Harvard squares a study of morphology and use by Elizibeth gus gamergo.

The Role of Collective Memory in Shaping Public Squares; the Case of Republic Square, Male' City

Fathimath Shaheen[*], **Janaka Wijesundara**[*]
University of Moratuwa, Sri Lanka

Abstract

It is a seeming paradox that the balance between society and built environment has a constant change as we evolve repeatedly, and our collective identity mean to facilitate new public spaces to boost our public life, as well re-shaping existing spaces. The public spaces we design directly or indirectly influence to our behavior, experiences and social interactions which in turn reflect how we respond to our built environment. Even though urban designing and planning paly wider role of this evolving procedure, sometimes some proposed design does not respond to the vital role of public spaces and unknowingly break the relationship between man and his environment by incorporating some ambiguous attributes.

This research aims to study the relationship between collective memory and public squares and the influence of public collective memory to shape and re-shape, to revitalize and utilize today's public squares. The qualitative and quantitative data to answer the research questions were gathered by conducting user survey, visual documentation and interviewing with community focus group.

The study is conducted through a close examination of the Republic Square of Male' city, which was once prevailed with a strong sense of community, though today it is seen as an isolated piece of public realm. By combining the theoretical background with qualitative research and quantitative methods, the paper aims to provide a better understanding on the underlying issues and possible solutions. Findings indicate that the success of the public squares is based on the experiences and rationalities of the urban past as evidenced by the historical continuity which characterizes the relationship between collective memory of its people and the public spaces.

Key Words: Collective Memory, Public Space, Public Square, Male', Sense of Belonging, Revitalization

Corresponding Authors: [*]; E-mail- -fshahyn@gmail.com; jwijesundara@uom.lk

Introduction

The paradox of collective memory in contemporary writing argues that it is the complex social phenomenon that in turn alters our perception of urban public spaces with its positive and negative factors. In this study, collective memory refers to the shared memories of inhabitants about their shared past and expressions they made when remembering buildings, spaces and places of the past and present city living (Halbwach, 1992). The collective memory in relation to public square is the consideration to its key role in revitalizing and creating memorable urban public squares which leads to strengthen the sense of community and sense of belonging.

Research Problem and Questions

This research focuses on the reasons behind underutilized or declined public squares, and an analysis of collective memory will be emphasized, especially in terms of its influence on the public squares. Public squares have a vital role to play in the cities by connecting various elements, offering wide range of activities and it happened to be the starting point for all community, retail business and social activities. At least that's the theory and that's how it should be. So the main research questions are;

Why people are abandoning and neglecting some important and historically significant public squares? How do these underutilized public squares can affect public collective memory? How sense of collective memory in terms of accumulation is necessary in revitalizing and creating memorable urban public squares?

Limitations of the study

This research study is focused on physical attributes, social aspects and sensory experience of public squares that influence to the transformation of the squares. The study limits the users and socio-cultural setting in the surroundings of the one of the largest and historically significant public spaces in Male' Republican Square.

The Concepts of Public Squares

The concept of Public Square has not much been changed in contemporary world and has the four main characteristics of place "as being: 1) historical, 2) imbued with human identity, 3) relational and 4) charged with symbolic meaning" (Augé, 1992 cited in Levy, 2010). Public Squares have been one of the inevitable components which enhance urban livability and are regarded as the heart and soul in every city from ancient times to till the date. We can see public spaces everywhere, but the distinction between other public spaces, and public squares are which squares signify something more powerful components in urban public life than other public spaces. It differs from parks, park lets, beaches and other public spaces, because "a public square is that on a square, the citizen is not connected to manifestations of nature but to the heart of urban culture, history and memory" (Levy 2010). History provides various examples of how great public squares were emerged, evolved and transformed. The ancient squares are very much different from contemporary public squares or city squares, in terms of its defining elements, dominating activities and the relationship built between people. It's one of the many reasons why the older and traditional squares are full of public sprits and more popular than recently emerged squares.

Today, the significant uses of public squares are diverse as they are used as a metaphor for all kinds of gathering rather than the traditional role of civic activities. Nevertheless all these

squares as forum, plazas, amphitheaters are mean to do the same such as mingling with other people, share and hear stories, exchange information to construct a sense of community and collective identity. Today, in the globalization context the physical setting of the square is influencing with the rapid expansion of metropolitan areas. City centers became crowded with vehicular activities. Since political protests and gatherings dominate the squares, they became more controlled and choreographed by governments and relevant authorities.

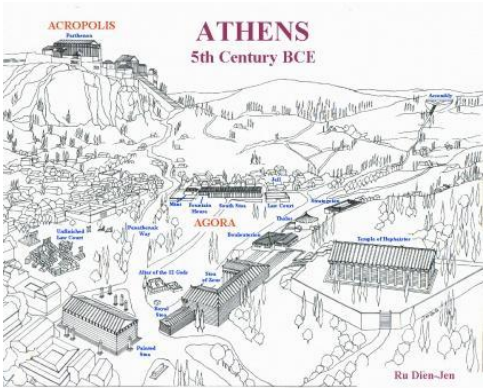


Fig. 1. Agora - The original of Public Square as "Commons". Source Spatial Frameworks (2011)



Fig. 2.A popular square in Copenhagen, Denmark. Source: placer sustain

Many scholars point out the symbolic roles of public squares. According to Lewis Mumford, a city is a “theater of social action” and its crucial function is the acculturation and humanization of its inhabitants (Mumford,1961) and for these purposes public squares, acts as a central formative element, makes the society “a community and not merely an aggregate of individuals” (Zucker 1959).Therefore, a good public square must function like stage to make the “Social Drama” more richly significant, well-designed, intensifies and underlines the gestures of the actors and the action of the play (Whyte,1980; Mumford,1961).

Public squares play a vital role in shaping and reshaping of today’s civic society acting them as a common ground where public culture is expressed and community life developed (Francis, 1988). According to Jean-Bernard Racine, the square is a “collective property” where, people can share and care diverse activities with a sense of ownership and community (Racine, Jean-Bernard, 1999, cited in Levy, 2010).

Theorizing Collective Memory

The notion of collective memory began with the works of French Sociologist; Philosopher Emile Durkheim. In his influential book, ‘The Elementary Forms of the Religious Life’ (1912), he used the term “Collective Effervescence” as a transcendence of the individual and the profane into a united sacred group (Durkheim, 1921). However, Maurice Halbwachs, a student of Durkheim later developed this discourse and use the term “collective memory” and its relation to time, space and history. After Halbwachs, many different explanations given by various academic disciplines and it find the concept of collective memory as an inter-disciplinary concept and its correlation between space and place making.

Halbwachs influential book ‘On Collective Memory’ defines collective memory as something that is socially constructed through spatial imagery, a way that a group conceptualized the past while in the present (Halbwachs, 1992). He further explains that; “Our memories remain collective *…+ and are recalled to us through others even though only we were participants in the events or

saw the things concerned. In reality, we are never alone. Other men need not be physically present, since we always carry with us and in us a number of distinct persons" (Halbwachs, 1992). The dialectic between the collective memory and individual memory forms a complex relationship when considering and relating these concepts with urban public space and place making.

Individual Memory and Collective Memory

In distinguishing between collective memory and individual memory, Halbwach (1980) claims that there are no purely individual memories (or he refers as "autobiographical" memories) which a person experience himself, or things that he is able to remember being presented for. (Halbwachs, 1980) By explaining this he memorized how he experienced the city of London for the first time, while he was walking alone he felt that he is not alone. There are certain things, for example; architects, historians, artists who mediate him to explore the city through his imaginary perception(Duindam,2010). Halbwach (1980) states; "I can recognize in myself many ideas and ways of thinking that could not have originated with me" (Halbwachs, 1980 cited in Duindam,2010). In this sense, if an individual person visiting a place alone for the first time, he normally acquire information about the place through the means of media, books, maps, guides, conversation, stories etc. this means, when he is experiencing the place he is accompanying virtual group of friends with him and he has a mental map of the place. Therefore, his visit can only confirm what he stores through images and other means and is the experience definitely won't be different or unique but rather a confirmation of what the person already knows.

Literatures have attempted to study various frameworks of collective memory in relation to urban space and place making. Some of them demonstrates in terms of its shapes and activities, its distinguishing attributes; how, where and when it is produced; how people make use of it in their daily lives; how personal or individual memory contribute with performing public and performing memory. The collective memory of any society is vital important in preserving cultural identities, in bridging the past & the present. However the term collective memory differ from discipline to discipline, for example some philosophers and their students use the term as " cultural memory" and some sociologists and other scholars refer it as " social memory (Leiden University). In this research, the term collective memory will portray as a perpetually social phenomenon (in relation to urban public spaces); which acts as a bond tying members of the community to the eternal present and maintain their identity.

Correlation between Collective memory and Public square

Several of influential urban theorists and scholars like Jan Gehl, Aldo Rossi, Lefebvre, Ali Madanipour and Kevin Lynch discuss about the relationship between memory and urban public life. They explain how public space is affecting and influencing to our everyday experience in public life, what makes certain public space more activate, while others tend to decline and abandoned. The roles of collective memory in urban public sphere and cities were explained by Aldo Rossi. According to Rossi (1982), the "city is the locus of the collective memory of its people" (Rossi, 1982). Likewise Henri Lefebvre states that "the city is the setting where urban rhythm of everyday life is played out" (Lefebvre,) and the one place where this urban rhythm significantly portray definitely will be a public space. In this sense, Boyer, also assure that the city can be defined as a fact of collective memory (Boyer, 1994. Cited in Yücesoy, Gökbulut,1999).Therefore, the correlation between collective memory and public squares can be examine in physical setting, activities and sensory experience which are the three necessary elements in a successful public space (Montgomery, 2009).

Physical Aspects – Physical Settings of the Square

It can be observed that, the reconstruction of collective memory happens when there is a major change in physical or social environment. In this context, the physical arrangements of the square recall and evoke the past events and memories that people frequently attached with and measure by the bonds attaching us to various groups of the society. Halbwachs (1992), one of the most influential philosophers on collective memory, stated that monuments and other topographical features are central in the formation of a collective memory and identity in the modern world (Halbwach, 1992), where Public spaces are characterized and distinguished by such elements which means Identity has always been related to physical space (Gehl,2001) . Therefore, people build relationship with such elements and objects and acquire strong collective memory which in turn makes them to feel sense of place and sense of belonging.

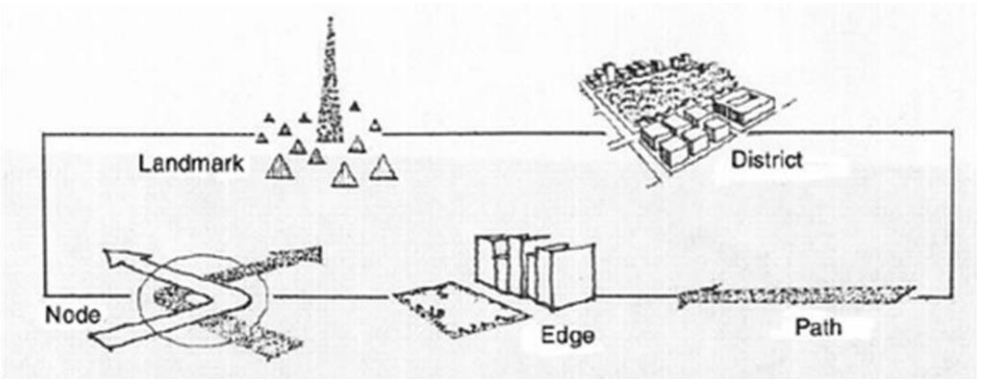


Fig. 3 Five Elements of urban Form, which enable the user to understand the environment through their collective memory.
Source: Lynch, (1959)

Socio-cultural Aspects – Activities and Activity Pattern

Social aspect refers to the activities and intangible features that are strongly connected with the people and to their public life. Public squares are complex public environments where diverse ethnic and cultural as well as a place for social interaction that facilitates the exchange of words between people who are not likely to intermingle relative to their social groups. These groups give different meaning to these spaces and thus it in turn reflect their society and influence on constructing their ideology and identity (Madanipour,2003). Since collective memory, which favorably and unfavorably influences social interaction, people are able to engage positively in the activities and other people and success of urban spaces.

Psychological Aspects –Sensory and Emotional Experience

The review of literature indicates that emotional experience can help to regulate our biological rhythm which effects to the sense of collective memory. Our collective memory help to create mental images of those elements and attributes of the square spatially well connected and make integrity as a whole environment(Simmel,2002). We directly or indirectly linked the spaces we admire places of memories. Those memories influence our perception of space and images in our virtual mind. And those memories are interrelated with different elements of city where legibility, structure, identity and imagebility are major key issues for understanding city and its melieu (Lynch, 1960).Therefore, in the public square most of the people would identify certain

areas or objects, for example, monuments, fountain, public arts or huge trees, where they can feel comfortable and psychological protection. These collections of images are vital and necessary for the individual as well for the group of people in order to perceive and experience the space without any confusion and ambiguity (Lynch, 1960). Because it is the people, who create and shape memorable and meaningful public space through their collective experience, emotions and memory and become a valuable asset (Goheen, 1998).

Collective memory as a tool for shaping Public Squares

The literature review of collective memory in relation to public squares has portrayed that the correlative relation between collective memory and Public Square is a complex phenomenon and which is to be realized through perception and experience. However it has revealed that the features of public squares affect people's collective memory because of people's physiological and psychological processes. The emphasis has been on how these factors influence to the collective memory of people, where they feel incomplete, when there is significant change to any of the factors. Therefore, changes in these factors in a public square (by revitalizing, retrofitting or reconstructing) is one of the facts that cause discontinuities and urban memory loss and therefore it inevitably effect to the people to decline the squares.

The Case of Republican Square - Transformation and Its Changing Roles

Historical Overview

In the early 19th century the Republic Square was a place where the community of Male' can display their cultural events and identity. It was the time when the community felt great sense of community and uses the square as a mean for communication and socializing. The square was the city a large public space that can host an extensive array of activities such as national and informal celebrations. At the time the square was crowded with local citizens even during the late evening. Since the square is surrounded by civic and state buildings, the various groups of people and workers use the space for hang outing socializing and participating in special events.

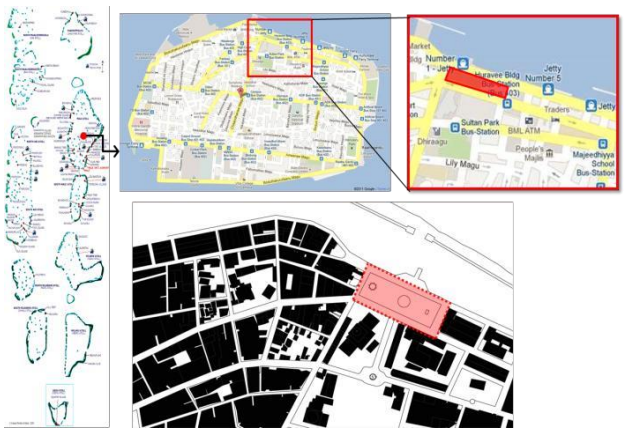


Fig. 4.Republican Square Location Map and Layout plan
Source Author's construction based on Google maps



Fig. 5. Republican Square Site Context.
Source: Author

Republican Square as a political Space for representation

Political, social reformers and activists also shaped Republic Square in the period after 1990 and particularly during the introduction of multi-party system to the country. Their reformist activities reached a peak in the beginning 2000, after the introduction to multiparty system to the Maldives. This was the time when the square became a popular site for political demonstration and protest. All these reforming activities had important implications for the city and influenced in Republican Square certain ways especially in a negative way that most of the local residents stopped using the space the way they use it before. Furthermore, the government declared a strict control in the space for such gathering and it leads to change the meaning of the square by the people of the city and their ideology towards using the space. Therefore, this rapid political and social transformation and continues variation could be a major factor that the residents of the city started to declining the square.

The decline of Republic Square

In the case of Republican Square, the strong emphasis of the political gathering and the restrictions seem to be the factor that losing its value among citizens. Another factor, which also could be a strong factor which influences the changing role of Republican Square, is the increasing of 'control', to avoid spontaneous gatherings of politics and protest. This control means to choreograph the space by allowing certain activities, specific groups or individuals to use the space while eliminating others (Madanipour, 2003). Such kinds of legal or institutional power to control the space turn to territory which provides feelings of distinctiveness and privacy. Because of this strict control and political demonstrations, gradually the square became "public space" which does not welcome everyone. Today, the city's built environment could be seen as a machine for living which effects the changes to the public spaces as well. Therefore, the activity in and around the Republican square began to decline. Today, the Republican Square is no longer recognizable and started to lose its social and cultural identity and meaning with its traditional role and it became an exclusive space for occasional tourist visits and a gathering place for foreign labours.

Research methodology

This study made use of mixed methodology in relation to the theoretical concepts of collective memory formulated through literature review to see how sense of collective memory is important in activating underutilized public squares. The methods consist of visual documentation, user survey, and interviewing community focused group. Preliminary Observation and Visual Documentation enables to identify the physical character of the square, activity pattern and significant changes with comparison between two formative time periods. Photographic documentation and illustration are used to gather and analysis data's. The User survey is used to document immediate visitor's perception, feelings and experience in the square.

The interviews with community focused group are carried out with the 209 inhabitants from the same ward where the square locates, and consists of three different age groups, which facilitate to understand the different time sequences. The comparison between different time sequences demonstrates the transformations of the collective memory of these inhabitants. The participants were asked 3 main open-ended questions and their sub questions that led to an in-depth analysis of inhabitant's feelings and perceptions of the Republican Square.

Question 1- Which elements were important in the Republican Square? **(Physical Aspects)**

- What makes these elements important?
- What are the physical (spatial) factors that made the square important or special?

Question 2- Are there any political, social, economic or perceptual reasons that belong to you? **(Socio-cultural Aspects)**

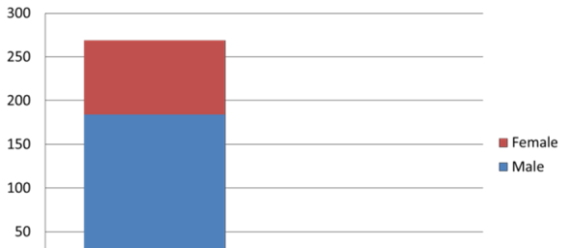
- What was the reason behind why were you using / not using this place?
- Do you think that square was the place of communication of the community? Why?

Question 3- What kind of emotions did this place remind you? Why? (**Psychological Aspects)**

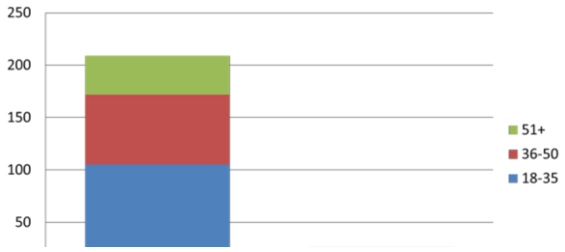
- What was the meaning of Republic Square for you in general?
- When you are experiencing the square did you feel that you are belonging to this place (Republican Square)?
- Can you draw a mind map of the Square?

Research Findings

Based on the interview questionnaires with the community focused group and user survey, the 26 participants who participated in the onsite user survey include 19 male and 7 female and participants who responded to the questionnaire included 124 male and 85 female (see Graph1.)



Graph1. Number of responses based on Gender



Graph2. Number of responses based on Age

Republican Square - Transformation of collective memory through time sequence

Based on the preliminary observation, information obtained from inhabitants, users/visitors survey and relevant authorities, the transformation of Republican square with the changing ideology towards public spaces in Male', can be identified in two formative period of time. The study examines how the Republican Square was made during the time sequence from 1990 to 2000 and from 2001 to till the date. It will trace the transformation of collective memory by examining the square in terms of its activity patterns, physical setting and psychological factors within the two time period. Furthermore, examining some memorable movements and the impact changing of social, political, economic ideology in urban public realm to investigate how these changes affected the inhabitants' collective memory.



Fig.6. Republican Square physical character and Activities during the first time period (1990-2000). Source: Author

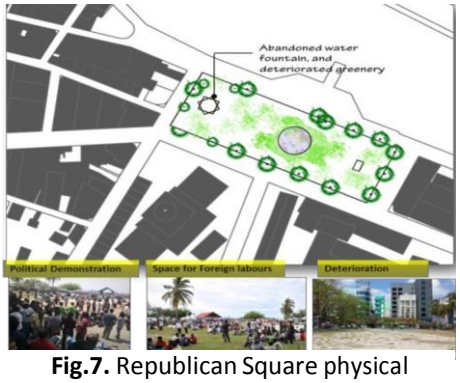
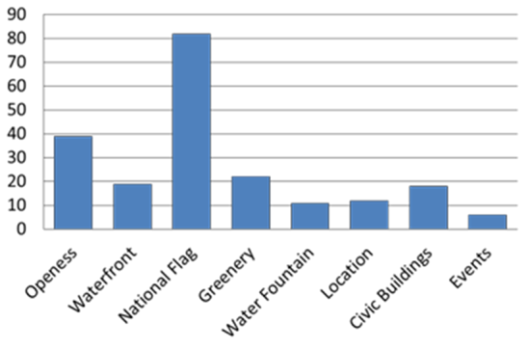


Fig.7. Republican Square physical character and Activities during the second time period (1990-2000). Source: Author

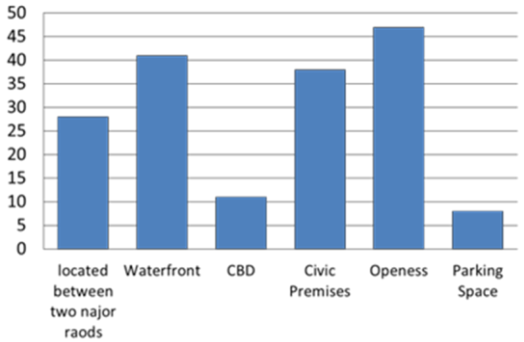
Impact of Physical Setting on Collective Memory

The research indicates the important elements and physical or spatial factors that the participants mentioned. According to them the physical setting around the square was largely influenced by the civic building, the sea front, and location between 2 major roads which provides a connection space to the many public buildings and the parking spaces. Due to this the square was a very happening place during the first time period. Furthermore, it is obvious that the participants only experience these places not only individually, but as a group or collectively which the quality of such places / features will lead to a clear understanding of the space. The graph 4 indicate the physical spatial factors which respondents find is most important and how many time they mentioned about these factors. From the memories of respondents the National Flag as the most important element that made the square more important and memorable (see Graph 3).They strongly believe that the national flag is a symbol of unity, freedom and identity, has continued to symbolize the binding force of the community, even though some respondents declined the square long time ago.

The participants did not trace much changes of the physical setting of the square during these two time periods, because the places they mentioned the elements they have identified are still functioning as the way they were before. However some respondents find that the square has lost its pedestrian aspects of two access roads due to the expansion of main jetty within the bazar area. It became evident that even this miner transformation of the square effects to the collective memory of inhabitant which in turn alters their perception of the space.



Graph3.Frequency of mention graph for the Important Elements of the Square



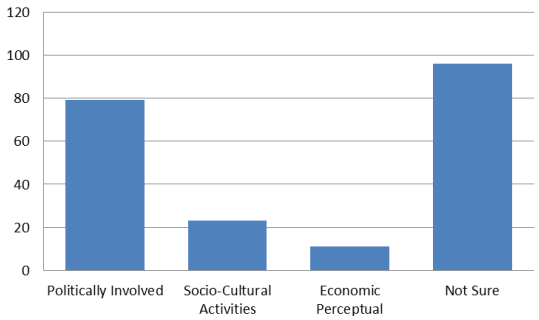
Graph4. Frequency of mention graph for the Physical and Spatial Factors

Impact of Socio Cultural Activities

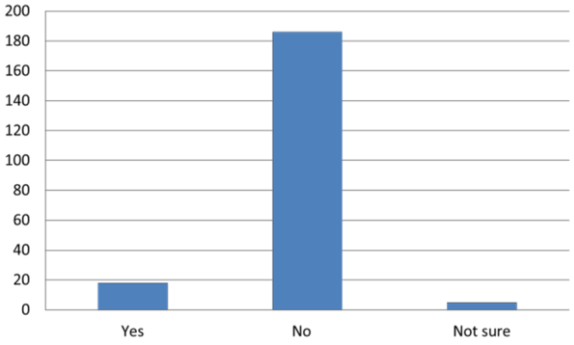
The participants of the focus group agreed that the square was largely influenced by cultural activities, special day celebration and commemorative events during the first period. Majority of respondents find the "Square was a place for Socio-cultural activities" and therefore, it acts as a platform or meeting place and common ground for community interaction for all the inhabitants. Furthermore, most of the participants find the square was a meaningful place during the first time frame, where they memorize their special gatherings and performed ceremonial celebrations.

However, almost all the participant agreed that socio-cultural environment of the square has started to change after 2005 with the beginning of the political activities in the country which leads to disappear the socio cultural activities they used to participate and experience.

It is clear that data indicates that46% of participant have involved in political gathering, protest and demonstrating which recently happened in the square. About 11% of total responds recalled the socio-cultural activities that they participate and happened to experience in the square long time ago. For this reason, large percentage of people find, and the square's function as a community meeting place has not been recognized in the second time period. Therefore, most of the participants agreed that they don't have any interest to use or visit and spend their time there as they were previously did and some did not certain about whether they liked or not.



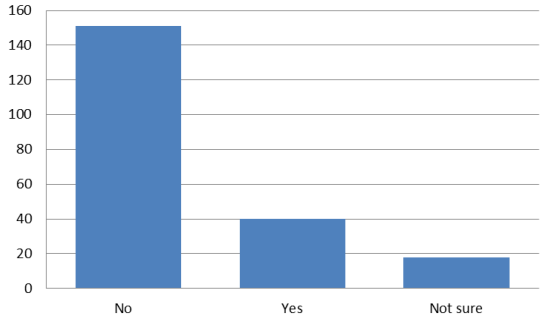
Graph5.Frequency of mention graph for the Social, Political and Economic perceptual



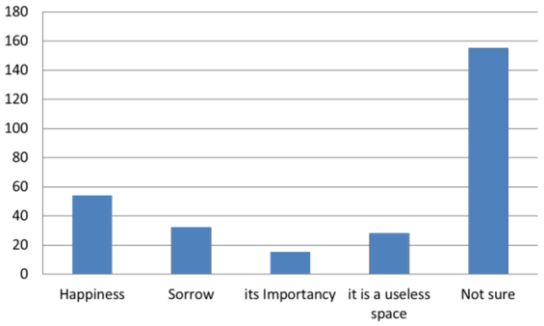
Graph6.Frequency of mention graph for the Square as a place for the communication of the community

Impact Psychological factors

During the first time period the square's functional and social role had a great influence on shaping people's behavior and their life style. The participants emphasize the square as a mean of interaction, mediation, symbolic identity and the place gives different feeling which they just like to be there. Some older respondents find that it was the space where they normally hangout after the work or may be late afternoon. They remember it as a feeling of togetherness, which is unfortunately not felt now. According to the memories of participants, it is astonishing that almost 55% of people are not sure about the emotions which are attached to them when reminding the square.

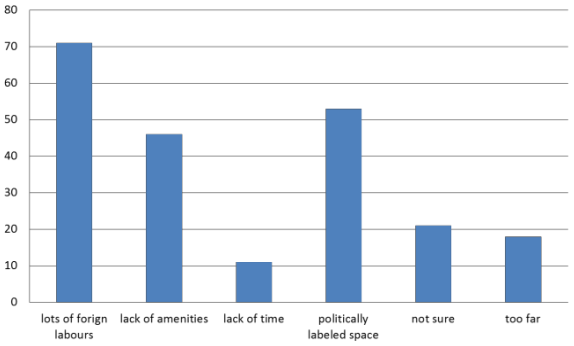


Graph7. Frequency of mention graph for Using/Not using the Square

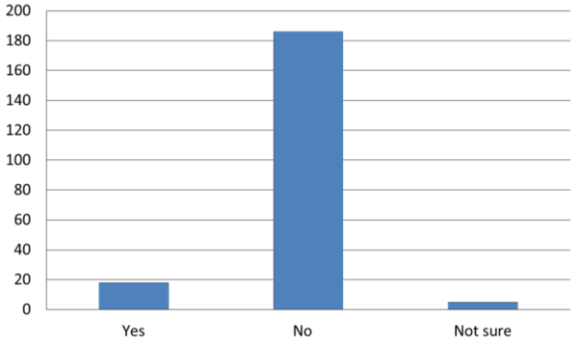


Graph8. Frequency of mention graph for the reason behind not using the Square

According to them the square has lost its meaning and declined during the second time period. Some participants mentioned the strict control over the square by the government due to the political demonstrations has led to the deterioration with the lack of activities and maintenance. Therefore, they find that the interaction between certain elements and activities they were attached before started to distract and people gradually started to find alternatives as a replacement. However some respondents still memorize their happy moments they have experienced in the square collectively as well individually. In the perceptions of the participants, overall respondents experience negative feeling about the square and they don't feel that they belong the place anymore, although they use or visit the square occasionally. For this reason



Graph9. Frequency of mention graph for Emotions and Experience in the Square



Graph10. Frequency of mention graph for Sense of Belonging

although most of the participants are able to draw mind map of the square, however some of them did not identified some important elements and could not portray a clear picture of the square.

Discussion on Research Findings

In the first time period of Republican Square, the physical setting asits monuments, surrounding buildings, activities and social life were recognized and valued as the "commons" of the community. However, the beginning of 2000 starts with smash hit of multicultural ideas and ideologies. Due to the rapid political and social transformation, the society was changing rapidly, freedom from political arena, technology and science and had accelerated development in travel, communication and finance. These changes had altered the way in which society experience the space, activities and to the physical attribution of the square and eventually caused a huge impact in declining and abandoning the square.

The response to the questionnaires and physical spatial analysis indicate that there are not many changes in the physical setting and they still have a vivid image of the surrounding environment as a collective memory. However it can be observed that, the reconstruction of collective memory happened due to the changing roles of the square with missing significant activities and elements and according to the respondents, there is nothing they can be proud of or recognized other than the national flag. As a result, the square is being turned into a space without meaning, which, in turn, creates conditions for segregation, social depletion, physical desecration.

Conclusion

The literature review and research findings suggests a crucial insight in the role for collective memory in creating and activating utilized or abandoned public square to a successful and memorable public spaces. In this context, the study explored the complex and multidimensional relationship of collective memory in revitalizing public squares through analyzing Republican

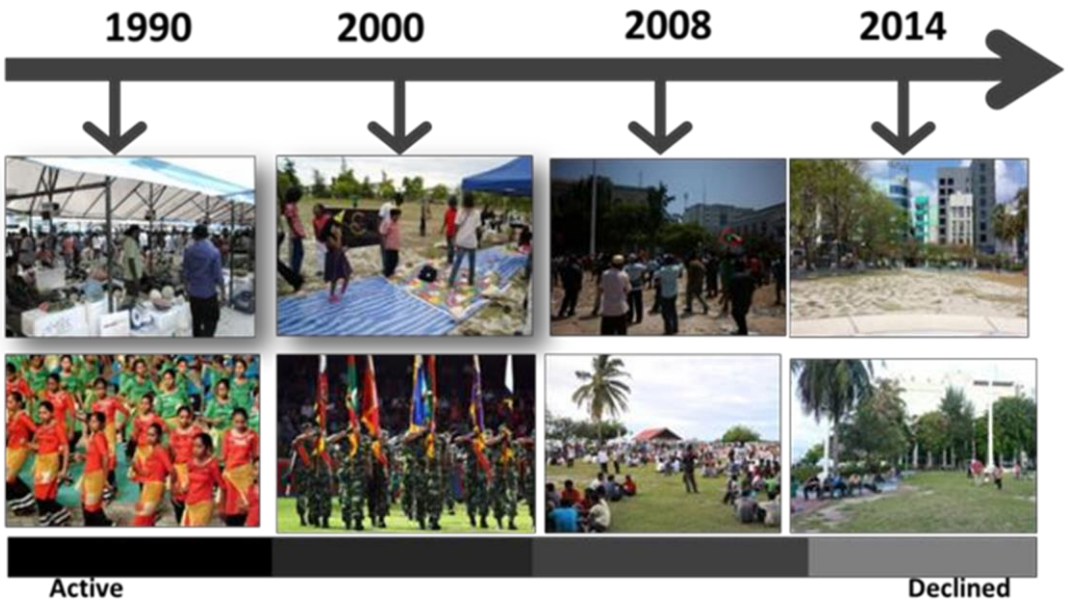


Fig.8. Republican Square Transformation from 1990 to 2014.
Source: Author

Square, Male'. And it has identified the role and perspective of physical setting, socio-cultural dimension and psychological factors, as well as the matters that they consider when revitalizing and shaping public squares. Therefore, as a conclusion it is considered that revitalization of public squares, should consider the aspects which discussed in the study critically and sensitively as a deeper appreciation and understanding of the relationship between public squares collective memory of its people, the spaces will ultimately improve the quality of the public realm. Because every public squares created, shaped, transformed and even declined by its people based on their collective memory.

This research could be carried out further in the future to study of the below mentioned areas.

1) A more in-depth study of the effect of human behavior in creating successful memorable public and its relation to environmental psychology.

2) A more in-depth analysis of socio-spatial reasons behind the changes in thecollective memory of public spaces.

References

Boyer, C., (1994), The City of Collective Memory: Its Historical imagery and Architectural Entertainments, MIT Press: Cambridge, Massachusetts and London, England.

D, Duindam (2010) Performing urban memory the façade of Hollandsche Schowburge: theater, site of terror, site of memory, Available atwww.uva.nl/binaries/content/documents/.../d/u/d.a.duindam/.../asset? (Accessed: 12/06/2014).

Durkheim.E, The Elementary Forms of the Religious Life, translated by Joseph ward swain (2012).

Francis, M., "Changing Values for Public Space." Landscape Architecture. 78, 1: 54-59. January-February, 1988

Gehl, J. and Gemzoe, L., 2001, New City Spaces. Copenhagen, Denmark: The Danish Architectural Press.

G, Goheen (1998) Public space and the geography of the modern city, Available at http://www.researchgate.net/publication/240738898_Public_space_and_the_geography_of_the_modern_city (Accessed: 04/06/2014).

Halbwachs M. On Collective Memory. / Lewis A. Coser. (ed). Chicago: The University of Chicago, 1992; pp. 41-120.

Haveeru, (2013), Pigions Park [ONLINE]. Available at: http://www.haveeru.com.mv/pictures/4217 [Accessed 11 August 14].

Lefebvre, Henri. The Critique of Everyday Life. New York: Verso, 1991

Levy, B (2010) Urban Square as the Place of History, Memory, Identity, Available at: https://www.academia.edu/1489197/Urban_Square_as_the_Place_of_History_Memory_Identity (Accessed: 01/06/2014).

Lynch, Kevin. The Image of the City. Cambridge, Massachusetts: Technology Press, 1960.

Madanipour, Ali. Design of Urban Space: An inquiry into a Socio-spatial process. Chichester: John Wiley & Sons 1996

Madanipour, A. (ed.) (2010) who's Public Space? International Case Studies in Urban Design and Development, London: Rutledge.

Montgomery, J., Making a City: Urbanity, Vitality and Urban Design, Journal of Urban Design, Vol. 3. Issue 1, 93, Retrieved April 24, 2009.

Mumford, L., 1961, The City in History: Its Origins, Its Transformations, and Its Prospects. New York, NY: Harcourt, Brace & World.

Online Image unwind, (2010), Male' City [ONLINE]. Available at: http://unwindmaldives.blogspot.com/2010_03_01_archive.html [Accessed 11 August 14].

Rossi, A., (1982), The Architecture of the City, The MIT Press.

Spatial Frameworks, (2011), Agora [ONLINE]. Available at: http://www.spatialframeworks.com/the-original-commons/ [Accessed 11 August 14].

Simmel, Georg, "The Metropolis and Mental Life", Edward Shils (trans.), Gary Bridge and Sophie Watson (eds.), The Blackwell City Reader, Malden: Blackwell Publishing, 2002, pp. 11-19.

Whyte, W.H., 1980. The Social Life of Small Urban Spaces. New York, NY: Conservation Foundation.

Zucker, P., 1959, Town and Square: From the Agora to the Village Green. New York, NY: Columbia University Press.

A Phenomenological Approach to Engage Students in Learning Urban Ecology

Samuel Hammer*
Boston University, Boston, USA

Abstract

Urban ecology is a complex interaction of humans, the built environment, and nature. The challenge is to teach this complexity effectively, no matter which students we are addressing in a university setting. How can we help students face challenges to learning this difficult material within constraints of time, physical conditions, and conceptual difficulty? A meaningful study of urban ecology should take students out of their comfort zone to engage with questions of complexity. Methodologies such as observation, contemplation, and serious play encourage critical thinking and help students tackle complex concepts that require abstract reasoning. These behaviors structure and guide an aesthetic experience that subsequently informs the cognitive-rational science of urban ecology. Observation in its many forms sets the stage for all further learning activities. Reflection allows students to develop ideas about their own learning and consider new perspectives. Serious play, which includes in-class model-building, excites students to work in a hands-on, collaborative environment. Finally, social media provide a tight focus for communication, encouraging students to "instantly" share their discoveries in a visual context while using the vocabulary of science. These methodologies and the abstract reasoning they generate can be carried forward for use in subsequent projects, in which student innovation and designing-outside-the-program are rewarded.

Keywords: Ecology, abstraction, complexity, phenomenology

Introduction

Urban ecology goes beyond the complicated interaction of nature and the built environment. The city itself is analogous to an ecological system (Alberti et al., 2003). As an interactive ecological system, the city and its urbanized region display numerous features that engender complexity (Jacobs, 1961). The first step in relating this complexity to students is to break down the components that define urban ecological complexity. These can be summarized as:

1) The ecology of soils, water, and biota of that exist within the city and comprise its non-human ecology
2) The effect of the city on the natural ecological, biogeochemical, and climatic patterns within and beyond its borders
3) Temporally- and spatially-related social phenomena that are analogous to natural processes, for example neighborhood succession, which involves physical and compositional changes

*Corresponding Author: Samuel Hammer, email: cladonia@bu.edu

4) Human ecology, which involves diverse people and activities, for example economies of scale, transportation, production, learning and commerce
5) The health and resiliency of the urban ecosystem as related to human welfare, economic resiliency, and resiliency in the face of climate change and natural disasters.

These issues comprise the cognitive-rational narrative of urban ecology. They are the basis of an interdisciplinary model, which because of its complexity presents a daunting conceptual menu for students. How can we help university students "digest" these ideas within the space of a semester or two? How can we engage them in learning complex systems? How can we help our students, both undergraduates and graduates, to sharpen their long-term skills in abstract reasoning? A phenomenological approach, which emphasizes students' mutual interrelationship with their environment (Bogner, 1985), may provide an answer. Because phenomenology explains meaning through an individual's self-experiences it is radically subjective (Selvi, 2008) and therefore difficult to assess from an educational perspective. Its methodology is also difficult to circumscribe. In spite of its limitations, phenomenology may provide a useful framework for grappling with complex systems. In this paper I discuss my rationale and strategies for teaching complexity, which use a phenomenological approach to take students beyond the cognitive-rational narrative of urban ecology.

From abstract to articulate

The external signals that we perceive from our surroundings are abundant and abstract (Hammer, 2012; 2014). At all stages of cognitive development, from infancy into adulthood, we require a problem-solving algorithm that enables us to make sense of these signals. We make sense of these signals through abstract reasoning, which includes activities such as making connections, perceiving patterns, and discerning processes. All of these fit within a phenomenological approach. Students enter the university equipped with the ability to perform these activities. In fact, abstract reasoning and its supporting phenomenological behaviors cannot be taught. Instead, these activities are promoted through the behaviors of observation, contemplation, and play, behaviors that we can encourage in our students. Through these behaviors students apply a personal aesthetic, a kind of intellectual scaffolding that involves multiple ways of thinking and feeling, in order to address problems in urban ecology. One's personal aesthetic thus goes beyond conventional definitions such as "taste." Rather, an aesthetic can be interpreted as a critical methodology, a suite of behaviors for problem-solving that transcends disciplines (Yanchar et al., 2005). The goal of abstract reasoning and the aesthetic that supports it is to translate abstract signals into the articulation of a product or model (Boal 2006). For students to build meaningful models of urban ecology they must translate the signals they perceive into a cognitive-rational narrative. How do we make them aware of their own perceptions?

Scientist-artist behaviors and urban ecology

Leaving the comfort zone: A methodology of discovery

Problem solving requires negotiating unknown, often difficult conceptual terrain (see Chimero, 2012). For most people, entering the unknown is concomitant with leaving one's comfort zone. It requires a mode of discovery, a process. Problem-solving professionals such as planners, designers, scientists, and artists use process to identify and grapple with problems. Their process can be considered as phenomenological in that it is open-ended and iterative (Mackey, 2001). It includes constant dialogue with

the environment. And it results both in a model *and* a newly evolved process. As we approach new problems that will impact the future, for example urban resiliency, our collaborative-interdisciplinary activities show that much more is required of us than expertise alone. Complex questions that surround urban ecology, diversity, and resiliency require abstract thinking and the ability to act on that thinking. So teaching our students the "subject" of urban ecology is perhaps less a matter of teaching "facts and figures" than it is encouraging modes of behavior and thinking. To this end it is essential that students encounter urban ecology in all its complexity through their own experiential lens (Jacobs, 2012).

Experience requires action, and this is the first challenge to students' comfort zone. For example, in an exercise in which students studied water in the context of our city (Boston, USA), they were asked to take a self-guided field trip to the Charles River Dam. The dam is significant in that it separates a former tidewater river from the ocean. It is the only structure that protects inner Boston from flooding. The several-meter-high dam is susceptible to overflow in a combination of rising sea levels, high tide, and a potential storm surge. For my urban ecology class undergraduate students were required to take two forms of public transportation and to walk about a kilometer to reach the site. Leaving campus and using public transportation was uncomfortable for my students, many of whom use taxis several times a week, and I heard plenty of complaints about the inconvenience. Moving outside their comfort zone challenged the students, but it may have nudged them into looking at things differently. As assigned, I received twitter posts from every student describing the experience. Some of their responses:

"The dam is intricate."

"The dam looks strong and sturdy."

"The dam is smaller than I expected."

"The water level is already so high it can barely take any more."

"I saw a different side of Boston on this trip! Truly opened my eyes."



Fig. 1: Students Discover Boston on Foot
Source: Author

Observing: The first step takes many forms

If we consider urban ecology as a set of problems that need to be addressed, then the first step is to identify the components of the environment. These components include the natural, human, and built environment of the city. Simple observation is the key to this activity. It can be done in innumerable ways—visually (with or without the aid of tools like a microscope), aurally (the sounds and noises we hear are central to the urban environment: Sharma et al., 2014), or using any of the senses.

For example, I sent my undergraduates to a nature preserve a few blocks from campus. The preserve features a pond with no outlet, the remnant of a glacial landscape that existed ca. 8000 years ago. The pond and its surroundings are lovely in themselves but I wanted students to pursue a goal in their walk. I asked them to read a short essay about movement and to consider movement in a variety of contexts. For example I asked them to compare the movement of glaciers to the movement of the surface of the pond. They were asked to record as many kinds of movement as they perceived and to post a photo or video with comments about their observations to our flickr site. Students reported seen and unseen movement: Leaves in the wind, swimming water birds, plate tectonics, even the movement of nutrients during plant metabolism. They did a good job and engaged in the serenity of a special urban space. In fact, students did this work for me while I was in Colombo at the last ICCPP conference!

In a more rigorous but still open-ended exercise, I asked my graduate students in Design Research Methods (Boston Architectural College) to situate themselves in an urban setting and observe everything they could, taking extensive notes, sketches, photographs, and video documentation. They compared their unaided observations (notes and sketches) with their photos and videos, and reported the difference in the quality of these different kinds of observations. The process of observation itself is more important than what students observed. Later in the course I asked them to return to the spot and note which aspect of their urban corner they would set out to improve. Their design questions came only at the end of a course in which they observed, reflected, questioned, and played in a variety of settings.

In other settings, both graduate and undergraduate, I promote the use of microscopes. The microscope reveals structural characteristics, for example of soil, that are useful to understanding urban ecology. I ask my students to collect soil samples during a field trip and in a subsequent laboratory, students examine the soil they collected. We discern biotic and abiotic features in the soil as well as differences in the texture and composition of soils from various sites. Our observations give us an opportunity to discuss related ecological features such as water, plants, and microorganisms to questions of land use and the urban built environment. The microscopy exercise also provides students with the notion that urban ecology transpires at many scales and in many spatial and temporal dimensions. The fact that they collected the samples themselves allows them to experience urban ecology in an immediate, personal fashion. Their discoveries under the microscope help them build a narrative of ecology previously unknown and probably unsuspected to them.

Our students are digital natives (Jones et al., 2009), so they can be encouraged to use laptops and other devices to observe, either passively (observing what's on the screen) or actively (by taking photos, videos, and sound recordings). When I introduced undergraduate laboratories that were 100% computer-based I was happily surprised with student engagement. This was a first in my 20+ years of teaching that students stayed focused for the entire lab period. The

material they engaged with on their devices provided an atmosphere where they could focus and move through the activities, tweeting me feedback as they proceeded. It is worth noting that as I continued a series of computer-based laboratories I designed, students sustained their interest and engagement for the whole semester. Perhaps this is because students, especially undergraduates, find the computer-based environment non-threatening and easier to frame around a concept than a field trip on a cold day. There are simply less “moving parts” and the environment is friendlier to them. But does this translate to other parts of the world? In Boston I teach in a cold climate that is inhospitable to outdoor activities most of the school year. Conceivably the heat and humidity in Sri Lanka comprise an analogous situation in terms of outdoor activities. Would urban ecology students in the tropics benefit from more computer-based labs?



Fig. 2: Students Observed and Analyzed Urban Space Using Images on their Computers
Source: Author

Reflecting: Finding connections and developing hypotheses

Observation by itself can be a passive behavior. As students gain fluency with the difficult concepts of urban ecology, our goal is to encourage less passivity and more action. How can we increase abstract reasoning as well as independent thinking? Reflection and contemplation encourage students to look inward toward their own process of reasoning, in order to reach higher-level cognitive behaviors (Bloom et al., 1956). Reflection is the next step in increasing engagement with complex models of urban ecology. Scientists and artists use observation to fuel reflection, a mode of thinking that permits interpretation of complex situations and the development of hypotheses (Ash & Clayton 2004). Students can be encouraged to do the same. In the guided reflection exercises I developed students work toward an enhanced awareness of the urban environment and concomitantly enrich self-awareness because they reflect on *how* they observe. Here a phenomenological approach leads to met cognition (understanding how we know), which is central to critical thinking as well as learning in a design context (Edelson, 2009). A signal feature of the process of reflection is that is slows students down. Although they crave self-determination of open-ended exercises in observation and reflections, students might prefer to perform the rote tasks they need to fulfill during a lab, preferably as fast as possible. So reflection is another process that may take students out of their comfort zone.

In the introduction to both my graduate and undergraduate courses I ask students to evaluate why they choose a certain image over another. This starts the process of self-evaluation that highlights, among other things, the aesthetic biases that students bring with them. We all share this trait and as educators, reading students’ responses about their visual preferences can also force us to explore our own ways of thinking and teaching. Using replicates of Paleolithic hand-held tools I ask students to read an essay on the tools (as well as to handle them) and to evaluate the concepts of “subjective” and “objective.” It’s amazing to read responses that report

as “subjective” terms like “elegant,” “beautiful,” and “balanced.” By contrast, supposed dates, tool uses, and other “facts,” though highly speculative, are reported by the students to be “objective.” What does this tell us about the way students might interpret their larger environment? Or how they would evaluate urban ecological problems? Must there be a gap between perceptions of beauty and utility? Contemplative learning in a phenomenological framework addresses these questions.

Aesthetics, an algorithm for problem solving and abstract reasoning, is the diaphanous fiber that connects science and art, subjective and objective. Reflecting on their own aesthetic students connect the abstract signals they perceive in their environment with the cognitive-rational science of urban ecology. One of my course goals is to help students make connections between seemingly unrelated objects or phenomena. For example, I ask them to compare a lego brick structure with a Chinese scholar’s rock. As students work through perceived connections between objects, or as they struggle to find a connection the professor suggested, they sharpen their cognitive skills. If we can promote this behavior, for example by hinting at unexpected or seemingly out of context terms such as permeability, variation, and evolution, then we can help students connect the visible “real” world with its underlying ecologies.

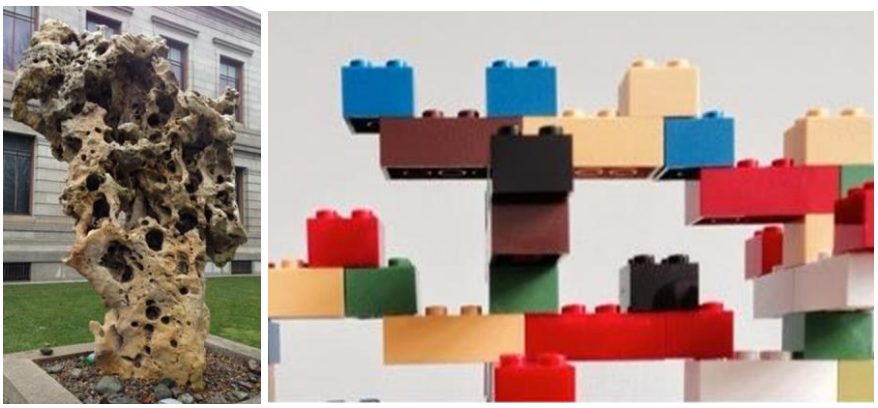


Fig. 3: Students compare unrelated objects to explore concepts such as permeability, variation, and the evolution of form.
Source: Author

Serious play: New frontiers in learning

After decades of teaching traditional laboratories I realized that in many ways, they didn’t work. While laboratories are intended to provide first-hand experience for students, perhaps replicating iconic work of past scientists, the result is something much different. Student laboratories, especially for undergraduates, seemed to feel increasingly rote, with students going through a cookbook-style sequence of activities and plugging in numbers for an analytic graph that held little meaning for them. At the surface, we could say that these labs involved abstract reasoning but in fact, students employed little or no abstract reasoning. They just wanted to get the lab finished. The fact that students rushed through labs demonstrated the lack of meaning in these exercises. I had to make a change.

During a serendipitous trip to Sri Lanka in 2013 I was introduced to a world quite different from my own, a world that required deep observation and reflection to even begin to understand. As I traveled, and immediately after I returned, I started to design a series of new laboratories that would promote observation and reflection. But what about play?

Part of my realization was that I could no longer expect students to perform the old lab exercises we had always offered. Starting with my creative and somewhat malleable graduate students in Sustainable Design (most of whom enter the program as non-designers) I began to introduce activities that would challenge students with open-ended, serious play in which they set the parameters. I asked the students to build “complex” structures that represented urban landscapes. The results were impressive. Tired, overworked graduate students were sparked to spend hours building with Zometool toys. I found a muffled group of stressed-out students suddenly come to life, creating structures, making noise, laughing and conversing. When they finished building their models of complexity they happily shared with the group the parameters, “rules,” and goals of their projects. Would it work with my undergraduates?

I started slowly with my undergraduates, who are more conservative than my design graduate students. Instead of asking them to “have fun” with building tools I asked them initially to explore the behaviors of water. I provided students with rudimentary tools: Water, salt, sand, clay, string, sponges, and *Azolla*, a water fern that we have to order specially, but which happens to be common to freshwater environments in Sri Lanka. Students engaged with enthusiasm and a sense of discovery. Some demonstrated the surface tension of water. Others found evidence of mass flow. One student poured fresh water on top of a saturated solution of saltwater and demonstrated (in a beaker) the characteristics of an aquifer in a saline environment. All of their discoveries have a direct bearing on urban ecological systems and all of them were self-generated. My only rule was, “Play.” Their play was subsequently translated to scientific narrative in the tweets my students sent me.



Fig. 4: Student tweets on the characteristics of water, following a serious play session.
Source: Author

Many authors discuss the role of play in learning, creating, and innovation (Zimmerman, 2003; Bateson & Martin, 2013). But even after our water experiment I was still skeptical. "Play" is something my undergraduate students left behind as they took on the mantle of young adulthood, honing their academic achievements in high-impact educational environments as they prepared for university. Common wisdom refutes play. But common sense recognizes its importance. Would I be able to persuade them to pick up the Zometool sets and work with them? My apprehensions were unfounded. Students engaged in intensive, goal-oriented collaborative play to construct oversize 3-D models. They began by strategizing and sketching their models. As the models grew students adjusted their designs. They experimented with unexpected shapes, movement, and connections that resulted in their particular structures. Finally, they presented their structures and like my graduate students, reported on the process

of building, the role each of them played, and the outcome of their work. Students' model building behavior helped them comprehend the subject matter, experiment with scale, and understand functionality. Quite literally, students engaged in modeling complexity, a goal worthy of any urban ecology course.

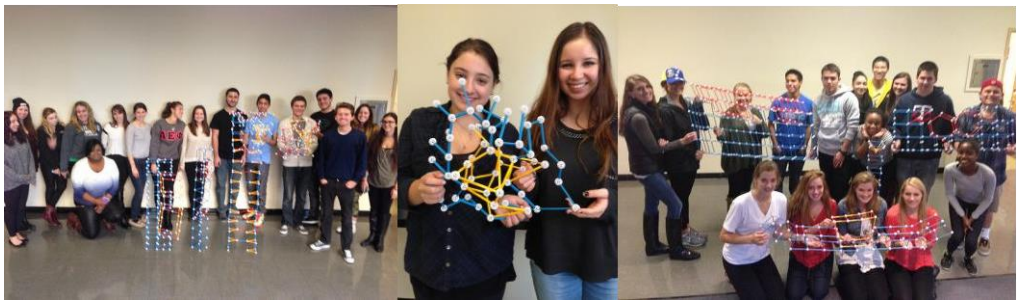


Fig. 5: Students show off their models of complex systems
Source: Author

Conclusion

A phenomenological approach to learning provides great opportunities. But there are limitations as well. For example, how can we assess student achievement in open-ended exercises? Where are the results that presumably make them qualified to work in professional settings? Can we predict how they will do on exams? While student achievement under a phenomenological approach is hard to predict, so are the urban ecology problems they will face in a decade or two. In my estimation, we cannot teach students solutions to the problems they will face. We can however provide the tools for problem-solving behaviors. Urban ecology is an interdisciplinary science and solving its problems require a trans-disciplinary approach undertaken at a range of scales from microscopic to global. Standing on its own, no single disciplinary "content" that we offer will take our students where they need to go. The world they face is unpredictable, random, and abstract, just like the many signals they perceive in their environment. The tools they will need to face the future go beyond technology, beyond our books, beyond the disciplines we have struggled to master (and which we naturally but perhaps misguidedly want to pass down). Our students face a world that requires real-time human agency. They will need to ask critical questions, to think and act quickly, collaboratively, and creatively. Our job is to help them develop their innate ability to connect disparate ideas. As they make these connections, they expand their horizons through interdisciplinary work. Helping our students approach and solve problems through abstract reasoning is our contribution to their future.

References

Alberti, M., Marzluff, J.M., Shulenberger, E.C., Bradley, G., Ryan, C., & ZumBrunnen, C. (2003) 'Integrating humans into ecology: Opportunities and challenges for studying urban ecosystems'. BioScience, Vol. 53, no. 12, pp. 1169-1179.

Ash, S. L. & Clayton, P.H. (2004) 'The articulated learning: An approach to guided reflection and assessment'. Innovative Higher Education, Vol. 29, pp. 137-154.

Bateson, P., & P. Martin (2013) *Play, playfulness, creativity and innovation*. Cambridge, UK: Cambridge University Press.

Bloom, B. S., Engelhart, M. D., Furst, E. J., & Krathwohl, D. R. (1956) *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain*. New York: David McKay Company.

Boal, A. (2006) *The aesthetics of the oppressed*, London and New York: Routledge.

Bogner, B. (1985) 'A phenomenological approach to architecture and its teaching in the design studio', in *Dwelling, Place and Environment*, Seaman, D. & Mugerauer, R., Eds. Springer Netherlands. pp. 183-197.

Chimero, F. (2012) *The shape of design*, Minneapolis, MN: Shapco. Creative Commons Attribution.

Edelson, D.C. (2002) 'Design research: What we learn when we engage in design'. Journal of the Learning Sciences, Vol. 11, pp. 105-121.

Hammer, S. (2012) 'From abstract to articulate: Science, problems solving, and aesthetics'. Community College Humanities Review Vol. 32, pp. 6-15.

Hammer, S. (2014) 'Hacking design learning: Exploratory play with purpose'. ARCADE Magazine Vol. 32.1, (unpaginated). http://arcadenw.org/blog/hacking-design-learning-exploratory-play-with-purpose.

Jacobs, J. (1961) *The death and life of great American cities*, New York: Random House.

Jacobs, J.M. (2012) 'Urban geographies I: Still thinking cities rationally'. Progress in Human Geography, Vol. 36, pp. 412-422.

Jones, C., Ramanau, R., Cross, S., & Healing, G. (2009) 'Net generation or digital natives: Is there a distinct new generation entering university?'. Computers and Education, Vol. 54, pp. 722-632.

Mackey, J. Linn. (2001) 'Another approach to interdisciplinary studies'. Issues in integrative studies Vol. 19, pp. 59-70.

Selvi, K. (2008) 'Phenomenological approach in education'. Analecta Husserliana, Vol. 95, pp. 39-51.

Sharma, A., Bodhe, L.E., & Schimak, G. (2014) 'Development of a traffic noise prediction model for an urban environment'. Noise and Health, Vol. 16: pp. 63-67.

Yanchar, S., Gantt, E. E., & Clay, S. L. (2005) 'On the nature of a critical methodology'. Theory Psychology, Vol. 15, pp. 27-50.

Zimmerman, E. (2003) 'Play as research: the iterative design process', in Design research: Methods and perspectives, Cambridge, Massachusetts: MIT Press.

Enhancing Private Open Spaces in Indonesian Cities: Preparing Children as Future Change Agents

Mediastika, Christina E.*, Nurdiah, A., Julistiono, Eunike K.
Department of Architecture, Petra Christian University, Indonesia

Abstract

House expansion in many Indonesian housing has triggered lack of private open space and thus lack of rainwater absorption space. This causes inundation and flood during rainy season. Earlier research showed that housing expansion was driven by increasing of family member which supported by increasing of family income. House owners' awareness of private OS was sufficient, but their knowledge was limited. Awareness alone is not enough to fix the problem. In addition, directly repair OS deficiency that has happened today is not practical. Thus, assigning the younger generation to become an agent in fixing this problem is an ideal concept. A program using fun-learning methods, such as creating mockups is planned. Approximately 770 students participated in this program and this study concluded that children absorb the knowledge well and expected to be excellent future change agents in improving the quality of their places and cities. This is demonstrated by the very alive discussion and the mockups that fulfilled what has been taught. Seventy percent was designed in well condition (ie. OS availability, vegetation, and windows for air circulation and natural lighting) and 20% was designed in excellence with creative and unique OS and building's facade.

Keywords: private open space, children, fun learning, mockups, change agents

Introduction

During period of occupancy, houses in Indonesia tend to be expanded to accommodate growth of family members, which is usually supported by improvement of family income. In general, house expansion can be constructed horizontally or vertically. However, the unpreparedness of the substructure of the house to bear the additional superstructure has led to a trend of horizontal extension. As a result, within fixed land size, this will automatically reduce the presence of private open space (OS) around it. This condition was suspected caused by limited knowledge and awareness of the house owners. They were suspected to have low knowledge on how maintaining private OS and low awareness on the importance of private OS for rainwater absorption and for providing access for both natural ventilation and day-lighting.

Enhancing city OS by encouraging people to provide private OS is a quite unusual approach since academicians are not entitled to decide what people do in their private space. However, since Indonesian building regulation has existed throughout years for regulating particular percentage of OS to be maintained within building site, studying OS of private property is not entirely

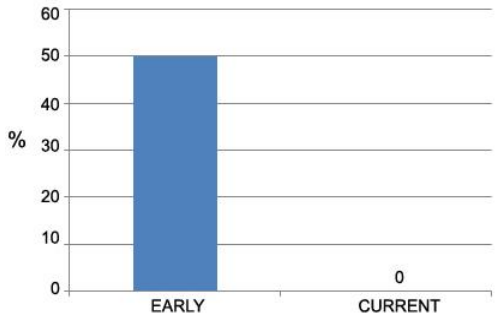
* Corresponding Author: Christina E. Mediastika; E-mail- eviutami@petra.ac.id

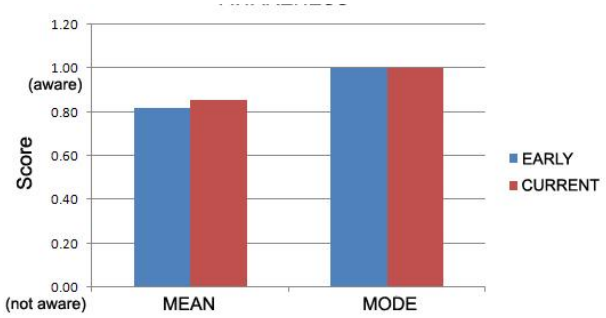
incorrect. In Indonesia, OS to be maintained in a public site is vary depends on regions and building functions. Generally, the OS to be maintained is 20% to 50%. Unfortunately, there is no specific regulation to maintain OS in private space. Building regulation specific to Sidoarjo area, which was the selected research area, suggests house owners to maintain private OS of house-lots for 10% only. At first, this was considered too small to give benefits for the house. Secondly, it never been evaluated by the regulator whether this rule is implemented. In so doing, we may easily find houses with almost zero OS (Mediastika, 2014, Fig.1a).

As it is unusual approach, earlier studies on green OS or simply OS within private property are also very limited. It mostly discussed on the necessity of public green OS and slightly disregards the benefits of private green OS. Study by Lacy (1990) has reported that clustered houses with protected OS were appreciated higher by market than those of single conventional housing with larger private yards. This condition refers to public open space limited to those who dwell within the clustered housing only. This might also be the case in Indonesia, where clustered housing is now becoming a trend, but maybe not the case of other region. This is in line with Connell and Walls (2005) who revealed that OS values are case study–specific. Particular OS area is unique to a particular region and time period. Thus, the way on how OS will be provided should consider the characteristic of a particular region. However, as a general term when space growth is not well planned, the presence of OS is considered as a luxurious space for people in any regions. This is also the case in Indonesia, where those living in a clustered house may enjoy the OS within the cluster, but those living in ordinary housing have no access for appropriate public OS. When public OS is insufficient, OS for rain water harvesting is also limited. Since it is not easy to provide public OS, neither in a closed area or in the city level, provision of private OS is considered as substitution of the unavailability of public OS.

Nevertheless, as a general term, beneficial effects of nearby green space have persisted throughout years, especially to improve people's health and wellbeing (Groenewegen, 2006). This finding is supported by a study comparing residents with a view of urban greenery and residents without such view which showed that those with view experienced better of well-being (Kaplan, 2011). With all these benefits, it is expected that house-owners are aware and possess knowledge on how OS shall be provided and maintained within house-lot, so as not to expect public OS provided by the city. A green OS on a private lot is never been bigger than that of public OS. But, the multiple effects of this insignificant dimension will play a role on the availability of sufficient OS throughout urban region.

Triggered by this issue, a research for specifically studying house owners' judgment on the important of private OS was conducted (Mediastika, 2014). Forty eight percent of houses which suspected of having insufficient OS were studied. The rest of 52% were not surveyed due to time and resources limitation. With this 48%, it all proven to having insufficient OS, with OS is toward 0%. The research concluded that average respondents possess sufficient awareness on the necessity of private OS (Fig 1b.). It also showed that there was grading in respondents' knowledge. In the beginning of occupancy, respondents possess very low knowledge, and then it develops slightly during occupancy period (Fig. 2). However, sufficient awareness and low knowledge is still inefficient to fix the improper house design immediately. More important, directly fixing improper design is problematic due to high cost and time implication.





a. b.

Fig.1a. Ratio of OS to house-lot of early and current condition in actual percentage.
Fig. 1b. Respondents' awareness of early and current condition

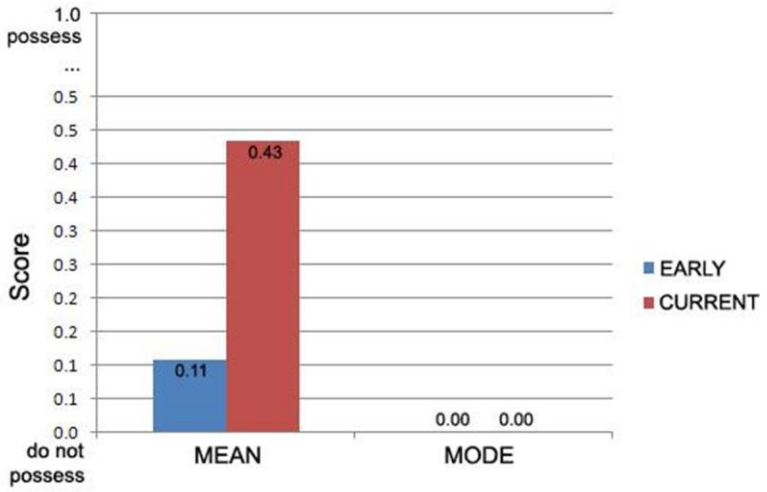


Fig. 2. Respondents' knowledge of early and current condition

Learning to condition that directly fixing the improper design is not practical; a further action to follow up the finding of previous study was planned. Based on the sufficient awareness but limited knowledge, further program to be conducted was sharing information among younger generations. Current condition of improperly house design was not planned to be fixed, but it was younger generations that was planned to cease the mistake and fixing the condition in the future. More than sharing information, the program was also aimed to build children's awareness on the necessity of private OS and healthy house and make them absorb the information given.

Action of empowering children as change agents has long been known, especially by the Non Governmental Officers (NGOs) to convey their messages and programs. Many were carried out unofficially, and the rest were officially. Most programs were conducted in rural communities and children were mostly attributes as change agents of social issues and hygiene and health (http://www.unicef.org/india/wes_2438.htm). At the UN level, children were also selected as change agents in the event of UN General Assembly Special Session on Children and the UN Study on Violence against Children. It reveals that children are the best change agents at both home and in the community. The UN believes that if we target the children, they will in turn bring change in the family and thereby the entire community (http://www.unicef.org/india/wes_2438.htm). In other cases, children are selected for change agents as behavioral changes were more evident among the children than among the adults. The impact of the project was reflected in concrete changes in the school environment as well as the home environments (Onyango-Ouma, 2005). More specific to sustainability issue, a study by Stuhmcke (2012) found out that the children participated in her project were able to think critically about environmental and sustainability issues. They were able to create change in their local contexts, and took on the role of educators to influence others' environmental behaviors.

Objective

The study was aimed to learn on whether knowledge sharing to children as future agent; in a particular educational method; is effective to convey the importance of private OS. This was limited to children's response immediately during the program i.e. how they absorb the information given, since the actual response is to be checked in a long future period.

Methods

Current surveyed houses were already expanded horizontally, and cost implication to fix the improper house extension is too high. Therefore, sharing knowledge on how maintaining private OS among current house owners would only fix the issue theoretically not practically. Within this situation, encouraging children to become future change agents is more beneficial, as they will develop their own houses in the future, so as not to repeat similar error.

A fact that previous study on private OS deficiency was conducted only in limited area of Indonesia should not limit area in where educating children regarding this issue would be conducted. Since there is trend of population growing; similar condition also exists in many Indonesian cities. Thus educating younger generation in any cities in Indonesia due to necessity of maintaining private OS was considered as an ideal concept. This study is planned as empirical study of both quantitative and qualitative data collecting method. The quantitative method is to record numerical data of the study and qualitative is to report the learning situation which could not be measured numerically.

Since the planned knowledge sharing is not merely to transfer knowledge but to make children deeply absorb information on the importance of private OS, the teaching method should be conducted in entertaining and empirical ways. Means that children should practice on how healthy houses with sufficient of private OS are designed. In order to disseminate this knowledge well, formal education venues were preferred, i.e. of formal schools and formal school time period. Using this formal concept, the program was managed to be conducted from one school to another from to time to time, without worrying to unavailability of school facilities. Conducting this program outside schools requires room and preparation of other facilities. Children of elementary and junior high schools were the targets. Those of lower than

fifth grade of elementary schools were not involved since their basic knowledge to absorb the subject given is not sufficient. Those of older than junior high school age were also not involved as they were considered entering the adult age and thus already having concept of how the healthy house should be built. Besides, the older are focus on preparing final exam.

There is no specific selection upon the school in where the program would be conducted, since in a long term goal, all students of elementary and junior high schools are the target. However, at this first stage, in order to save time, schools within reasonable distance of the author's office were selected. Later the program will be implemented throughout schools gradually.

Since it is sharing knowledge for children, the educational system was designed as an entertaining education. Not to be confused with term of 'entertaining education' introduced by Singhal and Rogers, the entertaining here means fun or happy learning. Singhal and Rogers (1999, in Singhal & Rogers, 2004) defined entertaining education as the process of purposely designing and implementing a media message to both entertain and educate in order to increase audience members' knowledge about an educational issue, create favorable attitude, shift social norms, and change the overt behavior of individuals and communities. Entertaining education is not a communication theory but a "communication strategy" intended to create a positive change among intended audiences (Singhal & Rogers, 2004). The program planned for children was mostly adopted the second term rather than the first one, as there was no media would be involved. It needs a particular communication strategy to create positive change of children perception and attitude toward the importance of private OS. Therefore, entertaining method was selected. Entertaining here means the teaching method should be conducted within atmosphere of relax and fun. In a similar term, it may be named fun learning, i.e. the way how learning is made enjoyable (Packer and Ballantyne 2004).

Concerning on the early stage of learning for children that should be conveyed in interesting method, the use of 3-D modeling is considered. In her book of Techniques for Teaching Young Children, MacNaughton (2009) introduces the use of modeling in gaining effectiveness of conveying knowledge. The model discussed in this paper is a real three dimensional of mockups. The use of building mockups is well-known in the school of architecture and interior design. It is the easiest way to assist both students and lecturer to have complete understanding on how design is proposed. Professionals also use mockups to convey their design close to reality for their clients to easily absorb the design concept. For children mockups made from colorful material are interesting objects. Making mockups as long as using easy material to design any shapes is considered attracting for children.

Earlier research which proved that children are excellent agent of change has encouraged this study to also empowering children. Within all those research, the effects of change delivered by children was not immediate. So as in this research, a real effect of community behavioral change toward provision of private OS is not reported. This paper will only report whether the children fully absorb the taught knowledge, which was shown by their mockups. Learning without mockups as long as it is conveyed in an interesting method such as, storytelling, watching movies, singing together, etc may also be fruitful. However, the authors believe that in this case, using mockups is a better way for transferring knowledge. The positive side of mockups is: a real 3-D model, the making is fun since children are freed to create their ideas, finished mockups may be kept as souvenirs either by student, group, class or schools. During the process of making mockups children learn on how to convey their idea, accommodate other ideas, and present all the combination in one mockup. This may mean that they also learn on how to conduct discussion and how to be fair to colleague's opinions.

The program was delivered by architecture lecturers who were plotted as guest teachers for the visited schools. This was considered as the first fun factor, when students meet new comer teachers. Second, brief knowledge on building, architecture, and healthy house with sufficient private OS was conveyed to the students. Pictures were also shown for students to easily absorb the subject (Fig. 3). Lecturing was given as short as 15 minutes so as not to make them bored. Then couple of minutes was allocated for them to absorb the subject and continued by dividing children into small groups consist of 3 to 4 students. They were freed to select group members so as to create cohesive group during constructing mockups (Fig.4).



Fig.3. A brief knowledge on the importance of private OS and healthy house was taught at the beginning of the program.
Source: authors

Thirdly, each group was assigned to construct a mockup of healthy house. The mockup should be built refers to standard of healthy house as explained previously, i.e. possesses sufficient private OS, and employs natural ventilation and day lighting. For easiness of mockups construction and creating cheerful learning process, play-dough was selected as the main material. Play-dough is colorful, soft and flexible to be shaped within minutes. This is suitable for a learning program that only be conducted for a couple of hours. Play-dough also easy and safe to be shaped as it does not require glues or cutters. Used play-dough is also easily to be reused either by students themselves for further playing at school or with siblings at home. In addition to play-dough as main material, other objects were also provided, such as thick papers for mock up's base, tooth sticks, straws, ice-cream sticks, and colored origami papers. The children prepare scissors, paper glue, and ruler. Approximately 60 minutes were allocated to finish the mockups task. At the end, the best mockup was selected in each class. Before a gift was awarded to the best group, a short evaluation was conducted. Children were informed why one was the best mockups. Followed by evaluation for all mockups regarding the positive and negative aspect each, so as children might fully absorb the content of the program and keep it in their mind during their upbringing until they are ready to have their own house to implement it.



Fig.4. Mock-ups constructing among students
Source: authors

Result and Discussion

The fun learning program has been conducted in 9 schools in Surabaya and Sidoarjo, Indonesia. Three elementary schools and 6 junior high schools were involved. Overall, there were 767 students joined this program so far (Table 1). The program was conducted simultaneously from one school to another in a schedule that matched to each school formal program. Most schools suggest the program is conducted after mid exams, final exams, or during their extracurricular session. Number of students in each class was vary. It could be as little as 5 students, such as in Mutiara Bunda 2 and Pelangi Kristus which conduct exclusive classes or as many as 38 students such as in Petra 4 for regular classes.

Table 1. Number of students involved in the fun-learning program

Schools	Number of Students	Number of Groups	Number of mock-ups		
			Well designed*	Very well designed**	Not proper ***
Mutiara Bunda 2 Elementary School	15	5	4	1	0
Mutiara Bunda 2 Junior High School	12	3	2	1	0
Angelus Custos 2 Junior High School	90	7	5	2	0
Pelangi Kristus Elementary School	7	2	1	1	0
Pelangi Kristus Junior High School	19	5	3	2	0
Kristen Petra 4 Junior High School	304	76	54	15	7
Kristen Petra 5 Junior High School	210	52	38	8	6
Mutiara Bunda 1 Elementary School	50	13	8	3	2
Mutiara Bunda 1 Junior High School	60	15	9	4	2
Sum	**767**	**178**	**124 (70%)**	**37 (20%)**	**17 (10%)**

* Possess OS, natural ventilation, day lighting
** Those of well designed with unique and aesthetic house and OS
*** Collapsed roofs or without vegetation

Number of students in the class did not significantly affect the learning process for constructing mockups, since both in regular and exclusive class they were grouped into 3 to 4 students. The friend they select to form a group has more impact on the mockups construction rather than overall number of students in a class. In so doing, there were classes with 2 groups only, and there were most classes with 8 to 10 groups. Of 767 participants, there were 178 groups formed in this program and 178 mockups have been constructed accordingly. Learning from what have

been conducted from class to class and from one school to another, this study found that in majority, students were eager to contributing in constructing mockups. This means that using play-dough was entertaining for them and that constructing mockups is also interesting. Ten percent of the groups (approx. 18 groups) were starting the construction with sketching their idea on a piece of paper, then discussing the role of each group member on what part of the house to be constructed. The whole discussion in the class was so alive, sometimes they were shouting one to each other. Even there was a time when the discussion was ended up with a member cried, means his or her idea was not accommodated by the group.

The figures appear in Table 1, might not fully supply figures for deep discussion. From here the authors realize that this study is not a quantitative study solely, but more a combination between quantitative and qualitative research. Not all of the findings could be represented in numeric. There was a lot more description to be presented in order to describe the findings. Although the total mockups constructed could be calculated, authors might only drew conclusion regarding the visible issue, such as mockups quality, but not of the process of constructing mockups, which rich of story. Mockups could not be grouped into ones by junior high school and ones by elementary school. It also could not be categorized that junior high school's mockups were better than those of elementary school ones. All seemed similar. In many classes, the junior high school students seemed very happy of playing with play dough as they have not play with it for a long time after they were graduated from kindergarten. However their overjoyed brought a slightly not serious atmosphere in the class, as they made fun of the dough and forget to construct mockups. Since mockups were similar in quality, judgment on the mockups was not grouped for 2 levels of schools as is presented by Table 1. Judgment on mockups was conducted with the following parameters:

1. Possess sufficient OS (at least 50% of the given site; in this case is the green paper, as seen on Fig. 5; remains as open space).
2. Design of the open space consists of vegetation (ground covers, bushes, shrubs, or trees).
3. Design of the house consists of opening apertures for day lighting and natural ventilation.
4. Design of overall house and open space is unique and aesthetic.

At the first stage, judgment was conducted for first parameter only. This study ensured that from 178 constructed mock-ups, all were built with sufficient private OS (100%). Since the play dough was prepared more than sufficient for each group, which allow them to create full house on site, they did not do this. This means that students have absorbed the instruction. Those who complied with parameters 1, 2 and, 3 were scored as “well designed”. Last those who complied with all parameters were scored as “very well designed”. There were also 10% of mockups which not properly designed, such as complied with parameters number 1 but with broken roofs or without vegetation.

Learning from the very alive discussion and the constructed mockups which in majority were “well designed”, this study witnessed that school children of this program have absorbed the knowledge well. By working in a group, they were taught that in reality in the future, a family shall accommodate each suggestion and preference of family member on how a healthy house shall be developed.







Fig.5. Examples of constructed mock-ups
Source: authors

Conclusion and Recommendation

This is a continuing long learning process and long program. What has been conducted is just the first period. This will be continued with the next and next periods. The direct impact of this learning process is not yet visible. At this stage we may only come to conclusion that the students absorb the knowledge well, which shown by their mockups and the process of constructing mockups. A significant conclusion drawn from this program is that 100% of participants construct the mockups with sufficient private OS as was taught. Only 10% of

mockups were designed not properly, but this was not dealing with OS issue, this was mostly regarding with construction issue of using play dough as roofing material which might not well constructed and the oblivion of providing vegetation. In overall 90% mockups were complied with the scoring parameters, which at least proved that they absorb the taught knowledge fully.

What will be seen in the long future is not part of this research. But authors believe that this program at least elevate children position from understand a little into deeply understand the issue. Using fun learning method we may expect that not only they absorb the knowledge well but it will become their long term memory (Ranpura, 2000). Not only that fun learning are more memorable than ordinary learning (Ranpura, 2000), but the program that encourages children to enter the cognitive level (by receiving a taught knowledge at the beginning of the program), affective level (by delivering opinion and conducting discussion during preparation of making mockups) up to psychomotor level (by constructing mockups) has develop children to easier build their long term memories.

Further we conclude that with fun learning and practical method, we may prepare children to be future change agent in enhancing private OS within house-lots in Indonesian cities. At the end, it is concluded that fun learning method specific to this study was efficient to be conducted, using the following aspects: new comer teachers, short and full of pictures teaching, making mockups uses play full material such as play-dough, and competition for the best mockups. We also learn that discussion in a group of 3 to 4 students may not effective and that one or two member's idea may not be accommodated which caused a quarrel within group.

In this study, data was gained only by observing the children and the mockups, which may cause bias in the conclusion stage. In so doing, a more specific data collecting regarding immediate response of children is recommended to support the observation. A survey to interviewing children' opinion after the program is suggested rather than filling a questionnaire, because filling questionnaire is not easy for school age children that may also cause bias conclusion. The use of play-dough may be combined with another hard material for roofing such as thick paper, in order to eliminate roofing construction problem during making mockups.

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References

Groenewegen, PP., et al. (2006) 'Vitamin G: effects of green space on health, well-being, and social safety', BMC Public Health, vol. 6, p. 149.

Kaplan, R. (2001) "The nature of the view from home: psychological benefits", Environment & Behavior, vol. 33**,** pp. 507-542.

Lacy, J. (1990) "An Examination of Market Appreciation for Clustered Housing with Permanent Open Space", University of Massachusetts–Amherst, Department of Landscape Architecture and Regional Planning Working Paper, Avalable: http://www-unix.oit.umass.edu/~ruralma/ LacyMarket.html.

MacNaughton, G., & Williams, G. (2009) "Techniques for teaching young children. Choices in theory and practice", 3rd ed. Frenchs Forest NSW: Pearson Prentice Hall.

McConnell, V. and M. Walls. (2005) "the Value of Open Space: Evidence from Studies of Non-market Benefits", Research Report Resources for the Future Washington DC. Available:http://www.rff.org

Mediastika, (2014) "Trend on the Absence of Private open space in Several Contiguous Housing in Sidoarjo, Indonesia", International Journal of Engineering and Technology, Vol.7, No.2, pp: 139-144.

Mediastika, CE, et al (2014) "Pembelajaran terhadap Pentingnya Keberadaan Ruang Terbuka Hijau (RTH) Bagi Siswa Sekolah Dasar (SD) dan Sekolah Menengah Pertama (SMP)", Internal Service Learning Program Report of Petra Christian University.

Singhal, A. & Rogers, E. M. (1999) Entertainment-education: a communication strategy for social change. Mahwah, NJ: Lawrence Erlbaum Associates.

Stuhmcke, Sharon Marie (2012) "Children as Change Agents for Sustainability: An Action Research Case Study in a Kindergarten", Unpublished Dissertation of Doctor of Education, Queensland University of Technology.

Ranpura, Ashish (2000) "How We Remember, and Why We Forget". Available http:// brainconnection.brainhq.com/2013/03/12/how-we-remember-and-why-we-forget/

W. Onyango-Ouma, J. Aagaard-Hansen, B.B. Jensen (2005) "the Potential of Schoolchildren as Health Change Agents in Rural Western Kenya", Social Science & Medicine, Vol. 61, Issue 8, pp: 1711-1722.

Digital Archiving of Architectural Heritage

Human Esmaeili*, Peter Charles Woods
Faculty of Creative Multimedia, Multimedia University, Cyberjaya
Harold Thwaites, Khairul Hazrin bin Hashim
Centre for Creative Content and Digital Innovation, University of Malaya, Kuala Lumpur

Abstract

Malaysia is experiencing disappearance of some of its post-independence architecture due to redevelopment. Historical buildings that could have been archived as national heritage have been demolished, tagged for demolition or currently are being demolished. Suleiman Courts, the first high-rise residential buildings in Kuala Lumpur were demolished in 1986. Pekeliling Flats, the first prefabricated low-cost housing in Malaysia and second high-rise residential buildings in Kuala Lumpur are now being demolished. Even the first drive-in restaurant in Malaysia is tagged for demolition regardless of the historical memories for its loyal fans. Other historical buildings are deteriorating in use without considering the importance of preservation. One example is the oldest geology department in Malaysia located in University of Malaya, Kuala Lumpur, which had a unique method of construction at the time it was built. The building is still in use but has been insensitively modified from its original state. In this situation digital archiving seems to be an alternative that at least keeps the records of a historical building before it is too late. It is important to clarify that digital archiving of architectural heritage is not solely because buildings are being demolished A project 'Malaysia Post-Independence Architecture Atlas' is being carried out by University of Malaya, in collaboration with Multimedia University. This project aims for available data to be digitally captured and archived for future purposes. In the first stage 30 target buildings (selected based on their cultural importance) were successfully archived. The main priority after digital capture was to categorize the collected data in a way that can be used by different audiences. The following is a summary of steps taken in this project by reviewing different aspects of digital archiving of architectural heritage.

Keywords: Architectural Heritage, Digital Archiving, Capturing, Virtual Reconstruction

Introduction

In developing countries insufficient attention is being paid to conservation of architectural heritage (Steinberg, 1996) which adds to the importance of digital archiving. Malaysia is one those countries with a fairly recent heritage building conservation system (Mohd-Isa, Zainal-Abidin & Hashim, 2011). Buildings were previously demolished without having any chance to be protected or at least be archived properly. Many cases from pre-Independence or post-Independence of Malaysia can be found. For example Bok House, an old mansion in Jalan Ampang, constructed during 1926-1929, was demolished on December 15, 2006, despite

*Corresponding Author: Human Esmaeili; E-mail- human.esmaeili@gmail.com

unsuccessful attempts by conservationists (The Star Online, December 15, 2006; The Star Online, September 6, 2006). Bok House is just an example of pre-Independence architecture of Malaysia. It was demolished soon after Malaysia National Heritage Act 2005 was gazetted (The Star Online, September 6, 2006).

Since this study covers the post-Independence architecture of Malaysia the main focus is on the buildings that were built after 1957. Malaya's independence was declared in 1957, which had an important role in the country's development (Chun and Noordin, 2005). The architecture of Malaysia was also influenced by Malaysia's independence. By the time independence was declared, more attention was being paid to development of commercial and administrative sectors, as well as considering the idea of a residential satellite town to support the capital city (Chun and Noordin, 2005).

Post-independence architecture of Malaysia is not that old but has experienced demolition after a relatively short life span. Suleiman Courts, the first high-rise apartment buildings in Kuala Lumpur, built in 1957 were demolished in 1986 after only 29 years (The Star Online, August 21, 2007). Tunku Abdul Rahman Flats also known as 'Pekeliling Flats', the first prefabricated low-cost housing in Malaysia (Thanoon et al., 2003), and second high-rise residential buildings in Kuala Lumpur, are under demolition which was started on January 2014 and is estimated to be finished by November 2015 (The Malay Mail Online, January 23, 2014). The first drive-in restaurant in Malaysia, located in Petaling Jaya (A&W PJ Drive-in) is tagged for demolition to open the space for two new office towers with a promised A&W outlet at ground floor (The Star Online, July 21, 2014). Looking at fans' comments shared on the Internet shows that they are disturbed by this decision.

Digital archiving of architectural heritage is the process of collecting and capturing available data for selected target buildings. Any existing, traceable and accessible information related to the building can be digitally archived. In addition to existing documents such as technical data, blue prints or old photos, a part of digital archiving deals with digital capturing and reconstruction techniques if needed. Digital capturing includes full coverage photography, videography, and 3D laser scan where possible. Reconstruction techniques such as digital drawing or 3D modelling (Pauwels et al., 2008) can be used for virtual reality purposes and also to provide a better understanding for users who do not have access to the real building.

This study is a part of the project 'Malaysia Post-Independence Architecture Atlas', a collaboration between 'Centre for Creative Content and Digital Innovation' (CCCDI), University of Malaya, Kuala Lumpur, Malaysia and 'Knowledge Management Centre', Multimedia University, Cyberjaya, Malaysia. In the first stage 30 buildings were fully covered and digitally archived. Main objectives followed by this project were to create a taxonomic database, which includes metadata to be provided through:

- Tracing and collecting existing historical records of the buildings
- Full coverage photography, videography, and 3D laser scan where applicable
- Digital reconstruction wherever needed

This database is presented in form of a digital atlas to be used by variety of target audience.

Digital Archiving of Architectural Heritage

Today's technology enables instant access to digitized information but the question is; what happens if information is available in different forms? The answer is; digitize it. But again the more important question appears; how to archive digitized information to be beneficial?
When it comes to archiving of cultural or historical heritage, it is difficult to answer the above question if not impossible (Dunne and Lerkenfeld, 2010). One first step to be taken before making any decision about digitization of a cultural heritage is to define its importance, purpose of digitization and prospective audiences.

> Organisations still don't appear to focus on the end users, the distribution or how the public can benefit from a new type of archive.
>
> Dunne and Lerkenfeld, 2010: 27

It is important to provide a clear view of cultural heritage for both public and specialists. This study tries to provide a better understanding of digital archiving of cultural heritage by focusing on Malaysia's post-independence architecture. Steps taken in creation of Malaysia's Post-independence Architecture Digital Atlas including instructional framework are reviewed.

How to start…?

At an early stage the main effort was around two selected targets with plenty of existing historical records, aiming to trace and collect accessible materials as much as possible. These are the National Mosque of Malaysia (Masjid Negara) and Dewan Tunku Canselor in University of Malaya, Kuala Lumpur, both gazetted as national heritage (Jabatan Warisan Negara). The reason for selecting these two building was extensive existing data in many different types and format but not categorized. The main idea was to work on a theoretical framework but with real data available in hand to produce a prototype. During the investigations many forms of information such as old photos, newspaper articles, technical drawings, etc., were collected. A well-designed interface and navigation system was needed as well. Graphical User Interface (GUI) and navigation system are two vital requirements to enable final users having easy access to all available data in this digital atlas in both online and offline versions. In addition to all requirements above another important factor was data transfer between research team members.

The First Prototype

After those two early selected targets were fully covered it was the time to compile everything together. Tree style taxonomy appeared to be safe to start with. Therefore each target was initially categorized by type and source of the collected data. This way both end-users and team members were taken into the account meaning; each team member could place collected materials into the database while considering and maintaining the end-users' needs. Main categories defined for each target were:

- Core Data Index
- Historical Records
- Digital Capturing
- Virtual Reconstruction
- References

Core Data Index is the standard guideline provided by International Council of Museums (ICOM) for documenting architectural heritage. It includes nearly 50 required and optional fields to be filled by archivists. It covers variety of information from name of the selected target and recording organization to specific details such as geographical information, coordinates, construction method, etc.

Core Data Index is more likely to be dependent on historical records. For example one section of Core Data Index is assigned to events such as opening ceremonies, renovations, incidents, etc., including date of the events. In some cases the only source to find such information, is to trace and find old documents like newspapers, magazines, etc. Historical records include any information related to the history of the selected target.

Digital Capturing includes full coverage photography, videography and in some cases 3D laser scan. Captured materials were later used as reference for virtual reconstruction. Pauwels et al. (2008), have cited that virtual reconstruction can be done by using visual materials as references.

References were included as well. For contents like scanned documents, photos and newspapers, prospective end-users have direct access within the atlas as permission was already obtained for these digitized materials. However the source of original document is included in references. Other sources such as books and journals are included only as references, which were used to collect information mostly for Core Data Index.

To bring more interactivity into the atlas, cross-referencing between related contents was introduced. This way connectivity between presented materials was maintained. Following this purpose, different types of Cross-referencing, mostly hyperlinks were used wherever needed.
Considering all parameters above, a data-management tool with following features was needed:

- Supporting any type of digitized material (audio, video, image and text)
- Ability to use internal and external links for cross-referencing
- Ability to embed small content as well as using external database for large file sizes
- Visualized tree style taxonomy

Requirements above led to using a web design method only as a tool for content management and transferring the collected data to the team in charge of final compilation of this digital atlas. Within different software available for this purpose, Adobe Muse was one of the best alternatives because it was easy to learn by all team members in a short time. Archiving and digital capturing teams could easily place their collected materials into the right place using Adobe Muse. As mentioned earlier it was important to manage collected materials at the first place. Fig. 1 is a back-end sample that shows tree style taxonomy of Adobe Muse which provides fast navigation between different categories at the same time for team members. Each category is marked by circle, linked to its related tab for better understanding. This advantage of Adobe Muse enables the archivists to have access to all categories at the same time, which speeds up the process. Categories are explained in Fig.2 and Fig. 3.

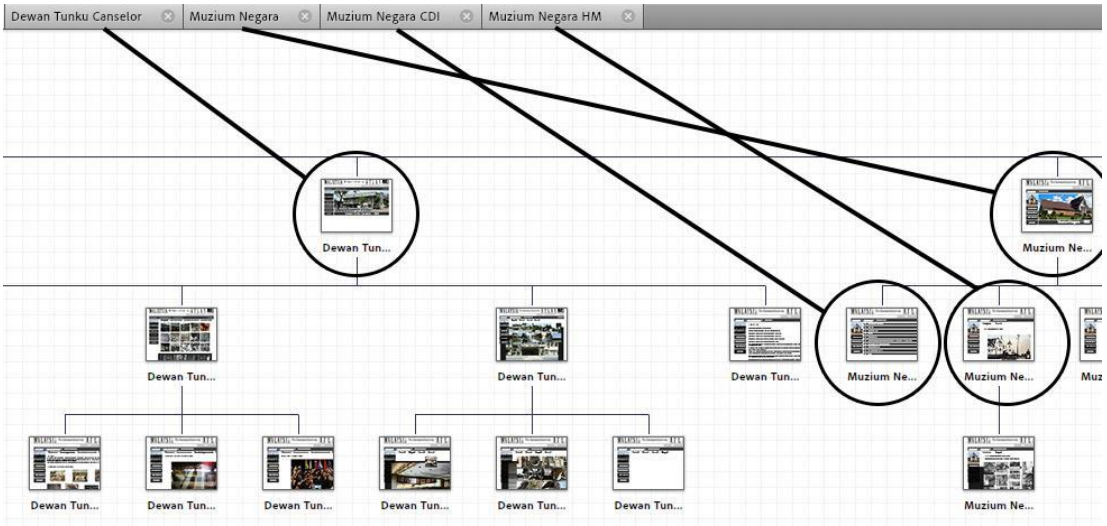


Fig. 1: Adobe Muse tree style taxonomy
Source: Authors

Just like any other tool Adobe Muse had its own limitations. One of the Major challenges was speeding up the process by letting all team members work at different pages of atlas, and at the same time being able to observe the last modifications done by other members without interruption. To reach to this goal the backbone of database was initially established by one of the team members aiming to maintain everything under the parent directory to avoid any missing hyperlink while moving the database to another server. Fig. 2 shows a theoretical framework which was initially designed before the database was created.

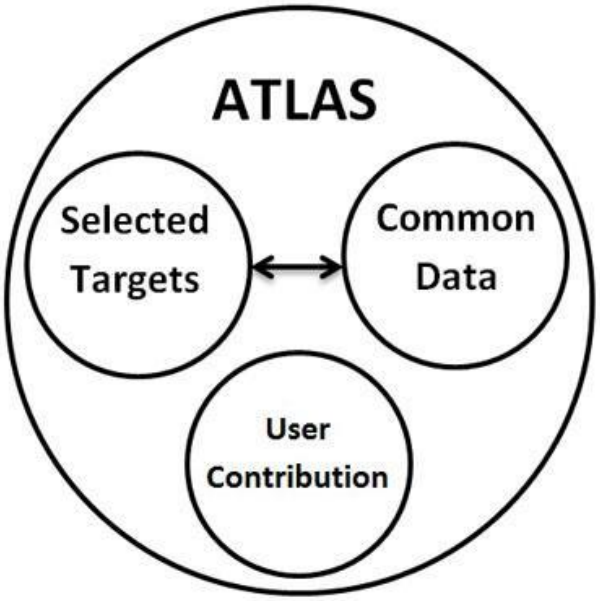


Fig. 2: Theoretical framework of the digital atlas
Source: Authors

As mentioned earlier 30 targets were selected at the first stage, considering their importance. Therefore in Fig. 2, the 'Selected Targets' was divided into 30 categories. Fig. 3 shows an example called 'Target A' including its first layer categories.

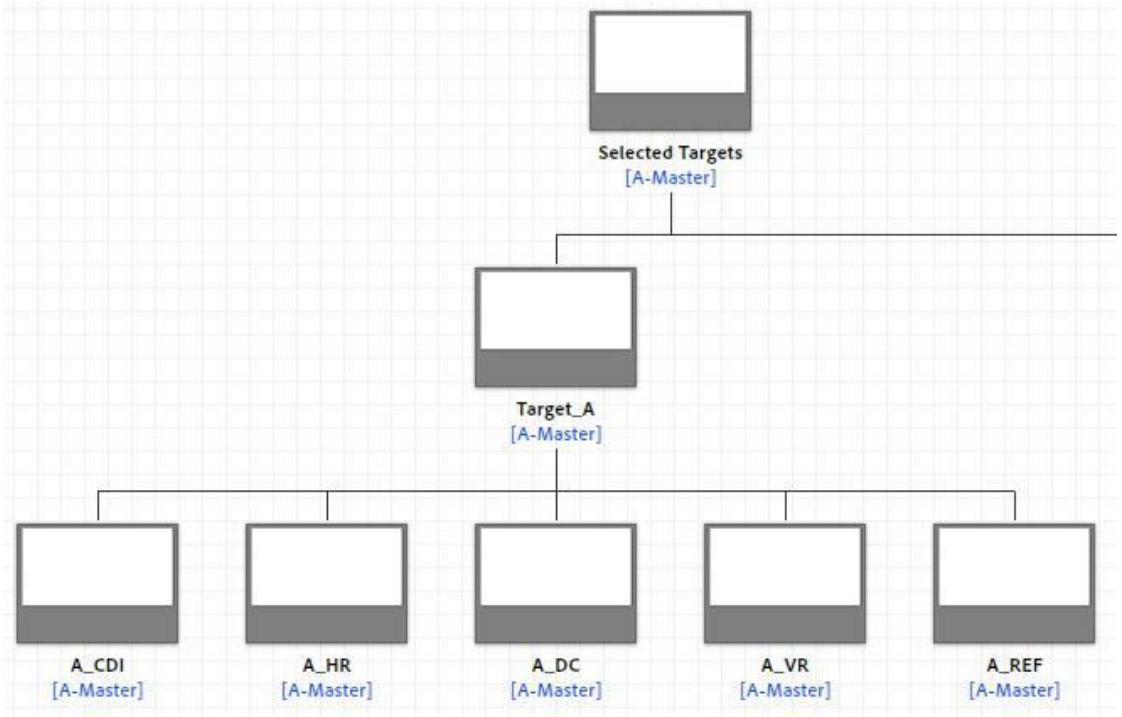


Fig. 3: Target_A's first layer categories
Source: Authors

In Fig. 3, A_CDI (Core Data Index for Target A), A_HR (Historical Records for target A), and A_REF (References Used for CDI and HR of Target A) were covered by archiving team. A_DC (Digital Capturing of Target A) was done by capturing team. A_VR (Virtual Reconstruction of target A) was delivered by visualization artists. Each category was divided to subcategories. For example DC was divided into Photography and Videography. Then each one of these two categories was divided into Exterior, Interior, and Details. Also 3D laser scan is a part of the digital capturing.

During the investigation it was realised that some of the selected targets have similarities like same architect, same contractor, same person in charge of the events like opening, etc. To avoid redundancy another main category (Fig. 2, Common Data) was added into the atlas containing Architects, Contractors, Persons, etc. Fig. 4 shows cross referencing between Selected Targets and Common Data, where Arch1 is the architect of targets A1 and A3 while Arch2 is the architect of A2.

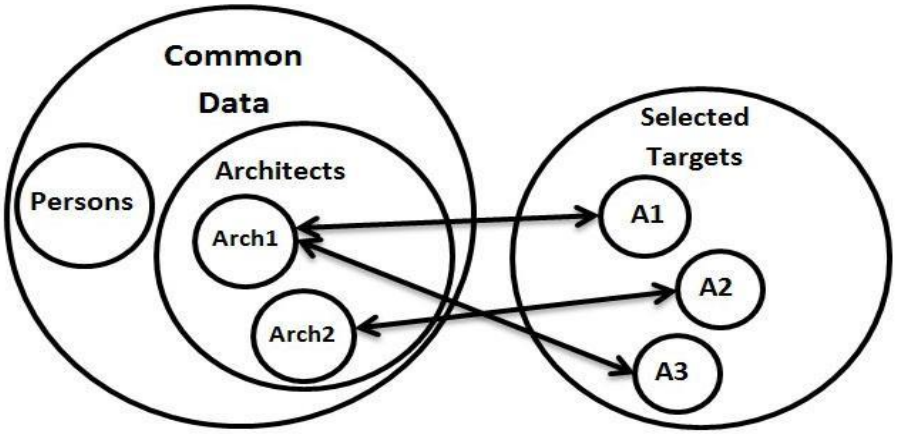


Fig. 4: Cross-referencing between different categories Source: Authors

As mentioned earlier, these types of cross-referencing enable the end-users to have more interaction while searching for desired information. A category named 'User Contribution' is shown in Fig. 2. This category works independently without cross-referencing. This is where future users are able to contribute any historical record related to selected targets. For example any historical photo taken by someone many years ago can be uploaded. These kinds of material will be reviewed by administrators to be placed into the atlas if relevant. Also an online forum will be available for discussion where users can share their ideas. To summarize the study figures 5 to 9, show some of the steps taken during making of this digital atlas.

Fig. 5 shows the first drive-in restaurant in Malaysia which now is tagged for demolition.



Fig. 5: Photo taken by digital capturing team
Source: Authors

An Immediate action took place to reconstruct this historical building in virtual reality. Figures 6 and 7 show the virtual reconstruction process under progress.

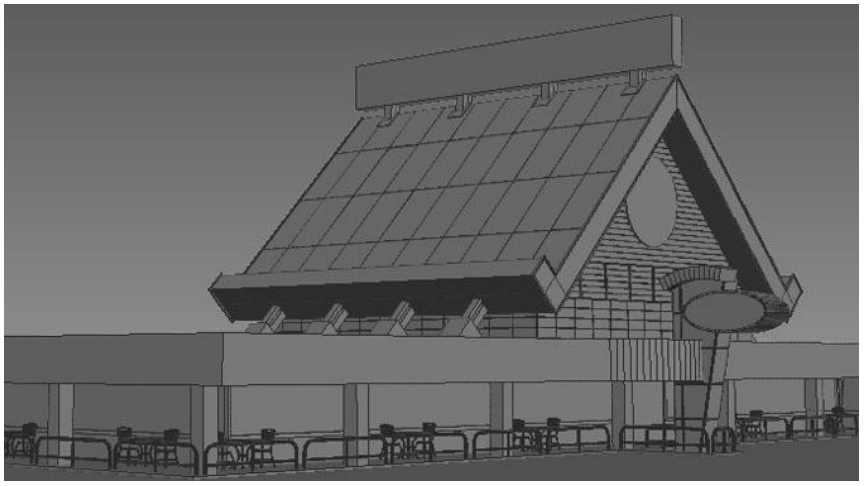


Fig. 6: Polygon model of A&W made by visualization team
Source: Authors



Fig. 7: Sample rendered image of A&W made by visualization team
Source: Authors

In some cases selected targets were heavily surrounded by buildings, landscapes, etc., which caused difficulties during photography and videography. To deal with this issue a drone was used for full coverage aerial videography. Combination of computer-generated 3D model and aerial videos enables the end-users to have a better understanding of the entire structure. Fig. 8 shows aerial views of Rifle Range Flats, Penang, Malaysia from two different angles, taken by digital capturing team.



Fig. 8: Aerial videography using a drone by digital capturing team
Source: Authors

One of the selected targets for this project was Malaysia's National Monument known as Tugu Negara. Fig. 9 shows real photo and 3D laser scan of the National Monument.



Fig. 9: Tugu Negara (left side) and its 3D laser scan (right side)
Source: Authors

Usage of 3D laser scanner was limited to the site conditions such as available space between scanner and the target, available angels, etc. For National Monument full 3D laser scanning was performed due to availability of requirements above.

For final compilation of the atlas Search Engine Optimization (SEO) was considered to provide instant access for end-users.

Conclusion

> An important aspect of precedence is the record of the building. This provenance is necessary as the building may disappear. One of the most significant buildings in the USA, by its most important architect, Frank Lloyd Wright, the Larkin Building in Buffalo, was demolished forty years ago and all that is left are a few grainy photographs and plans. Without the record future generations can only speculate. We are unclear as to the original purpose of the Pantheon in Rome, yet it must have been extremely important for a building of its size to be constructed. Beyond this, provenance is crucial in promoting ideas, and has become increasingly so since the 19th century. Architects have formed cliques, frequently associated with ideas and movements in art and philosophy. Promotion of a viewpoint demands examples, and examples where the message is clearly enunciated.
>
> (Woods, 2000)

This study reviewed multiple aspects of digital archiving of architectural heritage. Data collection was done through different methods with focusing on post-independence architecture of Malaysia as the target area. Many objectives were followed by this project. Historical buildings exposed to risk of disappearance were fully digitized as an immediate action. Full digitization achieved through digital capturing, virtual reconstruction (3D modelling/visualization), and

collecting almost any historical record which was traceable and accessible. Also a new framework was introduced into digital archiving of cultural heritage, which is somehow practical rather than theoretical. Authors believe method presented here covers variety of digital archiving aspects in the field of cultural and historical heritage. It can be beneficial in different ways for variety of target audience such as architecture schools, historians, researchers, etc. 3D models can be presented in virtual reality environment to be used by virtual museums or virtual tourists as well as being printed (using 3D printers) for exhibition purposes. However authors do not claim the method presented in this study is the answer to all questions or ambiguities but at least brings more clarity to this field by looking at multiple aspects of the process especially by defining objectives of digital archiving of cultural heritage at earlier stages.

Although software, applications and tools used for this project were not specifically designed for this purpose, the desired objectives were successfully delivered. For future development, in the next stage it is planned to design an application to be used specifically for the purpose of digital archiving of cultural heritage. To our knowledge existing applications are limited to specific tasks. The new application will be more multidimensional rather than being limited to specific areas. Both, archiving team and end-users will be taken into the account.

Currently, this digital atlas is operating on an offline database, waiting for required steps regarding the patenting, copyrights and pending permissions to be taken before getting online. However authors can be contacted via email for more information.

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References

Chun, H. K., & Noordin, N. M. (2005). An influence of colonial architecture to building styles and motifs in colonial cities in Malaysia. In 8th International Conference of the Asian Planning Schools Association.

Dunne, S., & Lerkenfeld, M. (2010, June). Digital archiving: a call for user inspired digital archiving of cultural heritage. In Proceedings of the 8th international interactive conference on Interactive TV&Video (pp. 27-30). ACM.

Jabatan Warisan Negara. Heritage Register > National Heritage Register List > Site > Building, viewed 5 September 2014, http://www.heritage.gov.my/index.php/en/heritage-register/national-heritage-register-list/site/building.

Mohd-Isa, A. F., Zainal-Abidin, Z., & Hashim, A. E. (2011). Built heritage maintenance: a Malaysian perspectives. Procedia Engineering, vol. 20, pp. 213-221.

Pauwels, P., Verstraeten, R., De Meyer, R., & Van Campenhout, J. (2008). Architectural Information Modelling for Virtual Heritage Application. In International Conference on Virtual Systems and Multimedia (VSMM) (pp. 18-23). Archaeolingua.

Steinberg, F. (1996). Conservation and rehabilitation of urban heritage in developing countries. Habitat International, vol. 20, no. 3, pp. 463-475.

Thanoon, W. A., Peng, L. W., Kadir, M. R. A., Jaafar, M. S., & Salit, M. S. (2003, September). The Experiences of Malaysia and other countries in industrialised building system. In Proceeding of International Conference on Industrialised Building Systems, Sep (pp. 10-11).

The International Council of Museums (ICOM). Core Data Index to Historic Buildings and Monuments of the Architectural Heritage, viewed 7 August 2014 . http://archives.icom.museum/objectid/heritage/core.html

The Malay Mail Online, By Danial Dzulkifly (January 23, 2014). Pekeliling flats make way, viewed 20 July 2014, http://www.themalaymailonline.com/malaysia/article/pekeliling-flats-make-way.

The Star Online, (September 6, 2006). The story of Bok House, viewed 5 August 2014, http://www.thestar.com.my/story/?file=%2F2006%2F9%2F6%2Ffocus%2F15343778&sec=focus

The Star Online, (December 15, 2006). Bok House on Jln Ampang demolished, viewed 5 August 2014, http://www.thestar.com.my/story/?file=%2f2006%2f12%2f15%2fnation%2f20061215210439&sec=nation

The Star Online, By Charles Fernandez (August 21, 2007). 200 former residents of Suleiman Court reminisce at gathering, viewed 20 July 2014, http://www.thestar.com.my/metro/story.asp?file=/2007/8/21/central/18575709&sec=central.

The Star Online, Dina Murad (July 21, 2014). Iconic A&W outlet in PJ to be demolished, viewed 21 July 2014, http://www.thestar.com.my/News/Nation/2014/07/21/fast-food-building-set-to-be-demolished

Woods, P.C., (2000). Some Architecturally Important Buildings in the University of Malaya Campus, synopsis, Inaugural Professorial Lecture, University of Malaya.

Re-Thinking A City Born Housing : For The RMG Workers

N.M. Esa, Khan*
Guest faculty in University of Asia pacific (UAP), Pakistan

Abstract

Most garment workers in Dhaka city live in inhuman conditions in the informal settlements under poverty and in a very unhealthy and miserable condition; and within this filthy situation they are paying almost half of their earnings as rent. These are the people who contribute to the success of garment economy in Bangladesh. Yet their role in the economy and their rights are overlooked by the government and the garment owners. Among these, habitation and lack of domestic spaces is one of the major concern. A widespread negligence towards the RMG worker's housing need inhibit the prospect of finding a viable solution to this problem. Public housing schemes hardly cater for the RMG workers, and its limited provisions are grossly inadequate. Given this background, this paper has conducted a research work on the existing habitation need of the RMG workers and at the end of the study, some initial recommendations have been placed to improve the present conditions of the garment worker's housing and their situation related with habitation, domestic spaces and spaces surrounding their living areas.

Keywords: Dhaka, RMG, housing, habitation, domestic spaces, urbanization

Introduction

RMG exports have experienced extraordinarily high rates of growth, along with the continual entry of new suppliers. From the 1960s, there has been an unprecedented relocation of world manufacturing capacity towards a selection of developing countries, with the export of RMG playing a particularly important role. Bangladesh has observed a remarkable growth in the RMG industry since its beginning in late 1970s. More than 3.2 million people are working in this sector and about 5000 garments factories are scattered across the country[1]. 85 percent of the labor force is women, mostly migrants, and in its early days, the industry employed some 60,000 child workers. Women form over 90 percent of production workers in the Ready-Made Garment (RMG) factories, which constitutes about 70 percent of the total female employment in the country's manufacturing sector. This booming growth of Garment industry is one of the main cause of a rapid urbanization in Bangladesh and it creates tremendous pressure on housing situation among the garment workers

*Corresponding Author: N.M. Esa Khan, email: esaabrar@yahoo.com

and there is no direction and guideline regarding the development housing commensurate with the RMG industries.

Due to low wages by the Ready-made garment (RMG) workers and high tenancy rent in the nearby location of their working industries, they are housed in informal settlement along with other migrant workers in the city. The situation of the RMG worker's housing in Dhaka is similar in many ways to those of other cities in developing countries. There is a clear pattern of slum and squatter settlements based on the garment industries, scattered all over the city. These slums are characterized by high-density living, unsanitary situation, and unhygienic environment lacking basic services and amenities, high rate of illiteracy, environmental and psychological degradation, and precarious health situation. However, Bangladesh has not shown any inclination towards improving their environment. The existing housing crisis can be resolved to some extent through some innovative design intervention.

Methodology used in the study

The data set for this study were collected both from primary and secondary sources. The primary sources include data collected through semi-structure questionnaire. Moreover, group discussion and personal observation were also used to synergize the study objectives.Some of the slums (Kunipara, Korail, and Duaripara) in Dhaka were a sampling basis for the research and design proposition. The research also used secondary data with particular references from internet and various publications for background analysis.

Literature Review

Empirical studies on RMG workers cover a wide-range of issues, however very few literature were found that had delved into the habitation issues. Zohir and Paul-Majumder (1996), Paul-Majumder and Begum (2000) and Zohir (2000) have done extensive research on the housing of garment workers. Their studies show that accommodation in the city at present is not adequate for present garment workers. Absar (2002) investigated on the Women Garment Workers in Bangladesh: the insecurity women face in an urban setting without proper affordable housing, transportation facilities and any form of social security. Bhuiyan (2012) explored the present socio-economic status of the garments workers from Rampura and Badda areas of Dhaka City.

Objectives

The objective of this study was to investigate on the existing habitation needs of the RMG workers and based on that findings, this study intended to propose some design interventions.

RMG Industries in Dhaka

80 percent of the garment industry, which accounts for 80 percent of all exports and employs about two million people in the country, is located in Dhaka. The draw of Dhaka is no surprise – it is a dynamic city and has attracted substantial industrial investments, particularly in the RMG industry, which has created demand for workers and services. An estimated 500,000workers are employed in the RMG sector in Dhaka. Most of these workers are women, who provide critical support to their

families.[2]This would indicate potential for increased labor force participation with adequate day care options for mothers with young children.

RMG worker's habitation in Dhaka

High land value and the reluctance and negligence of city development authorities to provide land and/or housing and associated services leave the RMG workers with no choice but to live in informal settlement which are within their affordability, beyond the purview of the formal land market, and possess the least risk of eviction. They almost pay the same amount of money for per square feet as the middle-income people are paying, however are living without amenities and any kind of facilities which they should get.

This paper has discussed the habitation in the slums as a reference to the housing of the RMG workers as they live in the slum areas. Following problems were found during the investigation in the accommodation of the garments workers:

Location: The choice of housing is determined, to a greater content, by close proximity to work place and travel cost. Poor and insufficient public transport system is very poor encourages the RMG workers to live near their work places.

Dwelling units**:** Each dwelling unit lacks the required spaces for a family to live with their family members. Average room size is 10 feetX12 feet with 5-6 people in average living in one unit. There are variations in residence types according to job categories. The sewing and finishing helpers live mostly with family members or relatives.[3]The dwellings are laid in very irregular pattern and no proper orientation. House to house gap varies in different spaces and the passageways are filled with dark. Street pattern are also very chaotic and disorganized; there is very little connection with the surrounding major road.

Housing materials: These houses are made of low cost housing materials like CI sheet, bamboo, straw and polythene and are highly vulnerable during the rainy season and susceptible to fire hazard. Roofs are made of corrugated iron sheet or other thatching material.

Shared/common space: RMG workers are living in the slums with people from different professions such as rickshaw pullers, drivers, and hawkers even the drug smugglers, prostitutes. The majority of households have no kitchen or cooking facility and they cook either in a shared room or in open spaces. There is no provision of day care center or any space for the recreation. Children seem to roam around in the filthy environment with other children of different ages as their parents have to leave them alone at home. There is also a lack of open space and vegetation.

[2]Baker, J. L. (2007) Dhaka: Improving living conditions for the urban poor. World Bank.

[3]Zohir, S C and P Paul-Majumder (1996): 'The Garment Workers in Bangladesh: Economic. Social and Health Conditions', BIDS

Water: Most slum dwellers get tap water mainly through informal sources; some depend on public water supply points outside the slum. Some use tube wells, each serving 100-200 families. Where potable water is not available the dwellers use unclean water from various sources including polluted lakes.

Sanitation: The slums have temporary latrines, generally shared by multiple families. There is no access to municipal waste disposal facilities, hence they dispose their waste generally to the marshy land adjacent to their settlements, which also pose serious challenges to the living environment.

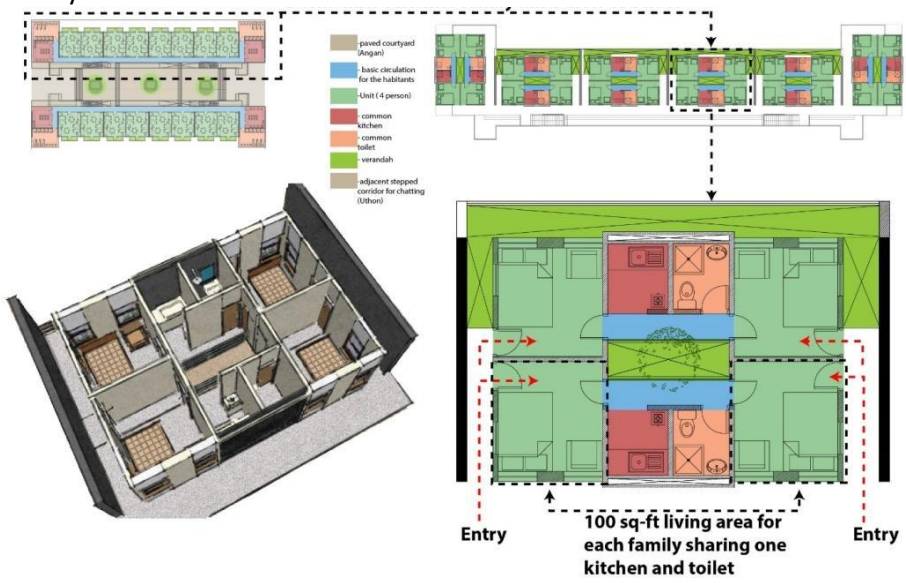
Electricity: Very few slum houses have access to electricity and others have an illegal connection. Some burn kerosene lamp or hurricane as a substitute of electricity.

Gas**:** In most cases when they don't have municipal gas or gas services, they cook with fuel wood and generally people share cookers.

Environment: The place where the garments workers live is somewhat grimy. Most of their houses are found next to the city garbage or along the putrid area by the big canal, drain or big ditches. Sound pollution for which the environment is not fit to live in normal life.

Design Proposition

Based on the above mention habitation needs, a prototypic four-storey row housing has been proposed for the increasing number of RMG workers in Dhaka city. The housing is proposed with full amenities, hospital, school, market, etc. It was specially taken care in this proposition that the internal relationship and how it grows through spaces and its spatiality. The housing comprised of both dormitories and family units. Shared toilets and kitchen facilities are provided at both corners for easier accessibility. The corridor and the linear stairways is provided next to an open courtyard for natural lighting and better visibility. The top floors are also connected to the nature through vertical courtyards. Solar panels, rain gardens, storm and gray water treatment facilities are proposed to promote renewable energies, as the sun and rain are readily available throughout the year in Dhaka. Sustainable green building materials and technologies are recommended as well to reduce dependency on fossil fuel.



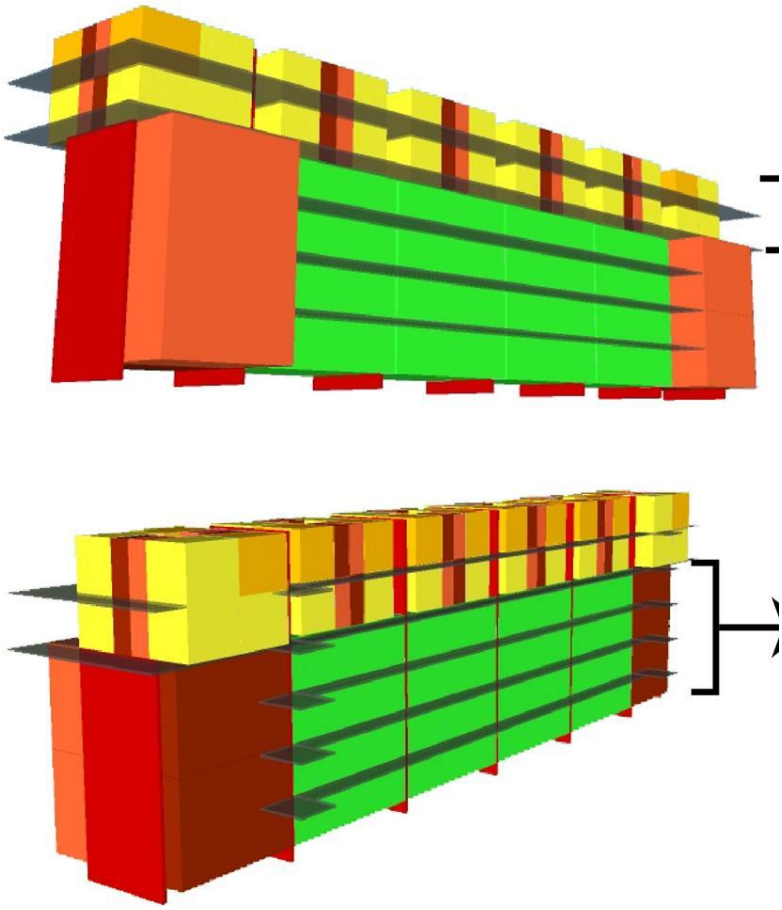


Fig 1. Three floors with dorm units (ground-2nd) and the dorm units are converted into family units at after 2nd floor

The design propositions intended to include the traditional rural housing characteristics within the low-cost mass housing for the RMG workers in densely populated Dhaka city. Most of the RMG workers belong to the migrant population, who came to the city in search of work and for better living opportunities. Prior to their migration in the city, they used to live in an open place with a friendly gathering with a good connection and bondage with each other. The design was concentrated in achieving the open space concept; five gathering spaces are divided into compact spaces with necessary amenities included:

1. *Uthon*: extension of corridor steps for recreational activities such as seating and chatting. An individual or a group of people can sit in the quiet space, uninterrupted by those walking on the corridor.

2. *Angan*: children's play area and festival celebration space (Eid, Puja, Bengali New Year and others. These are the open paved courtyards between buildings, stepped down from the "Uthon". This has been proposed for the children's play because of the indoor setting and safety as there would be eyes in the surrounding areas.



Fig 2. Children playing in the Angan (Left) and Women Leisure activities at Angan (Right)

3. Prangon: backyard with trees and shrubs. Urban farming was proposed for this area. Workers or their family can use these spaces for growing fresh fruits and vegetables and have an alternate source of earning. These harvests can also be served in the dwellers dining as well.
4. Boithokhana: Double heighted vertical courtyards between rooms at the upper floors for different amenities, from day care facilities to children's indoor play area. These spaces are essentially the common rooms for the dwellers.

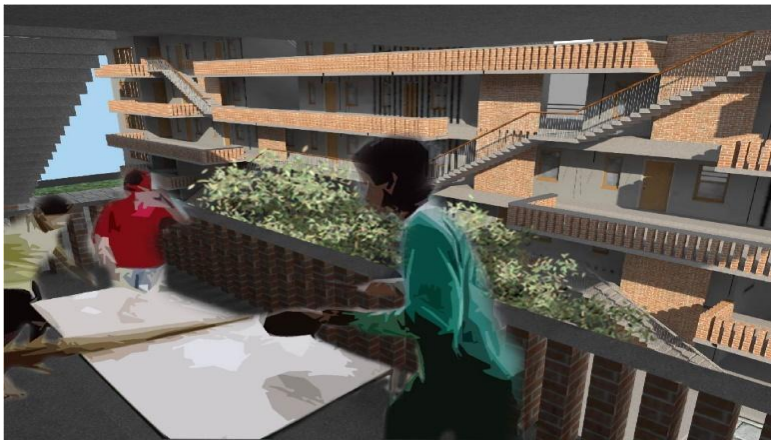


Fig 3. Children playing table tennis at Boithokhana

5. Prantor:: a large open to sky play field

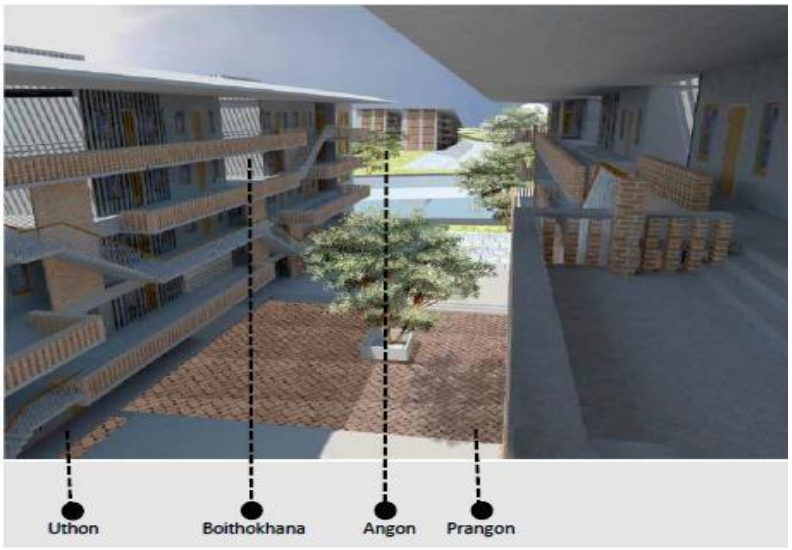


Fig 4. Open space segments

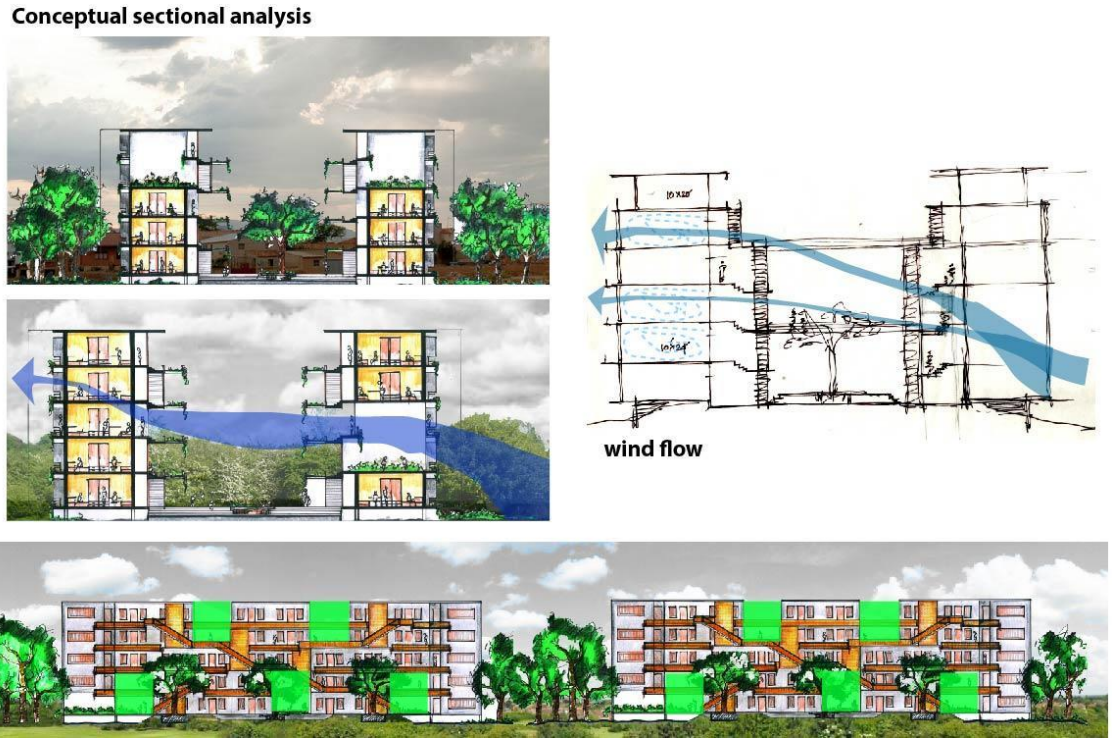


Fig 5. Sectional analysis

Conclusion

Housing is one the basic needs of human being and the RMG workers are derived of this right due to negligence by the public and our private sector. Every year millions of foreign currency earned by the Ready-made Garment sector and yet the workers contributing to this industry are living under penury without having any housing facilities. The following steps can be taken regarding the habitation needs of the RMG workers in Dhaka city:

- The public sector can take up schemes to provide low-cost core houses' sites and services schemes, walk-up row housing, tenement blocks, etc. to cater to the needs of the low-income group.
- Housing development in the public and private sector can conform to the development of physical and social infrastructure like, water supply, garbage disposal and sanitation, roads, electricity, gas, telephone, etc.
- Credit facilities can be extended to individuals and institutions remodeled to increase the housing stock as well as improve the quality of housing.
- More research is required to solve this housing and other related issues as soon as possible to hold the flow of the growing RMG development.

References

Absar, S. S. (2002). Women garment workers in Bangladesh. *Economic and Political Weekly*, 3012-3016.
BGMEA (2007) Directory of the Bangladesh Garments Manufacturers Association.
Harris, N., Bulbul, L., Mainuddin, K., Meng, K., Naguib, S., & Srinivas, S. (1999). Garment-making and urbanisation: an introductory study of four cases(Vol. 6). Urban Partnership Working Paper Series.
Hossain, H., Jahan, R. and Sobhan, S., 1993. No Better Option: Industrial Women Workers in Bangladesh, University Press Limited, Dhaka.
Zohir, S C and P Paul-Majumder (1996): 'The Garment Workers in Bangladesh: Economic. Social and Health Conditions', BIDS
Zohir, S C (2000). Intra-household Relations and Social Dynamics among Garment Workers in Dhaka City, paper presented at the National Seminar on Garment Industry in Bangladesh: Economic and Social Dimensions, Dhaka. January 21-22.

People Places: Attributes that enable a Convivial Walk Trail in Diyatha Uyana, Kotte, Sri Lanka

Ayodhya Jagodaarachchi, Amanda Rajapakse*
Department of Architecture, University of Moratuwa

Abstract

Introducing 'green walk-trails' to urban environments in Sri Lanka has become a popular intervention in the recent practice of urban development. People have embraced these trails as they fulfil the need for breathing-places/lungs associated with open green areas. In addition to beautification of the urban fabric, walk-trails serve a larger purpose of offering urban residents the opportunity to relax, rejuvenate and achieve mental and physical wellbeing. In order to fulfil such objectives walk-trails need to be 'convivial' places. Conviviality is an all-encompassing concept that emphasises the importance of fine grain, local nuances and adaptability that is the root of a more humane approach to urban development that encourages positive social interaction. Conviviality is 'place-specific' and based on an amalgamation of Geographical, Physical and Sensorial attributes.

The objective of the study was to explore key attributes that contribute towards enabling a convivial walk-trail in the specific context of "Diyatha Uyana", Sri Lanka. Based on the theoretical framework established to analyse conviviality, the analysis was 'User-centred' and 'Place-centred' to explore the qualitative aspects in depth. The main data gathering technique of the study was through narrative-mapping which incorporated cognitive maps supported by a narration. Data gathered were analysed via content-analysis in order to come-up with necessary interpretations.

It was found that the sensorial experiences were generated by the specific geographical and physical attributes, the vitality and dynamism in the way they combined and enabled unique micro contexts within the overall place. This enables strong visual and non-visual perceptions of the place. Such perceptions are key motivating entities that attract people to a public place, which is a decisive factor in the successful usage of public places.

Key words: conviviality, place-centered public spaces, green walk-trails

*Corresponding Author: Amanda Rajapakse; E-mail- amandaraj@gmail.com

Introduction - Convivial Public Space

The word 'conviviality' is accompanied by numerous positive interpretations such as pleasantness, warmth and cordiality. Conviviality is a much needed quality in the public realm, specifically in recreational public places, where people feel warmly welcomed, belonged and where memories are made and cherished. Spaces with these qualities are recognized as people's places. According to Shaftoe (2008, p. 05) without convivial spaces, cities, towns and villages would be mere accretions of buildings with no deliberate opportunities for casual encounters and positive interactions between friends or strangers.

Accessible green spaces in the urban context while providing relief to the urban environment have special meaning to people and their experiences. Shaftoe (2008, pp. 11-28) elaborates that such public spaces are meant for people to meet, access the green, celebrate and relax as 'sociable animals'. These places can function as breathing places or 'lungs' in cities and as important spaces for leisure, to experience the positive physical and mental health benefits by doing so.

The study was an attempt to explore key attributes that enable a convivial walk-trail in "Diyatha Uyana", a green public space which is the first contemporary attempt in the country to create a designed walk trail in the rapidly urbanising context of Kotte.

Principals and Underpinnings

Attributes that enable convivial green public spaces are wide and varied. Shaftoe (2008) expresses general attributes that contribute to successful public spaces and suggests that there is no single blueprint for a convivial space, but some common elements, which may be broadly categorized under the headings of Physical (including design and practical elements), Geographical (location), Sensorial (meaning how a space directly affects one or more of our five senses) Psychological (how the space affects our mind and spirit) and Managerial.

Considering the geographical attributes of Public places, aspects such as location, climate and topography fall under this category. The location of a particular place has a vital influence on its conviviality. The ambiance of a place can vary depending on the geographical location such as in coastal, hilly areas, with terrains, valleys, flat-land etc.

Climate of a context on the other hand determines the activities offered in a place. Shaftoe (2008, p. 60) notes that the 'micro-climate' of a certain place can be incorporated positively in order to create 'conviviality'.

Topography influences the conviviality of a place and has a strong impact on the perception of a place. [1]Layout, accessible routes, entry points and connections with the surroundings can be stated as the key factors under physical attributes of convivial places. The layout of a place acts as a catalyst of conviviality which determines its association with the surroundings and functions. It would be a fruitless effort no matter how exquisite and exotic the geographical location is, if a place could not be accessed easily. As Bently, Alcock, Murrain, McGlynn and

[1]The vegetation of a tropical context is very different from a savannah or a coniferous hill-side. Also, the vegetation of a context which goes through all four seasons will have a unique impact on its conviviality.

Smith (1985) argue, in order to become a responsive place, a place should be rich with **'**permeability' and only such places can be termed as 'places for people'.

Similarly, activities that take place within a context express the vitality and dynamism of a locality and attract and encourage people to experience the same. Considering the sensorial attributes of public places, according to Dovey (2010) they have a direct association with the experience and perception of a location and could strengthen or dilute the conviviality of the same depending on their positive or negative influences. Primarily it is about how people understand a place based on stimulations of their senses. The 'richness 'of a place is based on sense-experiences and when it comes to measuring the degree of responsiveness of a particular place, sense-experiences play a key role.

The interrelationship of place making and sense of a place of which the latter depends on stimulation of sensory cues and their impact on perceiving a particular place, is supported by Dovey (2009,) stating that sensation operates at a pre-reflective level, prior to cognition and meaning. Dovey (2009, p.25) also states that the encounter with a place is experienced before analysis can turn it into a proposition. Herrington (2009, p.114) elaborates on sensorial qualities of a landscape and states that sensorial experiences play a major role when it comes to perceiving a landscape three dimensionally. Furthermore, it is argued that landscapes should be intentionally designed in such a manner to communicate via a range of senses such as thermal comfort, smell, sound, taste and tactile sensation.

It is frequently stated that vision is the most dominant sense in terms of grasping information and probably the one most under our control. Shaftoe (2008, p.57) argues that when it comes to 'aesthetic qualities', both 'visual' and 'non-visual' attributes contribute to generate conviviality. Under 'Visual Richness' and 'Non-visual Richness' five senses are discussed namely, sense of vision, sense of smell, sense of sound, sense of touch and sense of movement. (Bentley, Alcock, Murrain, McGlynn, & Smith, 1985, pp. 89-98)

The potential of creating movement via the sense of smell can be quite convincing as some aromatic sources could attract or distract and change the course depending on personal biases. The sense of hearing could influence the image of a place to be positive or negative. As Shaftoe states "The delight of hearing the rustling of the wind through trees and the sound of birdsong is a welcome antidote to the urban cacophony dominated by traffic noise." (Shaftoe, 2008, p. 61) When it comes to the sense of touch, it is practically proven how natural elements such as wind and sun can stimulate our sense of touch and how it can generate the sense of comfort. The feeling of warmth or coolness caused by the micro-climate, with variations in shelter and shade can affect wind chill and the degree to which the warmth of the sun can penetrate. (Shaftoe, 2008, p. 58) Moreover, the sense of touch could be stimulated via different textures.

Sense of motion is experienced through a series of kinetic experiences related with speed such as walking, running, cycling etc. Venturi, Brown and Izenour, (1977) explain how a surrounding is perceived differently by a motorist from the perception of a pedestrian. Forsyth and Krizek (2011, pp. 531-549) argue that there is a significant importance of experiencing the surroundings while cycling, as the perception of a cyclist is quite different from a pedestrian, motorist or transit-user. This particular difference is created due to the impact of movement and speed. It is evident that there is a significant impact of speed on the sequence of perception of any context. In addition to these senses, Shaftoe (2008, p. 61) states that the sense of taste also has its implications on a place.

Moreover, psychological attributes of a place are mainly evolved around feelings of people and can be highly subjective. These attributes may depend on factors such as social status, gender, age, past experiences and personal biases.

Method of study

Based on the literature survey, a framework for defining conviviality in green public spaces could be specifiedas follows;

A. Geographical attributes

a. Location of the walk trail
b. Climatic aspects of the zone
c. Topography around the site (terrains, fauna, flora)

B. Physical attributes

a. Layout of the walk trail
b. Accessible routes and entry points
c. Visual and physical connections with the surroundings
d. Variety of activities and experiences

C. Sensorial attributes

a. Sense of vision:
- i. Natural elements and attractions that trigger progression or lingering (water, trees, terrains, animals)
- ii. Artificial objects that trigger progression or lingering
- iii. Activities and behaviour of people
- iv. Impact of natural and artificial lighting

b. Sense of touch:
- i. Natural stimulators of sense of touch (heat, wind)
- ii. Texture of horizontal boundaries of walk-trail (shade of trees, tents and huts, grass, sand, stones, pebbles, cement paving)
- iii. Texture of vertical boundaries of walk-trail (trees, walls, hedges)

c. Sense of movement:
- i. Impact of speed (variations of perception while resting, walking, running, skating and cycling)
- ii. Impact of activities or artificial elements (rowing, sailing, swimming)
- iii. Impact of movement of natural elements (wind, water, tree leaves)

d. Sense of sound:
- i. Sound of natural elements (water, wind, rustling of leaves, animals)
- ii. Sound of people
- iii. Sound of music
- iv. Sound of artificial elements

e. Sense of smell:
- i. Natural cues of smell (water, flowers, herbs)
- ii. Smell related to food items

f. Sense of taste:
- i. Food offered at the premises

The study is based on the sense perceptions of the place to derive the physical and geographical definitions that enable such perceptions of the locality[2]. It is a qualitative study which is user centered based on structured questionnaires and narrative maps which are based on interviews and mental maps.

A pilot study was conducted based on a structured questionnaire to fine tune the approach of narrative mapping for an in-depth study. In the first stage a survey was carried out based on a questionnaire covering 50 samples falling under the age categories of 15-30, 31-50 and above 50.The difference of gender and the variations in socio-economic status were neglected for the purpose of focussing mainly on perception of users.

The questionnaire provided a strong base to the user category and general perception of the place in terms of sensorial qualities, functional appropriateness and accessibility. General inferences were interpreted on the physical geographical characteristics and the strong sensorial qualities of the place in order to direct a more detailed study on the conviviality and relationship between the defining components.

The 'Narrative Map' was a combination of a 'mental map' and an interview. The following procedure was followed in constructing the narrative map.A random sample of 50 people was selected where each of them was asked to draw a map of 'Diyatha Uyana' showing his or her journey from the starting point up to an end point, indicating favorite/ most memorable/ most enjoyed places. Thereafter, each participant was asked to explain the map, stating reasons for their preferences of the particular route and sensorial experiences along the way. For a better understanding and interpretation, the narration expressed various aspects of their sensorial experiences in relation to the physical and geographical definition of the place. Layout plans, cross sections, sketches and photographs were used to interpret the narration of the place more effectively.

Diyatha Uyana



Fig: 01 'Diyatha Uyana'
Source: SLLRDC



Fig: 02 'Diyatha Uyana'
Source: SLLRDC



Fig: 03 'Diyatha Uyana'
Source: SLLRDC

'Diyatha Uyana' situated in the heart of 'Sri Jayawardenapura Kotte', the capital of Sri Lanka, is a part of an urban development project initiated by the Sri Lanka Land Reclamation and Development Corporation. The site is orientated along the banks of 'Diyawanna Lake' which is a historic and scenic water body edged by wet-land green belts.

[2]Thus Psychological attributes defined by Shaftoe were not be considered in the study as they are highly subjective and strongly influenced by socio economic factors and personal biases of people and not necessarily place based.

It was initially identified as a solution for flooding around the particular area. It was also a responsive design solution to prevent wet-lands and marshes from becoming isolated dark corridors which could be breading grounds for illegal and criminal activities. This precious natural environment was prone to reclamation by private owners and refilling in order to put up buildings which were endangering species of wet-land plants and animals. In addition to all these reasons, the city of Colombo and specially the area of 'Sri Jayawardenapura Kotte' was in need of open accessible green areas which could facilitate public interaction and recreation.

'Diyatha Uyana' is the first contemporary attempt in recent history of Sri Lanka to create a designed walk trail close to an urban environment. Within less than two years it has gained admiration and popularity from the public and has attracted people from all over Sri Lanka. It is warmly embraced by people and has now become a prominent recreational destination for people in of every socio-economic class in Colombo.

The layout of 'Diyatha Uyana' consists of a front square and a walk trail that runs through the marsh and along the water body. The front square is a vibrant space which facilitates a variety of public activities as out-door dining, lounging, flower and fish exhibitions and shopping. It includes a fountain, an aquarium, a food court and a set of rentable stalls which are captivatingly visible from the main road. The walk trail begins near the main road and runs along the edge of the water body, blends into the marsh, extends through a boulevard and opens-up to the front square.

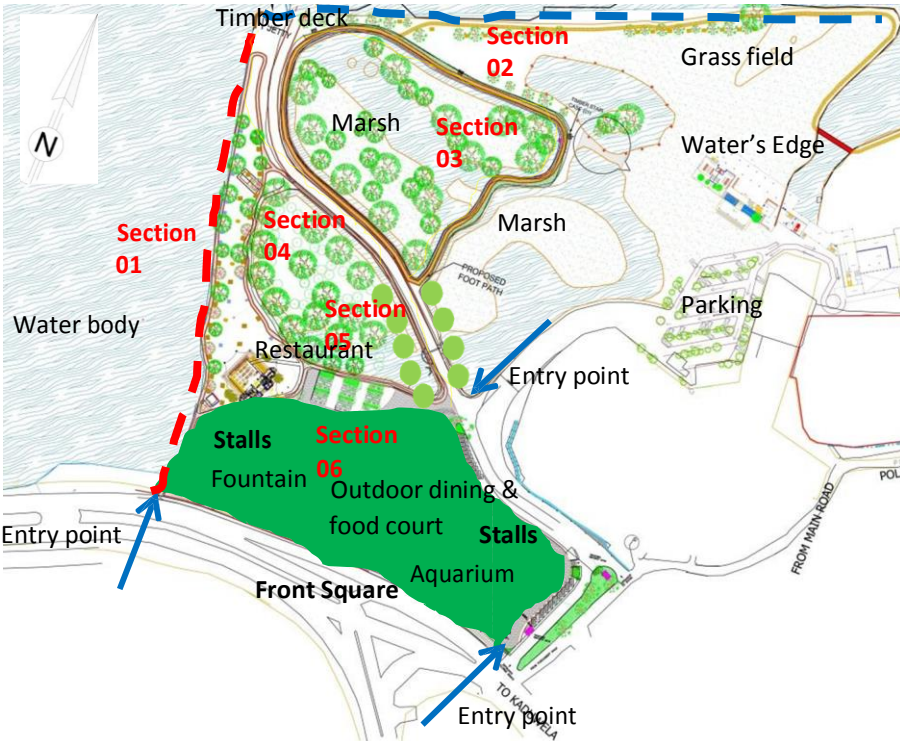


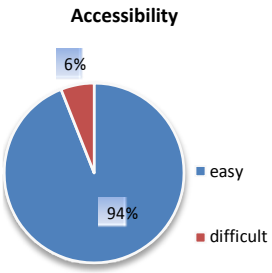
Fig: 04 layout of Diyatha Uyana
Source: author

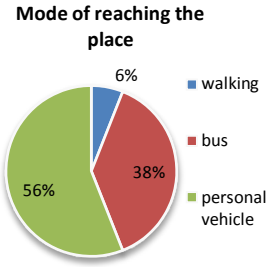
Conviviality of Diyatha Uyana

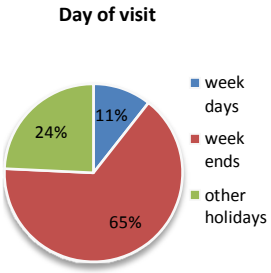
In order to analyze the conviviality of 'Diyatha Uyana', data was gathered at two levels where the first level was to obtain a holistic idea about the place and secondly to do a deeper study to find out the attributes that enable conviviality in each section of the walk-trail. The first level of data gathering was carried out as a survey based on a questionnaire.

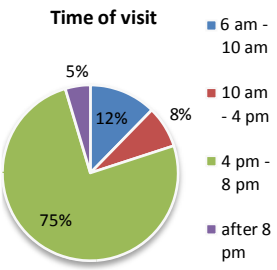
Interpretation of data gathered through the questionnaire shows that this particular place is regularly visited by people who live quite a distance away from its location. So it voids the belief that recreational public places are mainly and regularly visited only by people living in close proximity. It was quite surprising to see that even foreigners preferred 'Diyatha Uyana' as one of the main attractions of Colombo. Mostly the visitors arrive as groups of friends and family to spend their leisure here. Some of the most important findings are given below;

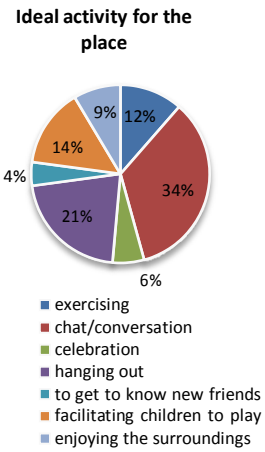
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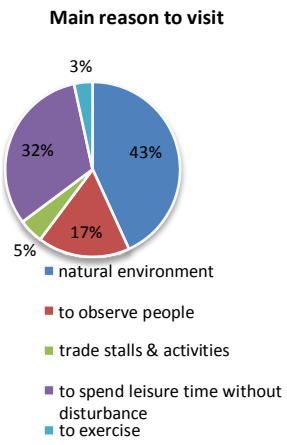


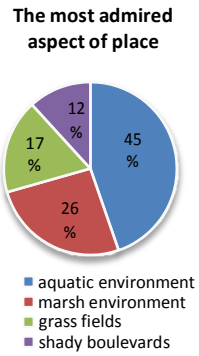


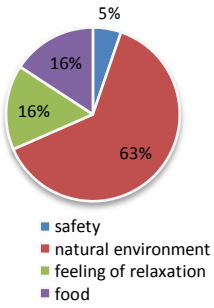




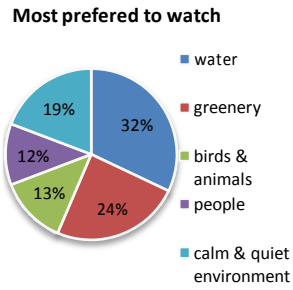


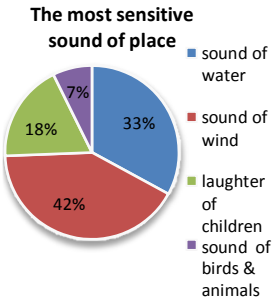


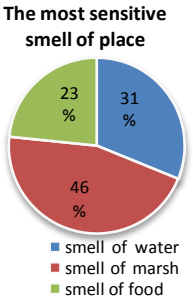


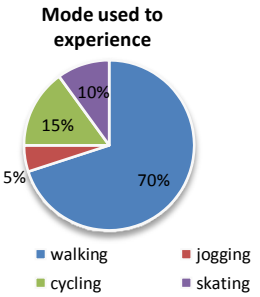


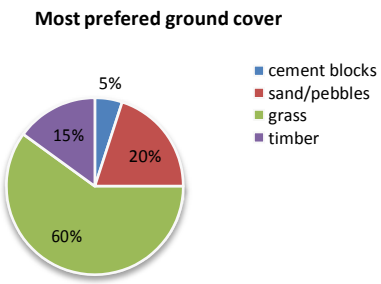
Sense perceptions

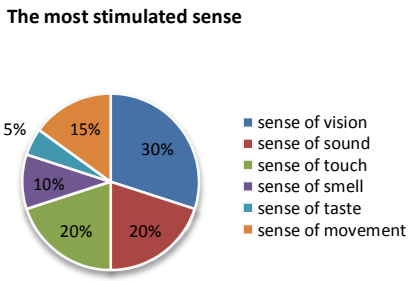












For the 2nd part of the detailed study on the narrative maps, the walk trail was sub-divided into six main sections based on their physical environment, natural elements, character etc. (Fig.4)This demarcation was supported by the people interviewed, as many had unconsciously sensed the place in a similar manner to make it easier to describe[3].

Section 01starting from the main road up to the timber deck is demarcated by the water body on one side, and a seating area on the other side. It is a linear, almost straight walkway along the edge of the water. (Fig: 04)
Section 02starting from the timber deck spreads up to open green area in front of 'Water's Edge'. It forms a linear walk way perpendicular to section 01 demarcated by the narrower edge of the water body.

Section 03 starts near the timber deck and spreads towards a different direction into the marsh. It is a walk way which runs through the marsh and is demarcated by the marsh from both sides. It ends opening up to boulevard.

Section 04is linked to section 03 near the timber deck and curves into the land side connecting to the boulevard. All the 3D arts are on the surface of this walk way.

Section 05is the boulevard that starts from the end of section 04 and terminates at the front square area. It is shaded with trees on both sides. Section 03 also ends at a mid-way point in this section 05. Most of the roller skating and cycling activities happen here.

Section 06is the open front square which spreads out to a large area. It is different from all the other sections as it is not a linear walk way. The food court, outdoor dining area, fountain, aquarium and trade stalls are within this section. It is the catchment area from where people disperse to the connected walk trails

50 detailed narrative maps were studied to define the conviviality of 'Diyatha Uyana'. The narration included an explanation of the map stating significant loci(geographical and physical) in their experiences explaining their sensorial perception of the place in detail.
An example of the mental map and narration is as follows.

Ex: 01Description of section 01 and 02

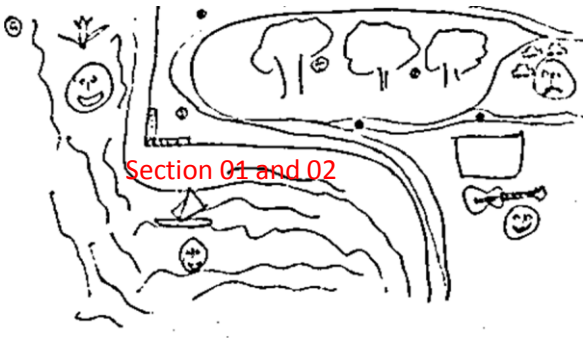


Fig: 05 a 'mental map' drawn by a visitor
Source: Author

A young man, 25
"This is my sixth visit to this place. I come here with my girlfriend to spend some quality time without getting disturbed. The atmosphere is quite relaxing and refreshing and the natural surroundings are wonderful to experience. When I arrive at the starting point of the walk trail, I walk as far away from the main road so I could avoid annoying sounds of vehicles. When certain that I am not disturbed by the chaos and that I am only surrounded by the sound of wind, I sit down by the water front and enjoy the view. The rhythm and repetition of waves always makes me calm. When sea planes start to arrive, I walk towards that area and lie down on the grass near the edge of water. The sound of sea planes always attracts people. I like to enjoy the cool breeze and spray of water on my skin. As it gets darker, I go to the restaurant for a meal. It is always nice to dine outdoors, under the stars, listening to the soft jazz music playing at the restaurant. This place always gives me pleasant memories."

[3] They used terms such as "walkway along the water, sea-plane area, and marshy area, shaded pathway with a lot of trees, 3D art area and entrance square" etc.

It is quite interesting how this person has tried to express his preferences and dislikes in a drawing. The sense of sound seems to be the most stimulated sense and water and trees seem to be the most preferred natural elements for him. The user has memorized the place mainly based on objects and sound rather than people. Presence of boats and sea planes has made a significant impact on his memory.

Ex: 02Description of section 04 and 05

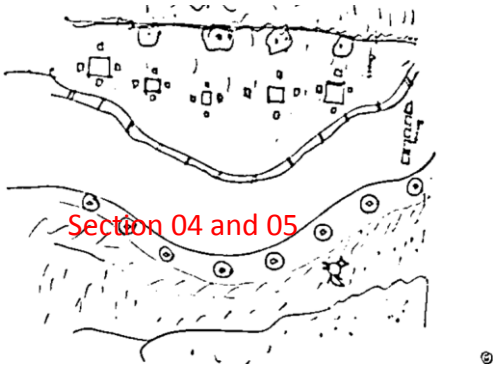


Fig: 06 a 'mental map' drawn by a visitor
Source: author

A teenage boy, 17
"I come here with my family to roller blade. It is safe here because you don't get disturbed by vehicles. It is wonderful how you feel while you are roller balding as you can feel the wind blowing against you. You feel so energetic and that the whole world is slower than you. You leave everything behind as you move. Also, I like to sit down and watch boats and water waves when I'm tired. You can watch birds in the marsh area. It is a nice place to hang out."

Here the user is talking about the boulevard and the 3D art street. His perception of the place is different from people who experience the place while walking. He has been observing the place while roller balding during the night. He has memorized the lighting objects as demarcating elements of the walk-trail. The user has captured the presence of water, trees and seating arrangements as key aspects.

As in the above two examples, all data gathered through 50 'narrative maps' were analyzed according to the attributes of conviviality listed under the theoretical frame work. Through their description of the sense perceptions within the prominent areas of the walk trail, the number of responses from people for each attribute in each section was recorded using 'tally marks'. The following table represents the number of responses received for various senses within the respective sections of the walk trail.

All the data gathered through **'narrative maps'** could be summarized as follows.

Table: 01 attributes and their obtained scores
Source: author

Attributes		Description	Number of responses
A Geographical attributes	**a**	Location of the walk trail	38
	b	Climatic aspects of the zone	17
	c	Topography around the site (terrains, fauna, flora)	42
B Physical attributes	**a**	Layout of the walk trail	11
	b	Accessible routes and entry points	19
	c	Visual and physical connections with the surroundings	45
	d	Variety of activities and experiences	29

From the analysis of the questionnaire and the narrative maps, it was understood that the geographical definition of Diyatha Uyana (A-97 responses in total) was the key aspect that

attracted many visitors to this place, the marsh, the aquatic environment (Ac- 42 responses) along with the location of the walk trail (Aa-38 responses) was a key attraction to the usability of the place. This was strongly supported by the visual and physical connection (Bc-45 responses) with the surroundings and the variety of activities (Bd-29 responses) offered by the place.

The following table was constructed based on sensorial responses within the various sections of the walk trail.

Table: 02 attributes and the number of responses received
Source: author

Attributes			Description	Number of responses					
				Section 01	Section 02	Section 03	Section 04	Section 05	Section 06
C Sensorial attributes	**a** Sense of vision	**i**	Natural elements and attractions that triggers progression or lingering (water, trees, terrains, animals)	16	19	20	-	18	-
		ii	Artificial objects that triggers progression or lingering	5	9	-	7	-	10
		iii	Activities and behaviour of people	11	8	4	24	14	27
		iv	Impact of natural and artificial lighting	2	-	8	7	3	6
	b Sense of touch	**i**	Natural stimulators of sense of touch (heat, wind)	28	17	2	3	3	-
		ii	Texture of horizontal boundaries of walk-trail (shade of trees, tents and huts, grass, sand, stones, pebbles, cement paving)	12	10	5	4	6	8
		iii	Texture of vertical boundaries of walk-trail (trees, walls, hedges)	-	-	4	-	21	16
	c Sense of move ment	**i**	Impact of speed (variations of perception while resting, walking, running, skating and cycling)	-	-	2	20	21	2
		ii	Impact of activities or artificial elements (rowing, sailing, swimming)	9	11	-	-	-	-
		iii	Impact of movement of natural elements (wind, water, tree leaves)	14	12	3	9	4	-
	d Sense of sound	**i**	Sound of natural elements (water, wind, rustling of leaves, animals)	15	14	19	2	10	-
		ii	Sound of people	9	7	2	22	3	4
		iii	Sound of music	8	-	-	-	-	15
		iv	Sound of artificial elements	-	11	-	6	7	-
	e Sense of smell	**i**	Natural cues of smell (water, flowers, herbs)	7	12	29	1	4	5
		ii	Smell related to food items	10	-	-	-	-	31
	f Sense of taste	**i**	Food offered at the premises	6	-	-	-	-	28

The hierarchy of sense perceptions along different sections of the walk trail was tabulated as follows.

Table: 03 Magnitude of stimulation of each sense in each section of the walk-trail
Source: author

Type of sense	section 1	section 2	section 3	section 4	section 5	section 6
sense of vision	34	36	32	38	35	43
sense of touch	40	27	11	7	31	24
sense of movement	23	22	5	29	25	2
sense of sound	32	39	21	30	20	19
sense of smell	17	12	29	1	4	36
sense of taste	6	0	0	0	0	28

Highest number of responses
Second highest number of responses
Third highest number of responses

A detailed breakdown of the sensory perceptions in a hierarchical order along the specific sections of the walk trail with the corresponding generators of such perceptions is as follows.

Table: 04 sensory perceptions in a hierarchical order along the specific sections with corresponding generators

Section no:	Description	Map	Three most influenced senses in hierarchical order	Reason	Photograph
Section 01	path along the edge of the water body up to the timber jetty		Sense of touch	The heavy wind flow (40 responses)	
			Sense of vision	Rowing boats, Large, open water body and people watching (34 responses)	
			Sense of sound	Sound of wind and waves (32 responses)	
Section 02	path along the edge of the water body up to the open grass land		Sense of sound	Sound of sea planes (39 responses)	
			Sense of vision	Large open water body and people watching (36 responses)	
			Sense of touch	Heavy wind flow and breeze with water splashing (27 responses)	
Section 03	path through the marsh up to the boulevard		Sense of vision	Animals in the sanctuary and birds coming to nest (32 responses)	
			Sense of smell	Distinct smell of marsh(29 responses)	
			Sense of sound	Sound of creatures and nesting birds (21 responses)	
Section 04	3D art street which connects to boulevard		Sense of vision	3D street art and people posing for photographs (38 responses)	
			Sense of sound	Laughter and chattering of people (30 responses)	
			Sense of movement	Skating and cycling (29 responses)	
Section 05	boulevard which opens to Front Square		Sense of vision	Greenery (35 responses)	
			Sense of touch	Visual tactile quality created by the continuous canopy of trees (31 responses)	
			Sense of movement	Skating and cycling (25 responses)	
Section 06	boulevard which opens to Front Square		Sense of vision	People watching and vibrant trade stalls (43 responses)	
			Sense of smell	Aroma of food (36 responses)	
			Sense of taste	Food court and outdoor dining area (28 responses)	

Findings



Fig: 07 overall summery of relationships between physical context and sensorial attributes
Source: author

From the research it is evident that a cross section of the population that visits Diyatha Uyana has expressed their strong yet varied perceptions of senses which define the conviviality of the place. Observing the various socio-cultural groups that patronize this place it appears that sensorial experiences in this context are not necessarily culture and socio specific. They are primarily based on specific physical, geographical definitions of the locality. These definitions with varied spatial and environmental qualities give 'Diyatha Uyana' that sense of vitality that makes it convivial to the users enabling unique micro contexts within the overall place.

For example, the zoning of functions and spaces from a more urban character to the road frontage, with a large public square defined by spaces for commercial activities, to an immediate mini wilderness within a distance of less than 200 m gives variety in experience for the visitor. In

almost all occasions, a person's journey through the walk trail inevitably starts and ends from the large public square or space bordering the main access road. The combination of various leisure and shopping activities, some according to a theme on specific days of the week gives an added dynamism to the functional aspect. The food court is an essential part of that aspect of recreation, providing a variety of food to suit the various needs during different times of the day. Each section of the walk trail provides a different sensorial experience along the way. Especially the aquatic experience is varied along the different sections. At sections 1 and 2 a larger expanse of the lake forms a clear edge to the landscape. The added sensation of the wind blowing from the direction of water along with the different activities of boating, taking off and landing of sea planes adds to the visual, tactile and auditory experience (Table 04). The inner portions within the marshy environment of section 3 provides a different experience of water in its scale formation and texture giving a sense of intimacy and personal space close to the green landscape. Exposure to the natural habitat of birds and other animals just a few hundred meters of the urban setting is a welcoming change that encourages relaxation and heightens not only the visual sensation, but the keen sensation of sound made by animals and birds.

As Shaftoe says, one of the psychological attractions of a good public space is the promise that it will satisfy our innate curiosity. (2008, p-55) The winding walk trail around the central marsh (sections 3 and 4) gives a whole different experience in terms of scale and enclosure by the dense marsh forming a strong edge providing a sense of intimacy. These series of linked but not immediately visible spaces gradually reveal themselves as one move through them. As Cullen (1961), says, this is also an important factor in good park design. The paved pathway with 3D art in section 4 maintains a balance between the hard paved surface and soft canopy of trees that provide shade to the area.

According to Shaftoe, our minds are skilled at 'reading' space, which identifies where we are and the qualities the place appears to offer. This is mostly done through visual interpretation of the cues within a space, both in terms of built form and activities taking place there (2008, p-54). This opportunity is provided by the different types of entertainment activities included around and within the walk trail. As Shaftoe (2008) says, a good public space will offer the chance for a whole range of these activities that encourages people to linger on and use the place. The multiplicity of activities offered along with the distinct environment adds a positive exposure to the place experience.

The combination of nature (water, marsh, green, trees) and activities such as boating, seaplane viewing, bird watching combined with 3D art viewing, cycling, skating, shopping and dining has added a great vitality to the place in the way that people experience the place. People watching, meeting friends, relaxing and exercising are supported by the geographic definition and placement of functions as eating areas, spaces for sitting, lying down and walking providing a myriad of opportunities for engaging with the place and people within the chosen micro contexts. In other words, 'Diyatha Uyana' provides interesting channels of movement, nodes for pausing and communication both through active and passive engagement and common platform for relaxation, play and leisure. It provides a lively, varied and intriguing occupation of space, allowing people to observe diversity. The prominent aspect of the conviviality of this place is that it satisfies more than the visual perception of place. The non-visual aesthetics enable a holistic experience of all senses, where Shaftoe states that our experience of a place is usually based on a combination of several senses. Thus, there is a strong relationship between the various components of conviviality.

Conclusion

The concept of conviviality helps to comprehend how people relate and respond to spaces and how their perceptions help make spaces work for them. As Canter (1974) says, they relate to basic human behavioral characteristics such as the need for different types of observation and communication and psychological effects as interpretation, coherence, legibility, sense of safety, intrigue and curiosity. These possibilities are provided within the various micro contexts of the sections to varying degrees, although not specifically defined and separated.

The notion of conviviality is a universal concept experienced by all irrespective of socio-cultural, economic parameters. From the research it is evident that a cross section of society that visited Diyatha Uyana expressed their strong yet varied sense perceptions of the place which defines its conviviality. Sensorial experiences in this context are not necessarily culture and socio specific. They are primarily based on explicit physical, geographical definitions of the locality that enables its sense of place. Thus, sensorial attributes of conviviality are "place-specific". They are intertwined and cannot be separated although established as separate attributes of conviviality in the theoretical framework. The vitality and dynamism in terms of these qualities along with the type and variety of activities incorporated in a public place enables conviviality of a specific location .These attributes and the degree of conviviality due to these attributes may vary from place to place. The parameters of a specific context that enables "Conviviality" and its representing design parameters therefore cannot be replicated in a different context.The study presented the convivial attributes specific to 'Diyatha Uyana' and how they contribute to make the place sensational and joyful so that it can be a point of reference in future projects of similar nature.

References

Alexander, C. (1977). A pattern language: towns, buildings, construction. New York: Oxford University Press.

Bentley, I., Alcock, A., Murrain, P., McGlynn, S., & Smith, G. (1985). Responsive environments: a manual for designers. London: Architectural Press.

Canter, D. (1977)The Psychology of Place. London: Architectural Press.

Cullen, G. (1995). The Concise Townscape. Oxford; Boston: Butterworth-Heinemann.

Day, C. (2004). Places of the soul: architecture and environmental design as a healing art. Oxford [England]; Burlington, MA: Architectural Press.

Day, C., & Roaf, S. (2002). Spirit & place: healing our environment, healing environment. Oxford; Boston, MA: Architectural Press.

Dovey, K. (2009). Becoming Places: Urbanism / Architecture / Identity / Power (1 edition.). Routledge.

Forsyth, A., & Krizek, K. (2011). Urban Design: Is there a Distinctive View from the Bicycle?Journal of Urban Design, 16(4), 531–549. doi:10.1080/13574809.2011.586239.

Herrington, S. (2009). On landscapes. New York, NY [u.a.: Routledge.

Shaftoe, H. (2008). Convivial urban spaces: creating effective public spaces. London: Earthscan.

Venturi, R., Scott Brown, D., & Izenour, S. (1977). Learning from Las Vegas: the forgotten symbolism of architectural form. Cambridge, Mass.: MIT Press.

Ward Thompson, C., & Travlou, P. (Eds.). (2009). Open space: people space. London; New York: Taylor & Francis.

Role of Geometry and Physical Elements on a Footpath in Defining Spaces, Influencing Events and Engendering Movement Patterns

Rohit Lahoti*
Visvesvaraya National Institute of Technology, Nagpur, India

Abstract

Physical environment is one of the factors that influences the activities and spaces formed to a varying degree and in many different ways. Footpaths form a significant micro-place of the physical urban environment. Primarily, a path for pedestrian accessibility and acts as an important public place for the city. In the scenario of socio-economic conditions in developing countries, owing to high poverty rate, unemployment and rural-urban migration, it is beneficial for people to adopt the informal way of using this entity of footpath. Moreover, due to the lack of efficient monitoring, footpaths, in this part of the world, have multiple utility factors, mainly social, economic and cultural.

The paper explores the role of the physicality of the footpath in the manifestation of spaces – tangible/intangible and the diverse activities. The quest is into identifying the meaningful relationship of geometry and multiple physical elements on a footpath with the quality of the public realm generated. The physical elements are analysed with reference to the context of certain Indian cities.
These physical elements have been qualitatively documented by means of surveys and a subjective understanding through observations of the sites taken for study.

A comprehensive understanding of these elements in the public realm revealed their influence in regulating certain movement patterns. The justifications for a particular path being more frequented are a matter of function and aesthetics rather than just intuition. This micro-understanding of various physical elements and the behaviour patterns observed on footpath can help in long-term street planning measures, at various scales. The paper highlights vital approaches in providing certain design opportunities with respect to the physical elements and the geometry of the footpath, thus improving the public realm of the street and of the place.

Keywords: Footpath, urban design, physical elements, geometry, behaviour pattern, physicality, movement patterns

*Corresponding Author: Rohit Lahoti; E-mail- rohitlahoti43@gmail.com

Introduction: Footpath as a micro-place

As per the Cambridge Dictionaries Online, **footpath** means a path, especially in the countryside, for walking on. A footpath, though in the context of Indian cities, forms a factor of livelihood for some people, a public place for the city and even a place to celebrate culture.

The scenario wherein the prevailing socio-economic conditions like high poverty rate, unemployment and rural-urban migration are rapidly booming, it becomes essential as well as lucrative for people to adopt the informal way of using this entity of footpath. Indian cities are growing rapidly, in spite of development control regulations enforced by the public authorities; considerable parts of them are uncontrolled. (Patil & Dongre, 2014)[1]

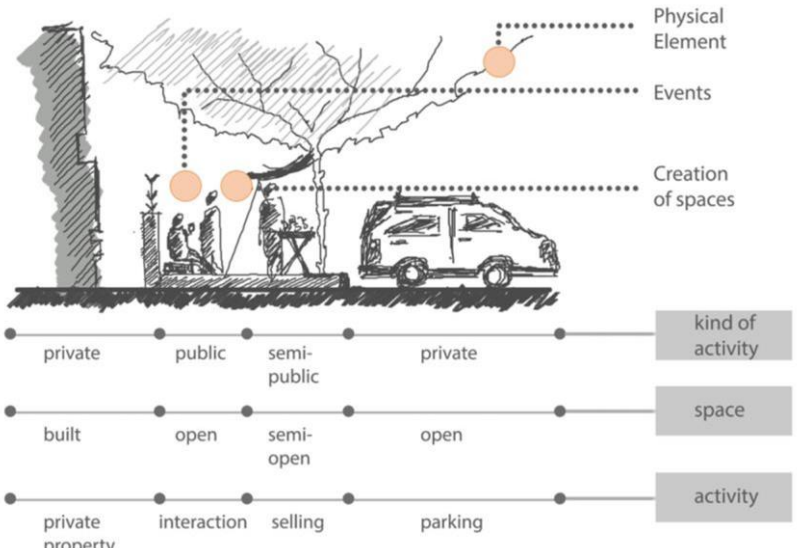


Fig. 1: Typical Footpath Section: People-places
Source: author

The paper is thus based on the assumption that the utility of footpath in Indian cities is beyond the primary purpose of accessibility. Its modifications, layer-by-layer, owing to the continuous and ever-evolving activities, help in the crafting of a dynamic environment. The chaos of the activities and users that happen on the footpath can be much more vibrant and inclusive when there is an organized treatment for it. So, the paper concentrates on understanding the specific context of some Indian streets with reference to the geometry and physical elements present on the footpath.

Context of Study

The context of my study mainly considers the study of Indian cities and can very well relate with the cities of similar developing countries. The observation and documentation through the photographs have been carried out personally based on the accounts of experiences met in cities of Mumbai, Nagpur, Delhi and Ahmedabad. The fact that the role of footpath is multi-faceted, especially in Indian contexts, can be a sign of positivity along with its cons but cannot be avoided.

[1] Patil, A. P. and Dongre, A. R. (2014) 'An approach for understanding encroachments in the urban environment based on complexity science', Urban Des Int, Palgrave Macmillan, Vol. 19, no. 1, pp 50—65.

Methodology

The study deals with the studying of the existing scenario in a particular chronology: starting from the physicality of footpath and its affects in creating behaviour responses by the people in terms of occurrence of the events, creation of spaces and certain movement patterns.

- Stage 1: Understanding of the physicality of the footpath in terms of geometry/ physical dimensions and the physical elements present.

- Stage 2: Understanding the behaviour patterns and responses of the people in different scenarios in social (folk), economic (work) and cultural/geographical (place) aspects.

- Stage 3: Further, knowing how this behaviour response, in different contexts, gets manifested into certain spaces – tangible/ intangible which thus boosts the events occurring on the footpath and in turn, the diversity of users.

- Stage 4: On understanding the interdependency of the physicality and the behaviour patterns, understanding how certain movement patterns are generated by the users when using the footpath and in turn, responding to the aforementioned physicality.

- Stage 5: Finally, concluding the research with an insight into how the understanding of these behaviour patterns, with respect to certain parameters, can help in the setting up of certain physicality standards for inclusive street design.

The ultimate aim of studying the behaviour patterns of people from different dimensions and of places with different cultures is to try and create opportunities on streets to be more inclusive. The inclusiveness shall vary in different contexts and so shall the basis on design or redesign.

Limitations

As far as the aspect of data collection is concerned, the observations documented are qualitative and subjective and not statistical or quantitative. The inferences made from the observations were mainly during selected times of the day and not throughout the day. The analysis is with reference to the impact of geometry and physical elements on the manifestation of spaces and activities. The domain of research does not include the dimensional aspects of either the footpath or the physical elements mentioned in the paper.

Physicality of footpath

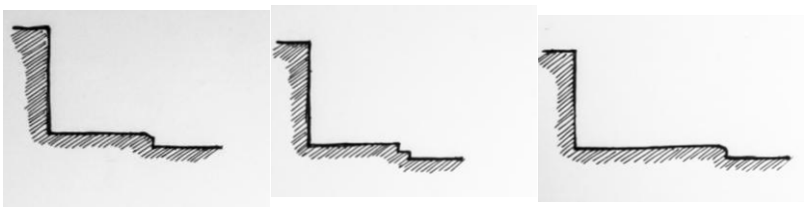


Fig. 2: Geometry / Physical Dimensions
Source: author

Physicality can be classified mainly in terms of two aspects: geometry or physical dimensions and the composition of various physical elements. Physical variations can be through changes in the

width of the footpath or even the kerb heights. For instance, varying the width of the footpath can give opportunities for various events to take place other than just pedestrian walking. In another case, providing a kerb ramp on the footpath, especially near the property entrances can give multiple usage for the vehicles as well as pedestrians. Stretches of the sidewalks are a bit like an attractive obstacle course. At any pace you choose to walk, there are people to get around, or tables and chairs at a café, or an old or new kiosk. (Jacobs, 1993)[2]

However, dealing physicality in just one of these aspects can be very mechanical and quantitative. The other major aspect of footpath's physicality is the physical elements and their composition. These physical elements and the balance of composition make footpath beyond just a tangible space.

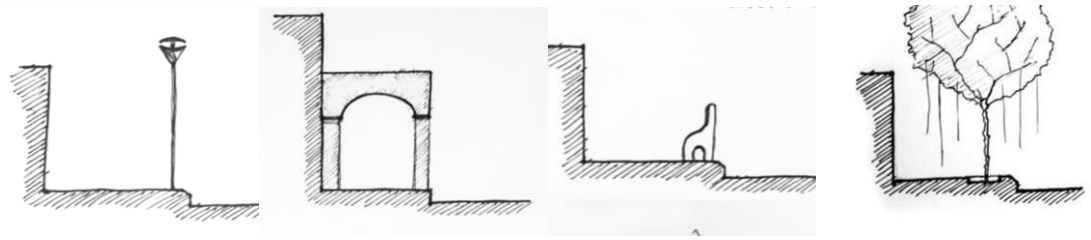


Fig. 3: Physical Elements
Source: author

For instance, just appropriately placing a tree with proper grating on a footpath at equidistance with some smartly designed street furniture can give rise to an altogether different scene which is both tangible and intangible at the same time.

> "Even assuming that the physical characteristics of the street are not an important criterion for deciding what makes one street better than other, one presumably wants to do one's best to design and arrange the pieces in ways that will be better, that are more likely to please, uplift, attract, or achieve a desired set of values than some other arrangement."
>
> (Jacobs,1993)[3]

So, providing opportunities for influence of events' occurrences through sensibly understanding the physicality of footpath can thus define a variety of spaces that can be created on a footpath.

The form and nature of the spaces shall vary according to the physicality and the behaviour response of the people in that particular context.

Behavior Response

The physicality of the footpath evokes various behavioural patterns and responses, in terms of economy, social science and cultural aspects. Depending on the geometry/ physical dimensions and physical elements, the behaviour response by various people differ and are adaptable according to the context. Taking the Geddesian triad as a reference, the general parameters can

[2] Jacobs, A. B. (1993). Great streets. ACCESS Magazine, 1(3)
[3] Jacobs, A. B. (1993). Great streets. ACCESS Magazine, 1(3)

be defined as the following: 'Work' as the economic aspect, 'Folk' as the social aspect, 'Place' as the cultural/ geographical aspect.

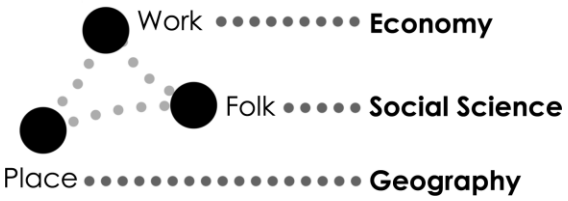




Fig. 4: Character of footpath: Connaught Place, Delhi Source: author



Fig. 5: Informal street market: Lalbaug, Mumbai Source: author

Interdependency of Parameters

The three parameters defined for the study are inter-connected and cannot exist in isolation, although a parameter can dominate, depending on the context. In fig.10, there is the existence of the three parameters, although in a much more organic and informal manner. The business of street vending on both sides of the footpath (work) has a different realm. This street market is almost 50 years old, still retaining its ethnicity (place) with the kind of products sold and the local crowd (folk) still maintaining its commercial value, for many generations.

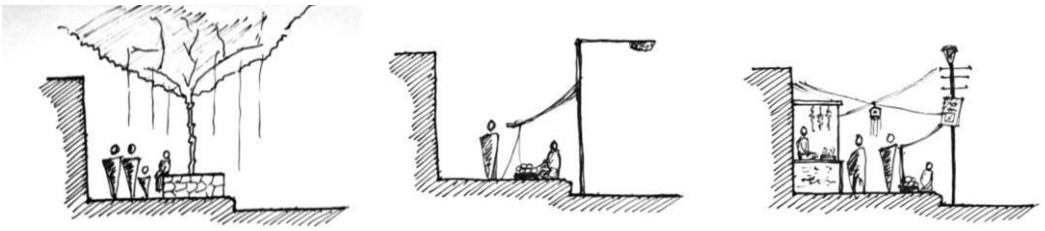


Fig. 6: Behaviour study on footpath: Social, Economic and Cultural aspects respectively. Source: author

> "The people of cities understand the symbolic, ceremonial, social, and political roles of streets, not just those of movement and access. The interplay of human activity with the physical place has an enormous amount to do with the greatness of a street."[4]
>
> (Jacobs, 1993)

[4] Jacobs, A. B. (1993). Great streets. ACCESS Magazine, 1(3).

Behavior Response: Social Aspect

The main event in this pattern of behaviour is a form of interaction, meeting or social gathering between users. For instance, the presence of just a tree with sitting space around it can directly affect the public realm of the street.

Behavior Response: Economic Aspect

The main event in this behaviour pattern is the act of selling and buying. The presence of a street light can act as a support for a vendor to tie up his/ her informal vending area and thus, earn a living.

Behavior Response: Cultural/ Geographical Aspect

The main event in this behaviour pattern is the chaos of buying and selling along with the energy of making the space more significant during festivals, celebrations or rallies.

Evaluating footpath's physical manifestation with 3 parameters

Taking the footpath as the core element, the role of the geometry and the physical elements in getting manifested into variety of spaces and activities are evaluated. The documentation is analyzed with reference to the kind of spaces that are created, the diverse activities that occur and the variety of users that use this space. The instances studied on these parameters, with various permutations of the Geddes triad, are specific to site location and vary according to the context of the place. All three parameters are mutually interdependent on each other.

Folk	Work	Place
Students	**Refresh**	**Tea-House (*Tapri*)**



Fig. 7: Space-Activity-User relation on a footpath: VNIT, Nagpur.
Source: author

Location: Adjacent to VNIT college, Nagpur, India

Physical Element : Tree

The physical element of a tree has been manifested in the form of the space created. The folk and the work factor act as catalysts for the place-making. An adjacent institution attracts students during break time, to gather for refreshments to the nearest tea-house and these whole set of events creates an intangible space in itself.

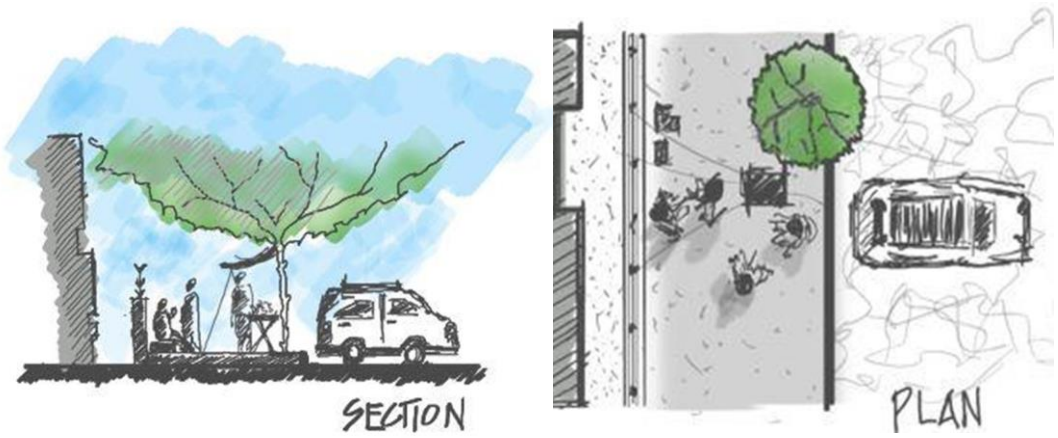
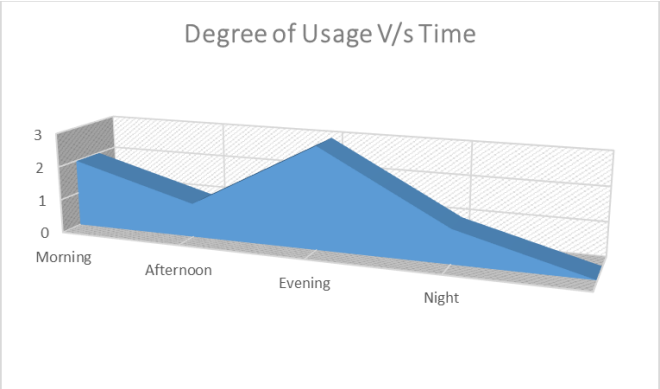


Fig. 8: Conceptual section and plan of a '*tapri'* (tea-house)
Source: author



Observations from the plotted graph of USAGE v/s TIME

Morning: Moderate: For Tea/Refreshments/Breakfast
Afternoon: Low
Evening: High: For refreshments

The inference from this particular manifestation of space can be on the placement of these trees. The location of this physical element of tree can directly/indirectly influence the levels of interaction among various users and thus, the occurrence of the event.



Poor kids **Semi-open shelters** **Playing, Sleeping, Selling**



Fig. 9: Space-Activity-User relation on a footpath: Mumbai.
Source: Sandrine Cohen

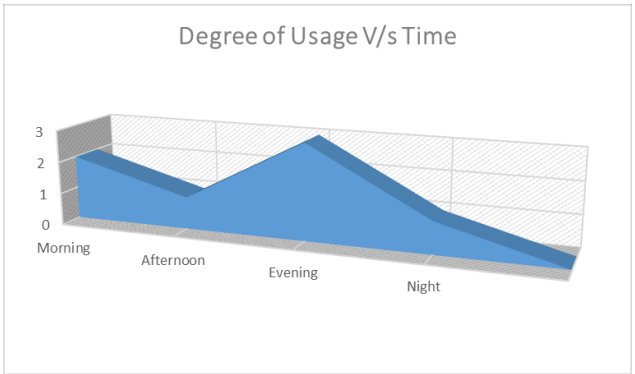
Location: Mumbai, Maharashtra, India

Physical Element : Street-lights

Due to the prevailing socio-economic conditions, the poor and homeless, without employment, have no option but to form their livelihood on the streets (footpaths). Depending on favorable locations, their makeshift homes made up of a stretch of tarp and a few belongings can be seen by the side of roads, thus manifesting into space and a set-ups for their activities.



Fig. 10: Conceptual section and plan of a tarpaulin shelter
Source: author



Observations from the plotted graph of USAGE v/s TIME

Morning: Moderate: Washing utensils/ Selling
Afternoon: Low
Evening: High: For selling to people returning from office
Night: Low

The inference from this particular manifestation of space can be to provide such physical elements like street-lights/fences at appropriate locations, as supporting elements to these temporary mobile structures. The provision should essentially consider the footpath width available and the locality.

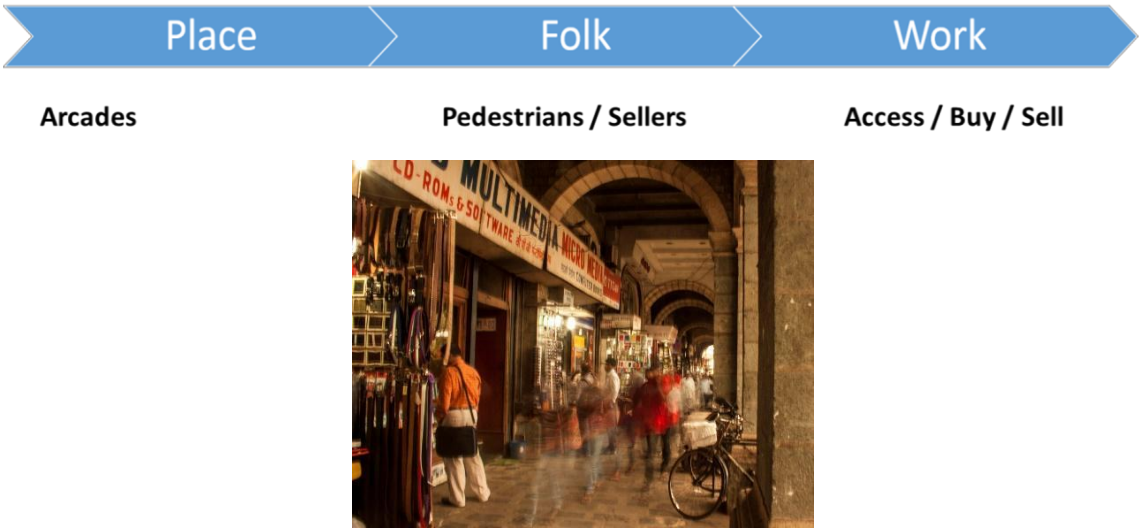


Fig. 11: Space-Activity-User relation on a footpath: Fort, Mumbai
Source: author

Location: Fort, Mumbai, Maharashtra, India

Physical Element : Arcade

The manifestation of the element of arcade gives the footpath a multi-faceted character. Due to the arcade, there is primarily, shading from weather elements and this aesthetically creates a more interesting experience for movement. This, along with adjacent shops and vendors, attract the folk and the ensuing activities of buying/selling.

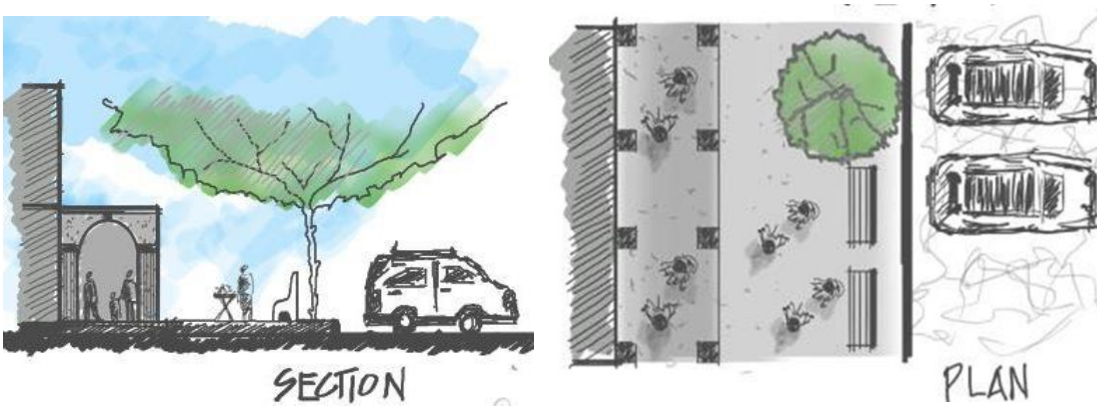
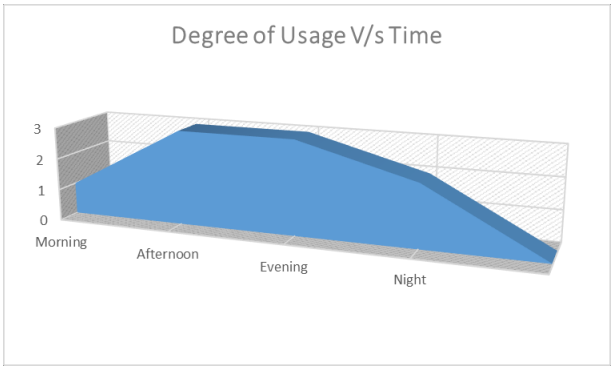


Fig. 12: Conceptual section and plan of an arcaded market.
Source: author



Observations from the plotted graph of USAGE v/s TIME

Morning: Low
Afternoon: High: Shading for pedestrians/vendors
Evening: High: For selling/ buying
Night: Moderate

The inference from this particular manifestation of space can be how the building edges are defined, with the use of elements like arcades, to make the footpath sustain multiple purposes, thus creating a zone of shared space that is neither totally private nor totally public. Such spaces allow for transition from public to private.

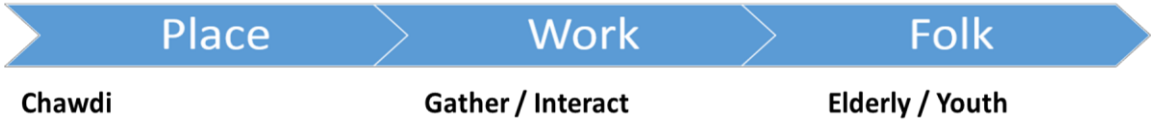




Fig. 13: Space-Activity-User relation on a footpath: Lalbaug, Mumbai
Source: author

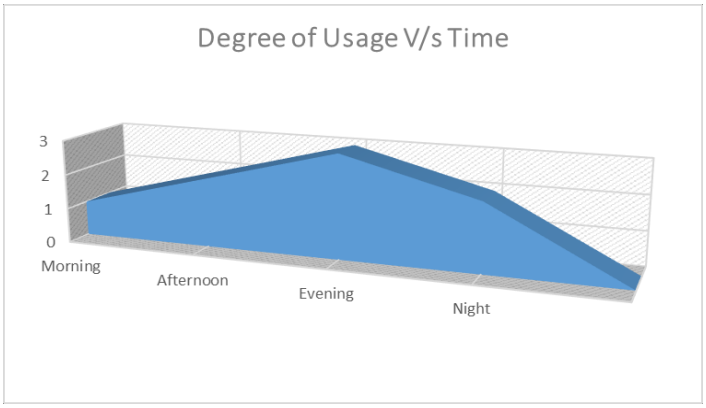
Location: A backyard of a commercial street in Mumbai, Maharashtra, India

Physical Element : Tree

Due to presence of chawdi**,** a sitting space within a tree shade, there is a favorable setting to gather and interact, which attracts diverse users of a familiar age group like the elderly and the youth.



Fig. 14: Conceptual section and plan of a '*chawdi'* (tree with sitting space around)
Source: author



Observations from the plotted graph of USAGE v/s TIME

Morning: Low
Afternoon: Moderate: Pedestrians
Evening: High: Interaction between various user groups.
Night: Moderate

The inference from this particular manifestation of space can be on the placement of such chawdi or some elements of similar nature that can encourage interaction and thus, influence the social significance of the street.



Fig. 15: Space-Activity-User relation on a footpath: VNIT, Nagpur.
Source: author

Location: Adjacent to VNIT college, Nagpur, India

Physical Element : Eateries

The physical element of mobile eateries on footpath is manifested in the form of a set-up that is established for activities to set in. The reason of relishing cuisines at small eateries attracts the youth and in turn, gives rise to various options like meals on wheels, pani-puri stalls, juice centers, fast-food chains, etc.

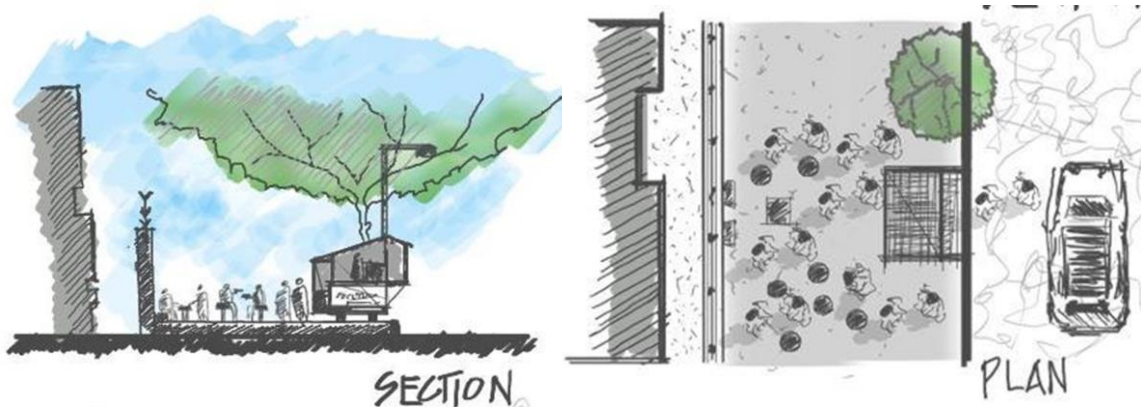
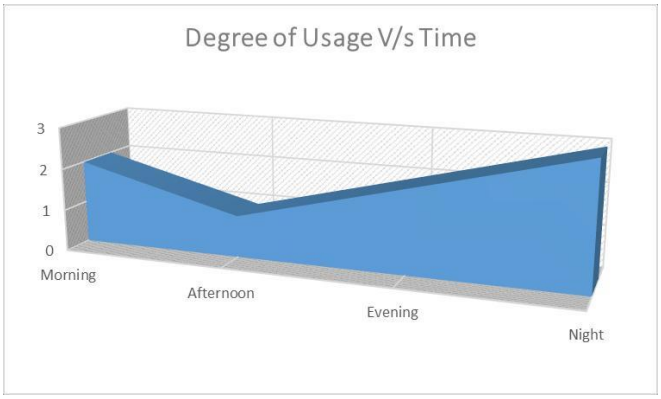


Fig. 16: Conceptual section and plan of a road-side eatery
Source: author



Observations from the plotted graph of USAGE v/s TIME

Morning: Moderate: Breakfast/ Tea
Afternoon: Low
Evening: Moderate: Snacks/ Refreshments
Night: High: Dinner/ Snacks

The inference from this particular manifestation of space can be on the placement/allocation of these mobile eateries in a manner that does not create obstacles for the pedestrian movement along with encouraging the vibrant public realm that is being generated on the footpath.

Work	Place	Folk
Selling	**Bulb-outs**	**Vendors / Hawkers**



Fig. 17: Space-Activity-User relation on a footpath: CG Road, Ahmedabad Source: author

Location: CG Road, Ahmedabad, Gujarat, India

Physical Element : Bulb-outs / kerbs

The physical element of providing an additional bulb-out/ kerb to a footpath is manifested in spaces to support multiple activities at a time. Depending on area, the selling of daily items like vegetables, fruits, cobblers, etc. gives rise to extensions or bulb outs on footpath, in order to provide a space for them and encourage vendors and hawkers.

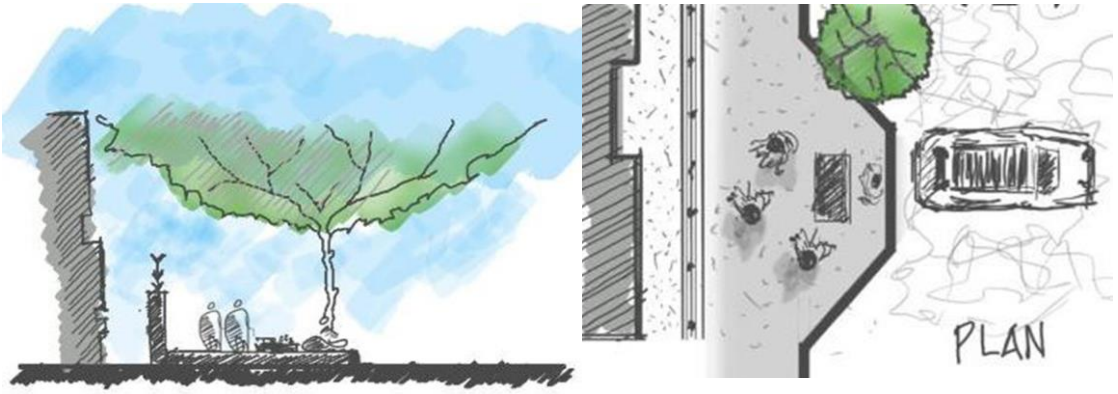
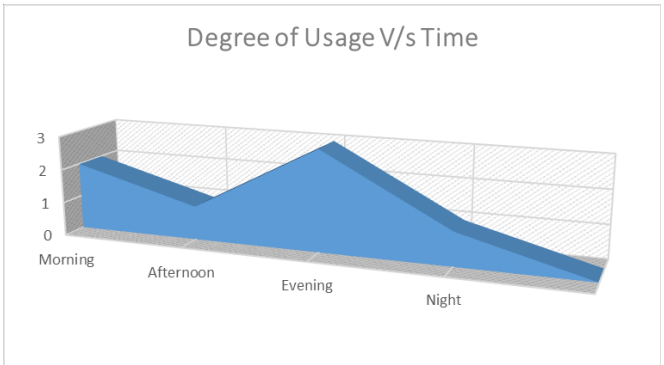


Fig. 18: Conceptual section and plan of a bulb-out. Source: author



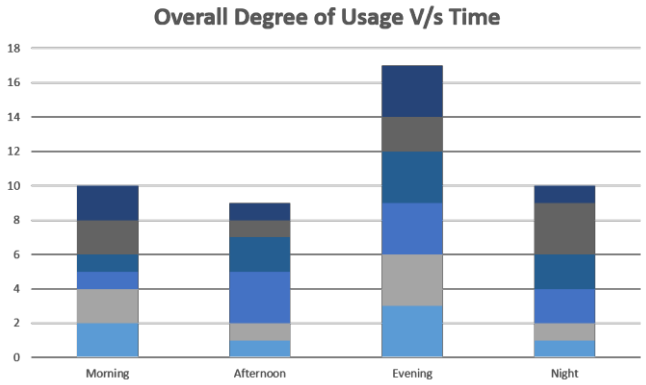
Observations from the plotted graph of USAGE v/s TIME

Morning: Moderate: For Tea/Refreshments/Breakfast
Afternoon: Low
Evening: High: For refreshments

The inference from this particular manifestation of space can be on the provision of such bulb-outs/ kerb at appropriate locations and distances, depending on the width and the nature of the footpath. This would influence the sustenance of various informal activities and the engagement of diverse types of users.

Inferences

Understanding overall usage pattern



Although the observations are not at one specific location, the overall plotting of the six cases studied, gave an interesting result. The maximum degree of usage is observed during the evening time followed by morning, night and afternoon. Hence, to infer from this observation, there can be a creation of certain design opportunities with respect to the physical elements and the geometry of the footpath which engages the footpath at all times of the day.

Understanding user movement pattern



Fig. 19: Movement patterns on a Footpath: Fort, Mumbai Source: author

On understanding spatial and activity pattern of users due to physical elements present on a footpath, the movement patterns of people were observed and studied. It was observed that there are multiple movement paths from origin to destination; in spite of that, certain movement paths have maximum frequency. The reason is not just intuition but factors like the variety of spatial configuration, type of activities and the degree of user interaction. To infer, such static elements and their careful organization on a footpath can influence the user choice to use a particular path for various purposes.

Conclusion

The paper highlights the key aspects in getting further insight into the kind of specific physical elements that can be used while making a physical intervention on any footpath. The specific inferences are mentioned in the particular instances taken for study, which is subject to vary depending on the context of study.

The methodology established in the study of existing scenarios in a particular chronology: starting from the physicality of footpath and its influence in manifestation of behaviour responses, spaces and activities along with the movement patterns, is of importance for urban designers to contribute on their part to address the issue of haphazard and random use of footpaths, which needs a multi-disciplinary approach.

To generalize, the pre-requisites for any street design/redesign can be:

- What kind of users shall be using the street?
- What are the type of activities- existing or proposed?
- What is the character of the place? (In terms of its history and background)

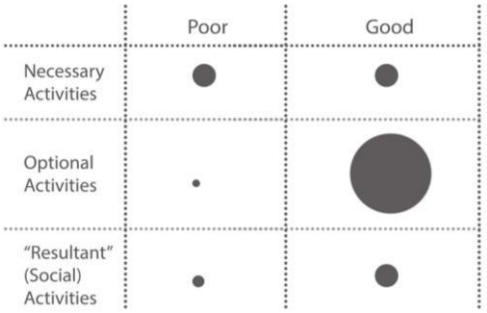


Fig. 20: Relation of activities and Quality of areas
Source: (Gehl, 2011)

The main purpose, however, is to achieve streets which are beyond just freeways or means of access. Streets define a particular place and thus, how a footpath as a micro-place is dealt with, makes a major difference in the overall language of a street. When the quality of outdoor areas is good, optional activities occur with increasing frequency and intensity.

References

Books– single author / multiple authors:

Gehl, J. (2011). Life between Buildings: Using Public Space. Washington: Island Press.
Stanford, A. (1978). On Streets.
Jacobs, A. B. (1993). Great streets. ACCESS Magazine, 1(3).
Alexander, C. (1979). The timeless way of building (Vol. 1). Oxford University Press.
Ching, F. D. (2007). Architecture: Form, Space and Order. John Wiley & sons.
Krier, R. (1979). Urban Space. London: Academy Editions.
Tibbalds, F. (1992). Making People-Friendly Towns: Improving public environment in towns and cities. London: Longman Group UK Ltd.
National Association of City Transportation Officials. (2013). Urban Street Design Guide. Island Press**.**

Journal articles:

Patil, A. P. and Dongre, A. R. (2014) 'An approach for understanding encroachments in the urban environment based on complexity science', Urban Des Int, Palgrave Macmillan, Vol. 19, no. 1, pp 50—65.
Mahadevia, D., Brown, A., Vyas, S., Patel, T., & Self Employed Women's Association (SEWA) (2014). Inclusive Design for Street Vendors in India: A CUE (Centre for Urban Equity) publication.

Conference papers:

Bhowmik, S. K. (2003). "Urban Responses to Street Trading: India." Paper for panel entitled "Urban Responses to Street Traders: A Comparative Perspective from India, Kenya, and South Africa" at the Urban Research Symposium on Urban Development for Economic Growth and Poverty Reduction, World Bank, Washington, D.C.

Website documents:

Government of India, National Policy on Street Vendors, (2009) Ministry of Urban Development and Poverty Alleviation. www.urbanindia.nic.in

Sit Alshai - Tea Lady; Events taking Place in El Meshtal Street

Suha, BabikirHasan*
Hamad Town, Bahrain

Abstract

Sit Alshai is a Sudanese local term that means the lady who sells tea, coffee and other drinks to passersby. There are many issues related to the Tea Lady, as she represents the socio-economic changes in the Sudanese community. These ladies get an income by appropriating parts of the streets of the city and transforming them to temporary cafes where people drink tea and socialize for a while. The authorities however do not approve their business and many times both the government and opposition parties use them as political leverage. The paper will investigate this phenomenon and the effects of it on the urban society. The Tea Ladies can be found in many places in Khartoum where this happens, mostly concentrated in the centre. However this paper will focus on documenting Tea Ladies located on one street in Khartoum, El Meshtal Street. The road has been chosen specifically because of it's rising importance in the past years and because it is located in an upper-class neighbourhood. The existence of the Tea Ladies on that street symbolizes juxtaposition on that street that is worth being studied and documented.

Keywords: Adaptation, Informalities, Juxtaposition, Khartoum, Place-making Reprogramming

1. Introduction: Lessons of Sit Al-Shai

> *"[…]I think architects are unable to read the mutations that take place and to reinterpret certain phenomena they previously know in architectural terms*."
>
> Koolhaas, 1996: 45

Reprogramming of spaces in the city is becoming a main topic of discussion and research today as more architects go back to the informal architecture in cities to learn lessons. Perhaps it started when Scott Brown, Izenour and Venturi went to Las Vegas and pointed out lessons for architects there in their book *Learning from Las Vegas* (Venturi et al., 1988). This notorious book that created a revolution in the architecture world was followed by another and an even more rebellious book and film by Koolha as that exploits Lagos, an informal city, as a city of the future inviting planners to takes notes from it (Koolha as et Al., 2001). Both researches depended almost entirely on the image and representations they documented of these cities. This paper aims to examine the phenomena of the Tea Lady in the city of Khartoum in a similar approach to that used in Las Vegas and Lagos. Using both photography and film the Tea Lady phenomenon was documented in a specific location in both space and time. The space is El Meshtal Street in

*Corresponding Author: Suha, BabikirHasan; E-mail- suha.babikir@gmail.com

Riyadh Neighbourhood in Khartoum and the time was 16th December 2013. Some photos included within this research may not have been taken in those exact coordinates in time and space, but are used to further explain and reinforce a specific point. The reader will be able to distinguish these photos, as the captions will disclose this information. It is important to note that this paper does not take the entire multiplicity of the issue, such as the socio-economical aspects and historical development of this phenomenon. Instead the research is initiating a first step into exploring these informalities in Khartoum.

2. Literature Review

Meneses-Reyes &Caballero-Juárez(2014) claim that street vendors are usually seen by researches in three different lights; a) as committing criminal activities by breaking the law, b) an economy that should be regulated by the law & c) viewing informality as a better and more practical system of management and control than the law. This research approaches these informalities, represented within this research in the Tea Ladies in Khartoum, in a different light. In a country where the law is not clear and that is going through turmoil this paper highlights the strong agency of these ladies in the city. By confirming the voice of the Tea Ladies in the city and looking at their street economy and place making methods one can draw out numerous effects of the Tea Lady in modern Khartoum, which if put to it's fullest potential could create positive change in the city. By studying existing researches related to street vendors one can find that street economy of this nature is strongly related to the notion of place making and creating a notable identity for the place. Lauermann (2013) is one of the researches that addresses this claim and finds that the vendors can "*leverage the social and material characteristics of their specific market spaces*". However this research does understand that there are various potential dangers as a result of the food and drinks street vending economy. Some of the problems that could arise with these informalities are health threats that comes along with street vended food or drinks that are not hygienically regulated, controlled or supervised. These health threats were discussed by various researches in different countries such as Muyanja et al (2011) in Uganda and Choudhuryet al (2011)in India. Nevertheless this paper is looking specifically at the agency of the Tea Lades in determining the urban landscape of Khartoum.

3. Defining Sit Al-Shai

The Sudanese phrase "Sit Alshai" has been translated within this paper as Tea Lady however the translation does not entirely explain the Arabic version of the word; therefore a more accurate definition should be given. The usage of "Sit" in Sudan refers to a female that is the owner of any object; therefore an exact translation would be the owner of the tea. However since it is very difficult to use "the owner of the tea" in English "Tea Lady" is used as the most appropriate phrase. The spread of Tea Ladies in the city of Khartoum is on the rise since the 1990s. The Saudi newspaper Alriyadh (29th March, 2011) writes about the conditions of the Tea Ladies in Sudan stating that most of them arrive from war tore zones and are supporting their families due to them being widowed, divorced or are sometimes working for extra income to support their husbands in the big expensive city. Having to work literally on the street these ladies are many times subjected to insults from men and confiscation of their stalls by the police.



Fig. 1 A Tea Lady at work on EL-Meshtal Street. Like any business they wake up early to set up their stalls before their customers leave their homes heading to work or schools.
Source: Author

4. Three Dimensional Analyses

The framework for this research draws from Theirsten and Schein's (2008) who created "method triangulation", a systematic method to analyze urban space. This method is based on Henri Lefebvre's definition of space "*Space is lived, perceived and conceived*". Their method has been developed further into a triangular pyramid to encompass the analysis levels this research is covering. At the top of the pyramid is the case study that is dissected into three levels: 1- social level, 2- physical level and 3- program level. Each one of these levels is linked to agents that are respectively: 1- the community, 2- the built environment and 3- the authorities. Amongst these agents are relations based on Lefebvre's definition of space. Several methods have been used to collect the data and they are divided into four categories, literature review, photography, onsite observations and discourse analysis. The data collected for this research is qualitative in nature and the aim for it is to illustrate trends that can be further examined in future researches.

4.1.1. Literature Review

The paper looks into the numerous literatures that have approached the city in an unconventional way. This literature discusses issues of mutations, events and informal architecture that exist in response to the needs of the community. In addition it has looked at literature that examines street vendors and their effects.

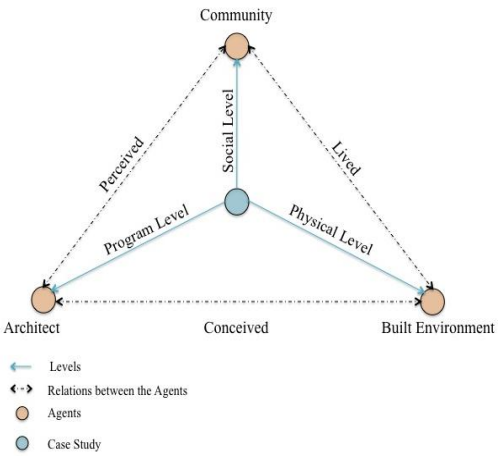


Fig. 2 Pyramid Analysis Diagram

4.1.2. Photography

With the excessive use of images in people's lives photography is no longer only a documentation method; it produces yet another body of information for the researcher to observe. In the past photography has usually been used in research as a means of illustration and presentation but not as a method for conducting research with the exception of a few cases. Sutton claims (1997) that most researchers tend to use qualitative methods including photography without mentioning it in their research fearing it might weaken the authenticity of their research. However at the present time photography is becoming more popular as a research methodology. There are two approaches to using this technique: a) systematic way and b) unsystematic. Whilst the first might be more accepted in academia the second proves to be more useful as it presents us with information that we would have not been able to obtain in a systematic way. Therefore this paper adopts the second method due to the lack of existing literature and information regarding the urban situation of Tea Ladies in Khartoum. The photographs that were used for the observation were taken from two points: a) by walking down the street and documenting the street elevation of the opposite site & b) documenting interesting events happening on the walkway.

4.1.3. Onsite observations

Conducting behavioural mapping, photographic observation and film observation to carry out observations. They have generated data in relation to how the space is lived in and the daily effect of the built environment on the users.

4.1.4. Discourse Analysis

This strategy is used to collect data from various media outlets regarding both the social and legal state of the Tea Ladies. Additionally the analysis includes the effect of the Tea Ladies in the contemporary literature of Sudan such as poems and novels.

4.2. Research Limitation

Many limitations existed in the research which could not be overcome have affected the outcome of the research. These limitations are:

- The fieldwork was conducted during one working day of the week
- Lack of exiting literature regarding the Tea Ladies in all related fields
- Interviews were not conducted with the Tea Ladies on El-Meshtal Street
- There was no updated planning records in the archive of the National Records Office of Sudan

4.3.1.The Conceived space:El Meshtal Street

The space that was chosen for this study is El Meshtal; a 1683 meter long road that runs East-West in the middle of Riyadh neighbourhood. Both the street and the neighbourhood became infamous when Bin Laden chose to live there during his stay in Sudan. Richard Miniter has described this neighbourhood as the Sudanese version of Bel Air (Miniter, 2004). He writes further about the Riyadh and describes it as following:

> Riyadh neighbourhood, a wealthy enclave of Sudanese and foreigners who made their money in the Middle East and came to Sudan to build multi-story concrete houses

> ringed by painted cement wall stopped with razor wire or broken glass. Behind the gates lay hidden gardens kept green with expensive water and cheap caretakers. Sometimes a sunken swimming pool casts a glittering light on thepalm fronds visible from the road or, in the harsh sunlight of the afternoon, a satellite dish winks back at a visitor.
>
> Miniter, 2004: 47

This affluent neighbourhood displays a meeting point and juxtaposition between the extreme wealth and poverty in the country. Wealth represented in its inhabitant's extravagant houses and the poverty symbolized by the Tea Ladies and their mobile structures. El-Meshtal, which is the main street going through the neighbourhood, is categorized by MEFIT consulting Engineers as a branch street that is of residential nature. However in the past years many businesses, banks and governmental institutes have either moved to the street or opened branches there. This reprogramming of the street to accommodate business transforms it from a residential one to a mixed-use street.



Fig. 3 A view of Riyadh from above taken in January 2014. Many public and influential figures, both Sudanese and non-Sudanese, have lived in this neighbourhood. The list includes political figures in the government, business tycoons and upper middle class families. In addition many Sudanese living outside the country have property in Riyadh. The street in the image is a small street inside the neighbourhood not to be confused with El-Meshtal.
Source: author



Fig. 4 On El-Meshtal Street is a sign that says Abu Bakir Al Saddiq Street. Abu bakir is one of Prophet Mohamed's closest companions. This could either be the original name of the street or a name that was assigned to it after the Islamist government came to power. EL-Meshtal means plant nursery in English. This name became widely used because of a known plant nursery at the West entrance of the street and it is the name used in official papers.
Source: author

4.3 Space: Event.2. The Lived

Event is one of the most important factors when analysing a site. In the same manner that the actual space is analysed the location within time should not be overlooked. Any appropriation of space happening in the city is a result of both the space and the characteristics of the time. As Bernard Tschumi states *"…Events are different from programs. A program relies on repetition and habit, it can be written down and be prescriptive. In contrast an event happens unexpectedly."*(Koolhaas et al., 2007:8). The Tea Ladies who are victims of unexpected events have become authors of unexpected events in Khartoum; their structures are of a temporary nature, are unpredictable and are not meant to last long. Their structures exist in a specific moment in time; therefore they are called events in the city. These events are most likely to

happen on nodes which are strategic points on the street that gain their importance from being junctions or placing of gatherings (Lynch, 1960).



Fig. 5 Map showing the nodes on El Meshtal Street, which are more likely to have vending events happening at them.
Source: author

4.3.3. The Perceived Space: The Tea Lady Coordinates

The most important factor in any business is location and Tea Ladies like any corporation understand the importance of the location they choose. Setting their stalls after carefully studying the pedestrian traffic into the road. According to the engineers in the MEFIT consulting Engineers during the morning peak El-Meshtal has 667 outgoing traffic and 181 incoming traffic. The Tea Ladies carefully set up their stalls at where the most traffic intersects (nodes), without academic research they know that most people come from these places. Therefore it would be interesting to study the traffic movement on the roads taking their stalls into account. As mentioned previously many new businesses have opened on the street and this might have resulted in more Tea Ladies moving into the area to serve the new workers. Previously Tea Ladies were concentrated in Khartoum centre. Another important issue in choosing their coordinates is related to the shade provided in the space, which attracts more customers to their location.



Fig. 6 : Families living in Al Riyadhare well known; some are political and economical decision makers in the country. Whilst on El Meshtal Street the unrecognized Tea Ladies appropriate a spot in front of their houses, using the shades cast by them to make a living.
Source: author

5. The Sit Alshai Effect: city scenarios

The Tea Lady who has now become an active agent in writing the urbanity of the city has many effects. This starts from her giving an identity to the space transforming it into a place in a process better known to urbanist and planners as Place making. Furthermore she also creates a public place where citizens can discuss common interests in what shall be called within this paper the Sudanese Salon. The Tea Lady designs her stall, understands how to use clear signage to market her product and has successfully exported her experience to others. The following is a detailed account of her effect on the urban landscape.

5.1. Place making

The space appropriated by the Tea Lady makes her automatically an active agent in the city in the Place making process in it. Place making is defined by Project for Public Spaces organization as *"both an overarching idea and a hands-on tool for improving a neighbourhood, city or region. It has the potential to be one of the most transformative ideas of this century."*(PPS, 2014).Tea Ladies are always found surrounded by people, mostly men, who are able to easily socialize with one another while having their drinks in this informal setting. These gatherings have all the important characteristics mentioned by the PPS in their Place making diagram (Figure 7). They are social spaces and easily accessed which are comfortable and allow for various events to happen in them. There are other vendors on the street such as street traders of mobile credit, fruits, vegetables and other traditional food. But none of these provide the spatial experience a tea stall provides, which explains the reason of why it is always the Tea Ladies that are mostly identified with the spaces they occupy.



Fig. 7: The PPS diagram which has been created in a way so that the inner ring represents key attributes, the middle ring intangible qualities, and the outer ring measurable data.
Source: PPS, 2014



Fig. 8: This photo was not taken in El Meshtal Street, but the drawing on the wall behind the Tea Lady is interesting and it emphasises her role in activating spaces in the city.
Source: author

5.2. The Sudanese Salon

The men gathering in groups around the Tea Lady enjoy their drinks whilst discussing the latest developments in the country, culture, art, literature and religion. These gatherings can be compared to those that took place in the French Salon in the "age of conversation". They are both political and non-political and contain conversations that are both public and private in nature. These gatherings contribute to the place making effect of the Tea Lady and elevate her status, as she is informally the owner of the space. Therefore it is not a surprise that these gatherings have transformed Sit Al Shai to a political leverage for both the government and it's opposition. The authorities in Khartoum seem to be undecided when it comes to the Tea Ladies business. On one hand the police systematically confiscate the Tea Ladies equipment, which disables them from continuing in their business. On the other hand the authority implicitly recognizes them as a profession when setting laws and regulations regarding their business. Examples of these rules set is that non-Sudanese are not allowed to sell tea in Khartoum, which is mentioned in the Sudanese newspaper Alshrouq (28th September, 2012).



Fig. 9 The Tea Lady's stall provides a place with an identity in the public sphere that allows for intimate conversations about public issues between the customers.

Source: author



Fig. 10 An example of a Tea Lady stall design that responds to the direct needs of the users of the space. The design also responds to site context analysis.

Source: author

5.3. Design

When analyzing a Tea Lady's stall design one finds that it must contain all of the following elements; shade, sign and seating. The shade is created in the design by either using a wall, a tree or installing a shading device such an umbrella. This is extremely important to attract customers and invites them to sit around the stall as the drinking cups handed to them are not disposable and must be returned. The second element that is noticed in the design is the sitting areas, which also invite the customers to stay for longer periods and encourages other people to join their gathering and conversations. The last element is signage such as using the Lipton tea sign and strong colours to draw attention to the stall.

5.4. Exporting the Experience

The phenomenon of the Tea Lady has become so important in contemporary Sudanese culture, it is one of the main attractions for tourists visiting the country. Entrepreneurs capitalize on this popular idea by bringing it into a more refined setting. This can be seen in Al Housh restaurant, one of the biggest restaurants in Khartoum and winner of many prizes. The design that is inspired from the Sudanese culture contains many references to the Tea Ladies in the country. In the middle of the restaurant is a circular Tea Lady stall where customers can live the street experience in a more lavishness setting.

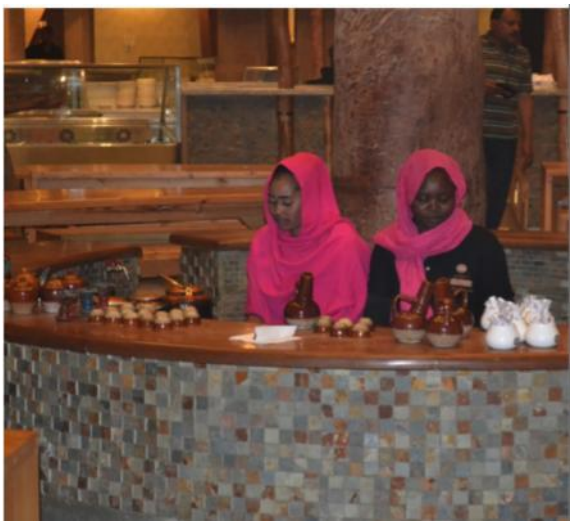


Fig. 11 Al Housh is a luxurious restaurant that opened recently in Khartoum. They have created their own – upper class – version of the street Tea Ladies inside the restaurant.
Source: author



Fig. 12 Teapots used as decoration inside the wall of Al Housh Restaurant. The wall contains elements from the traditional culinary equipments in Sudan in a form of collage; this is one part of it.
Source: author

6. Conclusion

The existence of Sit Alshai allows for informal gatherings and for spaces of democracy in the city transforming spaces to places that people identify with and connect to. Her profession becoming a successful experience that is mimicked and she herself has become an inspiration for many of the contemporary literature in Sudan; from novels to poems. While serving tea, coffee and other drinks, Sit Alshai has become one of the most active agents in the decision making process in the city of Khartoum. More studies need to be carried out about this topic in the following areas:

- Mapping out the locations of Sit Alshai and analyzing their performance according to their location
- Exploring the historical development of Sit Alshai
- A more in depth analysis of the economical effects of the Tea Ladies in Khartoum
- Studying the health risk of selling tea of the street
- Examining how the Sudanese Saloon can be utilized as a tool to create positive change in the city

The importance given to the Tea Lady by the authorities, community and the large debate created by her in Sudan displays that even though she is anonymously appropriating space she is as influential as those living in the houses in Riyadh neighbourhood. This research is the first step towards understanding the dynamics of the informalities of the urban landscape of Khartoum.

References

Choudhury M., Mahanta L., Goswami, J., Mazumder, M. &Pegoo, B. (2011). Socio-economic profile and food safety knowledge and practice of street foodvendors in the city of Guwahati, Assam, India, in *Food Control* (22).p 196-203

Koolhaas, R. (1996). *RemKoolhaas: conversations with students,* 2nded, Houston, Tex.: Rice University, School of Architecture New York : Princeton Architectural Press

Koolhaas, R., Boeri, S., Kwinter,S., Tazi,N. &Obrist.,H. (2001). *Mutations*. Barcelona: ACTAR ; Bordeaux : Arc en reÌ,ve centre d'architecture.

Koolhaas, R. & Tshumi, B, Miljacki, A. & al. (2007). '2 architects, 10 questions on program', in *Praxus* (Re-programming). (8). p 6 - 15.

Lauermann, J. (2013) Practicing space: Vending practices and street markets in Sana'a Yemen, *Geoforum* (47). P 65–72

Lynch, K. (1960). *The Image of the City*.MIT Press

MEFIT consulting Engineers. (2014). *Interviewing Engineers about El-Meshtal Street*, January 2014. Khartoum: Sudan.

Meneses-Reyes, R.&Caballero-Juárez, J.A. (2014).The right to work on the street: Public space and constitutional rights, in *Planning Theory*, Vol. 13(4).p 370-386

Miniter, R. (2004). *Losing Bin Laden: How Bill Clinton's Failures Unleashed Global Terror,*Regnery Publishing.

Muyanja, C., Nayiga, L., Brenda, N. & George Nasinyama. (2011) Practices, knowledge and risk factors of street food vendors in Uganda, in *Food Control* (22). P 1551-1558

Project for Public Spaces (PPS). (2014). *What is Placemaking?,* PPS, viewed 15September2014, http://www.pps.org/reference/what_is_placemaking/.

Sutton, R.I. (1997, January – February). The virtues of Closet Qualitative Research. *Organization Science*, 8 (1), 97-106.

Thierstein, A. & Schein, E. (2008, July). *Emerging cities on the: Arabian Peninsula: Urban space in the Knowledge Economy context*. Archnet-IJAR, 2(2), 178-195.

Venturi, R., and Scott-Brown, D. (1988).*Learning from Las Vegas*. Cambridge, Mass.: MIT Press.

City as a Performative Place: Asala Perahara and the Spatial Dynamics of Kandy

Wasana de Silva*
Department of Architecture, University of Moratuwa, Sri Lanka

Abstract

Traditional cities are dynamically re-enacted through regular performances and rituals. Kandy city is described within this per formative phenomenon in order to understand the dynamics of the place. Phenomenology is the research methodology . A theoretical framework, synthesizing key concepts of place, sense of place, dwelling, Chora, becoming, non-representational landscape theory and performance theory is developed and used to examine performance of the Asala perahara ritual process in Kandy city. Case study findings illustrate that, Asala perahara marks geometrical patterns, in the landscape connecting different locations, rituals, people and the invisible dimensions of the place. Unfolded place within this cultural drama, experiencing natural –cultural setting and body performances is a dynamic process. Spiritual experience is significant in these ritual performances and built forms , inseparable from people and the place. Analysing of Asala perahara explains that city is understood as an inside enclosed by three mountains, reflected in the city form and architecture of Kandy. This reveals important guide lines for city conservation and developments.

Keywords: Sense of place, *Chora*, Performing place, *Asala perahara*, *Nuwara* (Kandy: a traditional city concept)

Introduction

Ritual performances make significant role in sense of place, place attachment and place identities in traditional cities like Kandy. These places are celebrated through series of cyclical ritual performances highlighted the spiritual experience of the place and place attachment. Performances of people , spiritual experience, emerging place and city identities are inter-related with the dynamics of performing place . Asala perahara in Kandy is focused in this study in order to understand the dynamics of the place, people and spiritual experience of the place in traditional cities. The name Kandy is from the original Sinhala meaning of 'kanda uda nuwara' (city on higher elevations/mountains)[1]. Asala festival is an important ritual performance celebrates in Kandy with large participation of people. The city atmosphere becomes more lived and spiritual by gathering of performers, performing ritual events, vibrating sounds of drums and horns, celebrating different places and streets of Kandy during these festival season. How people experience the place through bodily performances in Asala perahara in Kandy, how these

*Corresponding Author: Wasana de Silva; E-mail- wasanade@yahoo.com

[1] Portuguese shortened this name to Candea and continued by British and Dutch used the same name to describe both the kingdom and its capital (Seneviratna, 1993. P.15)

repeating of ritualized performances relate to the place and dynamics of the place and how these experiences reflect in the city and built space, are research questions focused in this study.

Methodology

As research questions are framed within the human experiences and understandings the methodology is focused on phenomenology and Asala perahara performance in Kandy is examined in order to find the relationships of people, performance, emerging place and the city. Performance approaches as a research method is applied in this study. Performing place unfolds a dynamic place of becoming, a holistic understanding of both physical and non physical domains of the place is the theoretical model applied in the case study. A theoretical framework, synthesizing key concepts of place, sense of place, dwelling, Chora, becoming, non-representational landscape theory and performance theory is utilized to understand the place. Researcher needs much patience and intuitive attention throughout the investigation to understand the contextual character, spending long hours in case study location and also sometimes acts as a participant observer.

Literature: People place and performance

How people experience the place and understand the relationship between them and the physical setting/ location is described as sense of place[2]. Sense of place strengthens the place attachment[3]. Many traditional cities, specially Asian cities are significant with both physical and non-physical sense of place as the dynamics of becoming place[4] attached with everyday life of people and performances. Plato[5] describes ideal forms and the everyday world of becoming in sensing Chora; by which ideas pass from the timeless realm of ideal forms or types (concepts) into the everyday world of becoming as changing forms that follow the natural cycles of emergence and decay (Plato: Timaeas and Critia). Therefore, Chora as a defined and established word could be used to describe the dynamic nature of the place attached with performances and everyday life of people linked with physical to non-physical experiences[6]. The non-physical experience of the place is attached with spiritual dimensions as in traditional Asian cities. This kind of spatial understanding is discussed by many: Plato as Chora, Heidegger (1962) as fourfolds, Bollnow (1963) as polar experiences, Eliade (1961).

In order to understand how people perform in the place; what inter-actions take place among performers, observers, other people and natural landscape, recent research works on landscape understanding and neuro science provide better explanative framework. Actor network theory describes relational view of world always in the making of place[7]. People by acting and walking make a network of relationships around them, which produce place and space (Lefebvre, 1991). The performance approaches in landscape understanding (Lorimer, 2005) describe embodied relationship developed between individual subject and the environment. Surrounding as an extension of the body[8], world hood understanding (Heiddger, 1962) and perception of the world (Merleau-Ponty, 2002), the recent discussion of the body as embodied paradigm (Hale, 2013),

[2] Casey (1993); Relph (1976)
[3] Casey (1993); Altman & Low (1992)
[4] Plato, Dovey (2010)
[5] Deverux (1997); Holden (2012)
[6] De Silva (2014)
[7] Latour (1987);Massey
[8] Merleau-Ponty(2002);Heidegger(1962);Hale(2006)

lived body[9] describe deeper understanding of the invisible side of the world by body and performance. Schechner's performance theory (1988) discusses that everyday life is framed and performed; emerging theatre place is evident. We all act better than we know how (Goffman, 1959). Neuro-scientific explanation (Rizzolatti, 2008) describes bodily understanding of action and when same action performed by another person. This kind of understanding is common in ritual behavior when they do the same action and others do the same action the whole group of people act as one entity of sensing and making the place (De Silva,2014). Therefore ritual behavior, which is identical with walking, repetition of walking strengthen the sense of being and produce space and place. An analyzing of this kind of performances could be utilized to examine how people understand the place and make the place, the dynamic nature of the place.

Esala perehera and body performances

Kandy is the last capital of Sri Lanka. Ancient capitals flourished for more than thousand five hundred years across the Northern flat terrains in Sri Lanka , later shifted to the hill country and thereafter gradually moved to Dambadeniya, Kurunegala and then to Gampola in the 14th century, thereafter to Kotte and the last was Kandy the last of this kind (Seneviratna, 1993).

There are many rituals and ceremonies performed in Kandy today, with participation of a large number of people making inter relationships between Nuwara (traditional city concept) and villages. Rituals practiced before 1815 A.D., still perform in Kandy. From 1815 A.D. to 1948 A.D. Kandy was taken under the British power and city and city life exposed to major changes. However, it is recognized by temple priests that rituals in Kandy including Asala perahara still continue without any major changes due to social/cultural or political changes in the history and even today in the contemporary globalization. According to Wellasse Disawa (1817) Asala perahara is known as Asala keliya (play) performed to celebrate God Vishnu's birth[10]. He describes Asala keliya as very ancient ceremony origins on the day of God Vishnu's birth. This should be a very important phenomenon about Asala perahara which describes Asala keliya as a performing of a play celebrates birth of a divinity, having spiritual experiences. During July, August, September celebrations of Asala festivals in temples and devales in traditional settlements all around the island is common today, making a celebrative atmosphere. Asala perahara in Kandy is performed annually, during July/August ending on a full moon day. The perahara festival commence by planting kapa , known as kapa situweema, at four temples: temple of god Natha, temple of god Vishnu, temple of god Kataragama and temple of goddess Pattini. The locations of these temples are same as it is in 1815 period. Inner parade is performed around these temples for five days. Thereafter outer parade known as kumbal perahara parades along the streets in Kandy and Temple of the Tooth Relic too participates in this parade. However, according to Knox' description during the period of Rajasinghe II (1639 – 87 A.D.), it was not mentioned about the participation of temple of the tooth relic in the perahara. Descriptive account on Asala perahara by Wellasse Disawe (1817)[11] says until Keerthi Sri Rajasingha period (1747 – 1781 A.D.) temple of the tooth relic did not participate in the perehera. Therefore, it is evident that the origins of these rituals are not related with Buddhism and are more ancient than Buddhism.

[9] Post modern structuralism
[10] Seneviratne, 1978
[11] Descriptive account of Esala perehera on 19th August 1817, published in government gazette – Sri Lanka of 13th September 1817.

According to both descriptions, many temple women have followed the temple elephants holding sacred objects of Gods by giving services such as sprinkling water, flowers, scented smoke and singing special rhymes. Knox says 'thousands of ladies and gentlewoman- best sort of- in a brave manner' walk in the parade. Wellasse Disawe says many young women and men display their body skills, performing in front of the palace, before starting the perahara, for few hours. He describes; 'two women walking on ropes, displaying magical performances, balancing their body without the use of sticks. One woman jump up above the rope, seven/ eight feet high repeatedly, speedily'. He admires the speed of body movement, circling of their hands in different directions and brave performance of these people. In considering these, there are two important points to be highlighted about the Asala perahara during Kandyan period,

- Many females whose services required for temples (as potters, cooking women, washer women) and ladies and gentle women[12] participated in the Asala perahara. Today, only few females participate, only in Pattini Devle perahara, which is a small part of the whole procession. This shows that during Kandyan period **Asala perahara performance is not recognized as a cultural display; it is an 'ordinary Cultural Life performance'.** Therefore, these rituals have not been documented in ancient texts.
- Body movements, acrobatics, speed up movements and dancing are common, and therefore; 'body performances', and the 'mind- body' are prominent in the procession as an 'entity of sensing and making the place'.

Performing Asala perahara could be a very ancient technique used in place making and place understanding of traditional settlements by people. Therefore, it is reasonable to analyze the subject 'Performing Asala perahara' to examine the 'place', dynamics of place and performances within the traditional city concept of Nuwara.

Re-enactment of city and Asala perahara

Asala festival is a dramatic performance begins with Kapa kapeema (cutting a tree) and Kapa Situweema (planting Kapa), where four temples in Kandy: Natha, Vishnu, Kataragama, and Pattini perform main part with the help of devale villages outside the city. Today in Kandy, Temple of the tooth relic is the key feature in Asela perahara, and this is known as the 'Dalada perahara' by contemporary people. However, important rituals are carried out only at four devale premises, with the participation of devale priests. Temple villages belong to the Temple of the tooth relic also participate in many activities. As mentioned earlier, people in these temple villages and devale villages have to perform specific functions of the Asala festival for living in and utilizing temple lands. (For example: making arches in front of temples, and around the kapa house using young palm leaves, clean up the temple & premises, decorate temple, hanging clean white linen under the roof as a ceiling.) Asala perahara according to time, cyclic nature, relationships with natural features/landscape, methods of performing and significant aspect of the performing, is explained in (Table 1). Through series of performing they make inter relationships with natural landscape location: with valley, mountains, and river and with other suburban temples and villages. They narrate in the landscape by walking, repeating of walking, dancing, singing, drumming, displaying acrobatic games, making temporary structures and marking geometrical patterns. Marking centers, domains and divine experience is significant in these performances which describe producing space and place, a place making process.

[12] Knox

In these rituals sounds of hewisi puja produce dynamic space, requesting divinities to enter human space. The four kapa are planted at same auspicious time at four temples in Kandy (fig. 1). Planting kapa signifies the centre (Seneviratne,1978). Inner parade marks four domains in the place (fig.2) repeating the event for five consecutive days. On the next five days, god's insignia is taken for parading along the streets, known as kumbal perahara. This procession is very long and takes about three hours to pass one point. Perahara parades only along the old streets of Kandy. Each day, they make enclosed domain, getting larger and larger. Perahara parades in clockwise direction, circumbulation of the city (Seneviratne, H.L. 1978). End of Kumbal perahara is followed by five Randoli perahara. Four Randoli of Goddess' are the new addition to perahara, which is longer than Kumbal perahara. As in kumbal perahara God's Insignias are taken to the street on an auspicious time, then all performers of four temples gather at the Deva sanhinda and performers of Temple of the tooth relic gather in front of the temple. This perahara makes larger enclosed domains than Kumbal perahara, by circumbulation of the city. The final night parade is more elegant, and performed until midnight, of a full Moon night day. This perahara is followed by Diya kapeema perahara which connects the city to the river (fig. 3). This place is known as Diyakapanathota at Gatame connected with several related mythical, historical stories developed around the place, describing spiritual mythical aspect of the place and the performance. After Diyakapeema Randoli and sacred insignia of temples are kept at Ganesh kovil, while sacred karaduwa of temple of the tooth relic is kept at Gedige temple. After receiving divine blessings from priests who perform tiresome continuous ritual performing process, day parade revisit the city on an auspicious time (plate 1). Throughout the whole

performances beginning from kapa situweema to day parade body performance take central role in the place, by sensing and weaving the place. Experience of performers describe bodily

understanding of the place, place and perahara as a part of their life, less feeling of the body , performing special behaviour as 'pewenawa' are some evidences of worldhood understanding and surrounding as extension of the body. By walking, repeating , circling, rotating, jumping, dancing and singing they experience the space, spatial quality of the surrounding making an inter-related –network. With the repetitive nature of these body performances which trengthens the sense of being, and strengthening of their attachment to the place and sense of place. These body performances establish important relationship emerged between people and the place, through performing of repeated ritual events, a performing place. Place is re-created with the performance and the people which makes the spiritualized space and place which is identical in traditional city concept of Nuwara in Kandy.

Table 1: Asala perahara – Time, Space, Method of performing
(Source: author)

Ritual		Number of happenings Time Intervals – minutes, hours, days, months, years	Relationship with Natural features/ natural landscape location / time / universe.	Method of performing	Significant aspect in the performing
Asala festival	**Kapa situweema** (planting a pole)	Once a year (July/ August) Two days	Selecting and cutting a tree and planting mark direct inter relationships with landscape.	Parades, rituals, music, offerings.	**Marking a centre by planting the kapa**
	Inner parade	Three times in the evening for Five consecutive days	Parade around the temple makes inter relationships with landscape location.	Small procession walks around the temple, three times in the evening for five days. Music, offerings and rituals.	**Marking a place in the landscape location.**
	Outer parade – **Kumbal perahara**	Five days in the night	Parade walks (clockwise) along the old streets.	Long procession, walking, dancing, acrobatics, singing, playing musical instruments,	**Parade represent the whole social structure , making interrelationships with landscape location.**
	Outer parade – **Randoli perahara**	Five days in the night	Parade walks (clockwise) along the old streets.	Include God's palanquins to the above long procession.	**Parade represent the whole social structure , making interrelationships with landscape location.**
	Diya kapeema (water cutting)	from midnight till dawn	Relates to the changing patterns of midnight to the dawn, parade walks towards the river to perform rituals.	Perception and sensation of the landscape, walking, dancing, playing music, offering food.	**Water cutting, offering foods (special cooked rice) for Gods.**
	Day parade	From mid day until evening	Walking along old streets in day time.	Walking, dancing, playing music, acrobatics, body sacrificing.	**Parade ends, walking three times around the central square.**
	Devil dance (Wali Yakun nateema)	Seven days	Narrative performance of imagined stories	Dancing, singing, music, mime, stories, drawing symbols	**Performing series of mythical stories.**

Conclusion: City as an Inside

Analyzing geometrical patterns marked by perahara describe that perahara begins by marking a centre establishing divine experience on the earth, connecting physical domains to non-physical domains of the place. Thereafter this centre is enlarged into a domain, by parading around the temples. By each day of parading, the centre is getting wider and wider until the final night parade mark the city (the old city and streets). Therefore it is understood that the city is an enlarged version of a centre an inside (fig. 4). Within this inside they experience divine dimensions as well as mundane dimensions: the experience of fourfolds – earth and sky, divinities and mortals as one, the Chora of the place. It is evident that through repeating of continuous ritual process place and city is re-enacted by revisiting and re-strengthening the divine sense of the place by earthly performances of people in these traditional cities as an important concept to examine the contemporary cities and to develop conservation principles for traditional cities. All built forms and architecture is a representation of divine mundane experience in an intimate scale reflecting the understanding of inside within enclosed three mountains (plate 2).

This paper argues that these performances are not traditional or contemporary, but reflect important aspect of the nature of people, place and sense of place united in an inter-related network of performances in the city. It is evident that place is not only visual or physical , moreover, it is mythical and emerging with performances. Whether these kind of performances have been taken into consideration of urban developments, urban planning and governing policies of cities (specially in traditional cities), whether new developments and new life styles encourage these kind of performing to be established spatial networks to understand the nature of humans and the place are questions arising out of this study. Are there any places for people to sense and imagine of their own world views , stories, and narrations by repeated engagement among these places in new city developments ? In the view of city conservation of Kandy three mountains, inside valley and traditional performances are the vital aspects to be considering for people, place and city oriented urban concepts, the Nuwara. Also another significant question is why the later name Kandy used for the easy dialects of colonial rulers still continuing, while the original name provide better sense of the place and place attachment of the Nuwara with its natural location and people.

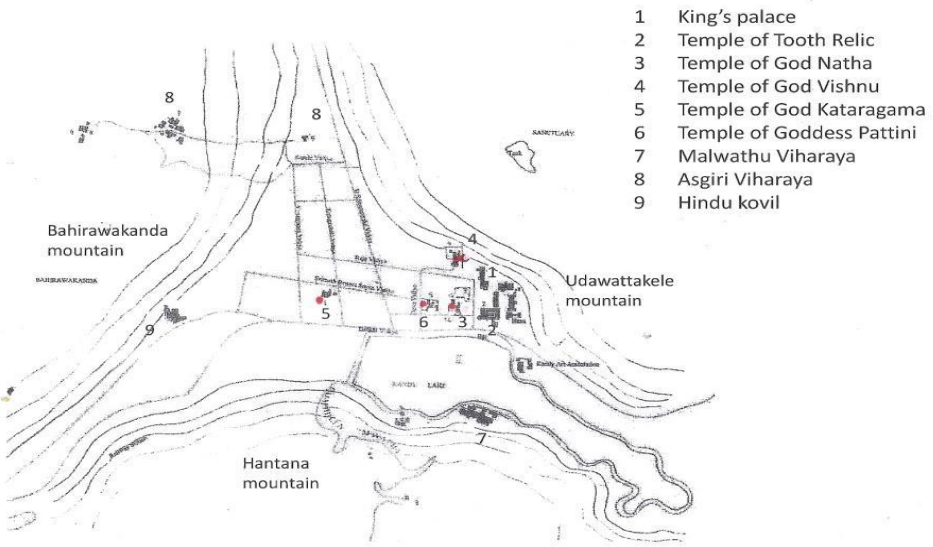


Fig 1: Planting four Kapa mark four centres in Kandy.
Source : author

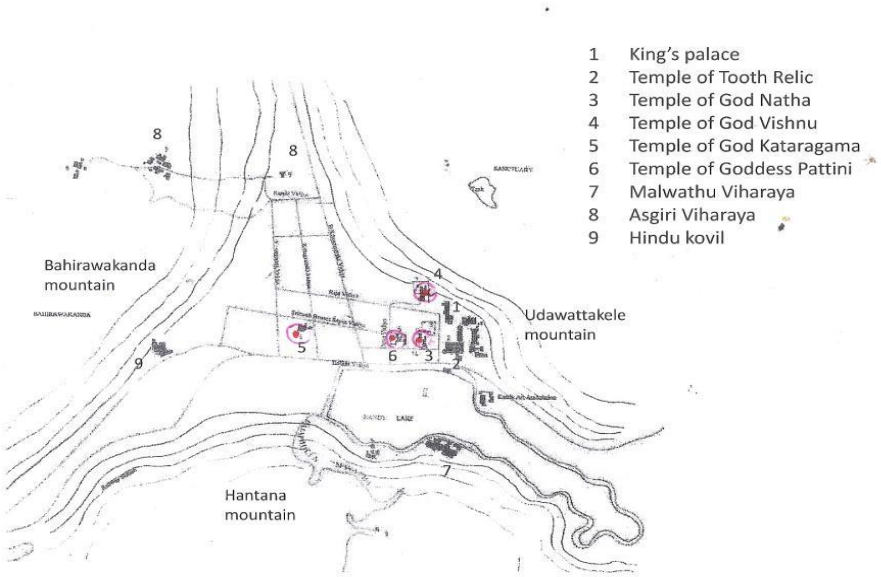


Fig.2: Marking four domains – Inner parade
Source : author

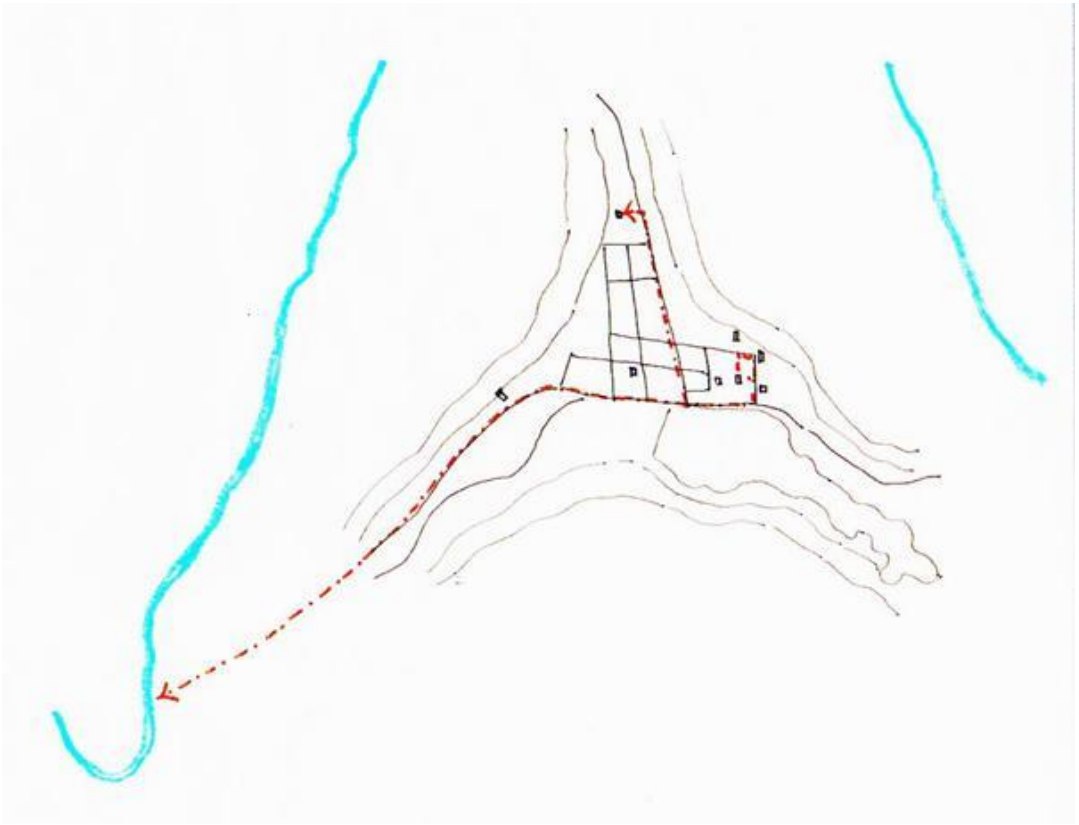


Fig.3 : Diyakapeeme perahara
Source: author



Plate 1 : Perahara re-visit the city
Source : author

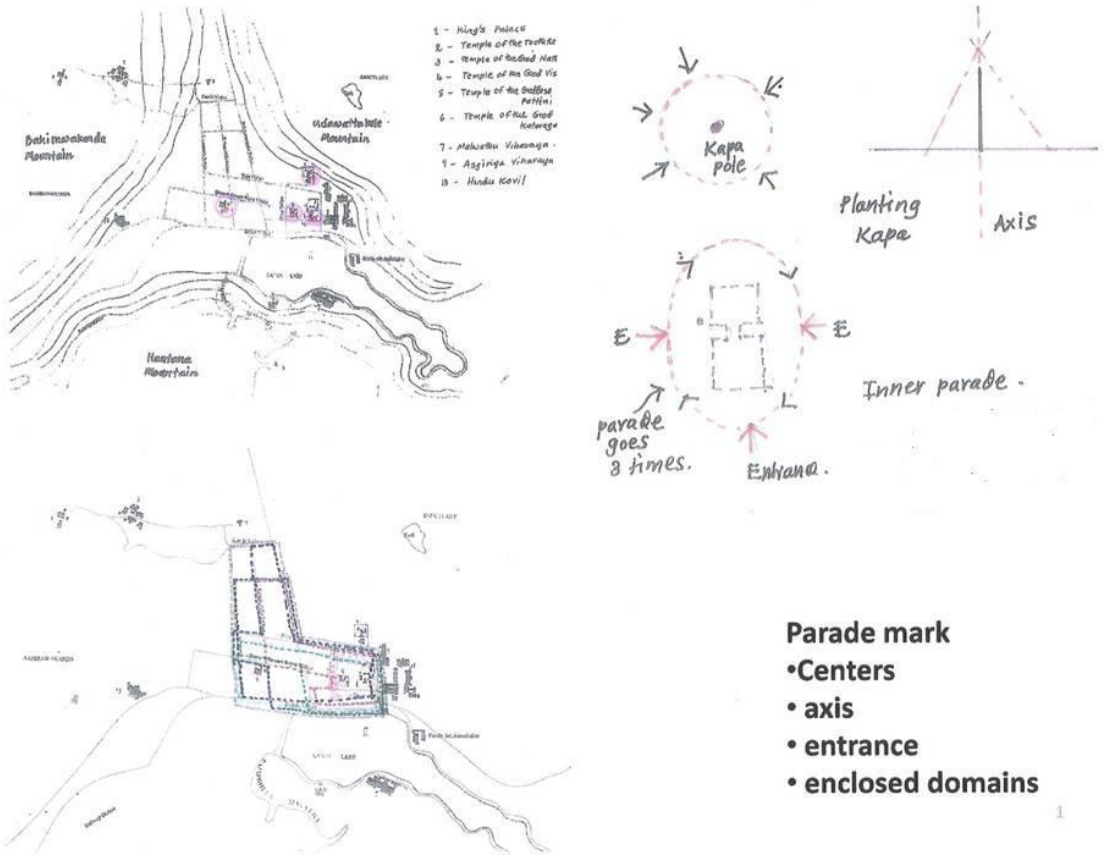


Fig 4 : city as enlarged version of a centre
Source : author



Plate 2 : Low scale architecture and built forms
Source : author

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References

Bachlard, G. (1964). **The Poetics of Space**. Boston: Beacon Press.
Bollnow, O.F.(1963). **Mensch und Raum (Man and Space).** Stuttgart.
Bollnow, O. F.(1963) **Human Space**. English translation. Princeton.
Casey, E. S. (1993) **Getting Back into Place**: Toward a Renewed Understanding of Place World. Bloomington: Indiana University Press.
De Silva,W. (2014) **Performing Place.** PhD Thesis (unpublished). University of Nottingham.
Devereux, P. (1997) The Archaeology of Consciousness. **Journal of Scientific Exploration** 11(4): pp.527-538.
Dovey, K.(2010) **Becoming places**. London : Routedge.
Eliade, M. (1961) **The Sacred and the Profane**. New York: Harcourt.
Goffman, E.(1959) **The Presentation of Self in Everyday Life**. Garden City: Doubleday Anchor
Hale, J. (2006) Architecture and the Body: Materiality, Movement and Meaning MAJA: **Estonian Architectural Review.** 50(4) : pp. 23-27.
Hale, J.(2013) Critical phenomenology: architecture and embodiment. **Architecture and Ideas**. n/a(n/a) : pp. 18-37.
Heidegger, M. (1962) **Being and Time.** New York: Harper & Row.
Holden, G. (2012) Authentic Experience and Minor-Place Making (Eds.) **Proceedings of the. Conference – Designing Place (2012), April 2012, University of Nottingham, UK.** pp.248-263
Knox, R. (1681) **An Historical Relation of Ceylon**. EEBO Early English Books online.
Latour, B. (1987) **Science in Action: How to Follow Scientists and Engineers Through Society**. Milton Keynes: Open University Press.
Lee, D. (1965, 1967). **Plato:Timaeaus and Critia**.(Translation) Harmondsworth:Penguin Books.
Lefebvre, H. (1991) **The production of space** / Henri Lefebvre , translated by Donald Nicholson- Smith. Oxford: Blackwell.
Lorimer, H. (2005) Cultural geography: the busyness of being "more-than-representational"'. **Progress in Human Geography**. 29(1): pp. 83-94.
Merleau-Ponty, M. (2002) **Phenomenology of perception / Maurice Merleau-Ponty** ; translated by Colin Smith. London : Routledge.
Relph, E. (1976) **Place and Placelessness.** London: Pion.
Rizzolatti, G. and Sinigaglia, C.(2008) **Mirrors in the Brain: How Our Minds Share Actions and Emotions.** New York: Oxford University Press.
Seneviratna, A. (1993) **Kandy.** Sri Lanka: Central Cultural Fund.
Seneviratne, H. L. (1978). **Rituals of the Kandyan State.** Cambridge : Cambridge University Press.
Schechner, R. (1988) **Performance Theory**. New York and London: Routledge.

Invisible Architecture; Integrating Subterranean Brussels in Active Neighbourhood Revitalization

Asiri Dissanayake[*]
Department of Architecture, University of Leuven, Belgium

Abstract

Brussels is a city with immense potentials and opportunities. Being at the heart of Europe, it is coherently connected with rest of the world both physically and figuratively. However, these opportunities and connections constantly attract people from around the world; giving way to a heterogenic society of diverse ethnicities and cultures. This heterogenic society creates a strong tension in some quarters of Brussels – especially when there is a prominent arrival magnet as with the case of neighbourhood Fountains with Brussels south railway station in close proximity. As with any infrastructure project, the proposed metro and tram station of Lemonier, is a potential for not only the neighbourhood of Fountains but also for entire metropolis of Brussels. The proposed MetCom program incorporating the Brussels underground gives these commonly mono-functional mobility infrastructure projects a new meaning; transforming them into effective urban public spaces. Introduction of this proposed novel logistic system for urban freight transportation allows new possibilities for the use of existing unused space within the metro stations as well as in the adjoining gray buildings. The project not only helps revitalize the neighbourhood by introducing a new economy but also encourages better interaction of the heterogenic society by providing a place for activity. The project however does not create an architectural object; on the contrary, it creates an invisible architecture.

Keywords: Invisible Architecture, Neighbourhood revitalization, Brussels, Logistic system, Mobility infrastructure

Introduction

Brussels is characterized by its numerous infrastructures from the 20th century; the north – south railway junction, the car tunnels on the city boulevards, the subway network, the ring expressway, etc. Even today several projects are in the pipeline, such as new tram and metro lines. In addition there is especially a need for rehabilitation of the existing transport infrastructures in the city. Although it may seem a technical discourse, infrastructure design also engages social and imaginative dimension as much as engineering; giving way for innovative proposals and programs.

The proposed MetCom logistic system for urban freight transportation is a novel program which has the potential of expanding throughout the highly congested cities as a sustainable logistics system which would eventually prevent the heavy logistic vehicles entering the city centres. In

[*] Corresponding Author: E-mail- asiridi@gmail.com

the MetCom system, the metro transportation system is used for transportation of goods within the inner city. The existing metro stations, cars and lines are modified to accommodate handling the freight transportation. While the passenger transportation continues undisturbed, frequency gaps in the off-peak hours are used for transportation of freights. This MetCom system not only makes the cities less congested, it also adds value in a neighbourhood scale providing employment opportunities within the city for the youth and the blue collar workers.

Apart from the MetCom system, the project consists of a metro station, tram station, a parking facility and also an urban square. The complexity of the infrastructure program is dealt with simple architectural solutions, giving as little emphasis as possible to creating an architectural object. Although the object receives less prominence, most of the attention is given to creating qualitative architectural spaces, encouraging interaction between the seemingly diverse activities. For example, the workshop areas of the MetCom have a direct visual connection with the public square vice versa, while the cafeteria is even accessible for the public. Such interactions are considered with utmost importance as creating an industrial working environment within a dense urban quarter might lead into repulsion generated through the neighbourhood itself.

The literature study allows for understanding not only the concepts behind the architectural quality of the spaces created, but also of the intelligence of the system which binds the whole project together. The detailed design of the process, program and the space relating to the project allows for a comprehensive understanding of this novel initiative as much as possible.

Neighbourhood of Fountains

Brussels is also not a city with a clear city centre and its outskirts; it is rather a city with multiple centres connected with a proper transportation network which acts as the vessels. International, national and metropolitan transportation networks meets together in a seamless way at the Brussels south station which is a prominent arrival magnet in the neighbourhood of Fountains.

Neighbourhood of Fountains, which lays just outside the historical city of Brussels, is located mainly in the valley of the former river Senne. During the 16^{th} – 19^{th} century, located largely in swampy areas, the neighbourhood was serving as crop and livestock supply to the city.

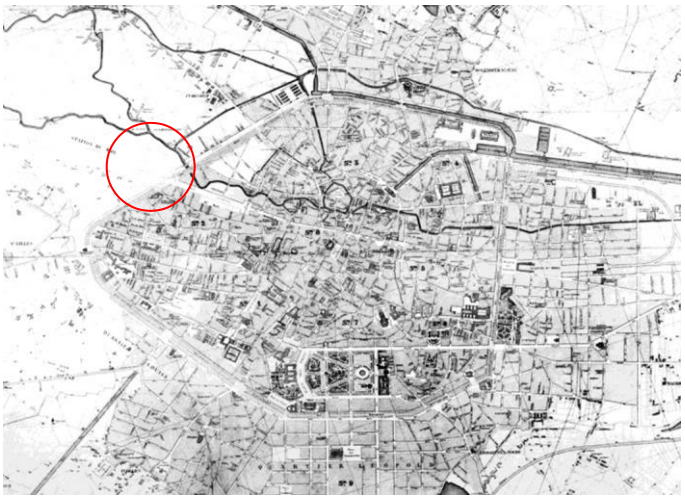


Fig 1: Historical map of Brussels indicating the neighbourhood of Fountains
Source: Brussels archives

In the 20th century however, the growth of the city due to its new status as the capital of Belgium and the rise of industrialization helped radically transform these neighbourhoods. In the outcome of this revitalization two factors were decisive. The first factor was conducting the channel between Brussels and Charleroi, completed in 1832, which provided access to the Hainaut basin and coal and contributed greatly to the industrial development of Brussels. The development of the railway parallel to the channel axis, subsequently leading to the Brussels south railway station, is the second factor resulted in the neighbourhood regeneration of Fountains.

Gare du Midi (Brussels south railway station) was created with a vast space called "the constitution", playing the role of a station forecourt and an entrance to the City. Designed by the architect Auguste Payen, the forecourt generates a feeling of a city gate as well as the monumentality of the station. Actually staged in the urban fabric, the station was the centre of view from drève du Midi, now Avenue Stalingrad.

The neighbourhood Fountains has a high immigrant population. The population consists of mainly Belgian, Moroccan, Portuguese, Spanish, Greeks and Italian ethnicities. Further research into the demographics reviles that the proportion of young people aged 0 to 17 years is greater in the three sectors of the perimeter than in the municipality as a whole and in the Brussels region (28 to 33 % of the total population, compared with 23% for the municipality and 21 % for the region). Conversely, the ratio of elderly is smaller inside the pentagon perimeter compared to the municipal and regional average. This character is directly related to the presence of foreign families or families of foreign origin, which have a higher birth rate than the Belgian birth-rate.

The whole neighbourhood is characterized by a large number of unemployed people. The main reason for this situation is the low educational attainment. The proportion of 18-24 year olds in higher education between 5.3 and 16.8 % is one of the lowest percentages in Brussels.

Infrastructure as an integrated design project

Objectives and research question

As Manuel De Sola Morales (2008) explains, in urban centres, land is undoubtedly the scarcest commodity; doubling it in the form of infrastructure permits a more intensive use to be made of it and simultaneously an enrichment of its image, a multiplication of the possibilities for movement for combining the most complex of the activities.

There is a growing need for rehabilitation of the existing transport infrastructures of Brussels, which creates opportunities to give these commonly mono-functional mobility infrastructures a new meaning; to transform them into effective urban public spaces, which could integrate other uses, as functions for which no affordable space is available in the city centre or which are perceived as generating nuisance to the common function of the city. In order to transform the current pre-metro north-south line 1 into a part of the programmed automated metro system, the segment connecting the south station with the city centre has to be redesigned.

The main objective of the project is to test how the subterranean urban mobility infrastructure of Brussels could be integrated in active neighbourhood revitalization. To answer this question, a fourfold vision is put forward in different scales of urban interaction. At the global scale the

project tests the manipulation of metro transportation systems in cities as means of urban logistics – a new economy. In the city scale the aim is to not only revitalize the neighbourhood of Fountains, Brussels with the introduction of a new economy, but also to encourage a diverse range of activities in the mono-functional landscape. Finally, the architectural vision is to encourage place for activity and interaction, not create an architectural object; thus creating an invisible architecture.

Research methodology

All the buildings, even the highly private buildings, come into contact with, and help shape, aspects of the public domain. The start point of research is through primary observation of the city in action. The approach then is to focus down on a narrow set of urban relationships to understand them with precision and depth. Here, the metro system of Brussels is identified as a potential for generating neighbourhood revitalization by introducing a new economy. The design strategy starts by selectively amplifying the often subtle and fragile trends found within the existing urban context.

Graham Crist (2004) says that when a project is socially driven and focused on programs and processes, the way a building 'looks' has a tendency to slide down the list of priorities. Such a project begins with social processes and it asserts that the architecture participates in, accommodates and gives form to these processes. Social process ranges from real and pressing needs, to particular community situations, or to broader cultural and global issues. This is rather true in this project as it is neither building nor architectural object – it is a continuation of the existing urban fabric mould in a way to make a quality place of action.

Infrastructure as an integrated design project

Infrastructure could be understood as a chance to free architecture and urban planning from their seemingly separate categories and to link them together to create a coherent urban solution. Although it may seem a technical discourse, infrastructure design also engages social and imaginative dimension as much as engineering.

Unlike in previous generations where engineering offices were engaged for the entire management of the building process of infrastructure – from preliminary design to the control of execution drawings, tendering etc – there is now a growing tendency to involve multiple disciplines from the outset. The architect or urban designer is no longer simply there to beautify a project which is primarily based on technical considerations. To arrive at a satisfactory proposal, the work is undertaken in close collaboration with specialized firms in construction or traffic management, but the emphasis on architecture is evident from the start.

Public authorities around the world view transport infrastructure as their primary field of investment. However, infrastructure design is still mostly a last resort for authorities to give structure to haphazard developments. Urban contributions and settlements are repositioned on the basis of new economies, proximities and hierarchies while landscapes and ecologies are radically altered. Landscape and infrastructure merge and movement corridors are (re)worked as new vessels of collective life. An entire new spectrum of the public realm becomes a terrain of investigation. In order to function, fit and be acceptable, infrastructure needs to enhance the quality of this terrain.

Architectural object and the 'place'

The common understanding is that 'architecture' is supposed to be dealing with buildings; thus creating objects. However, Henri Lefebvre (1995) posits that space is a social product; that "spaces are produced". For Lefebvre, space is an entity experienced by people intersecting, interacting, producing and reproducing relationships to and with each other; producing a social space. A similar theory of understanding place as a social space is also put forward by Michel Foucault (1986), expanding Lefebvre's interpretation by repositioning the social construction of space – the performed communication – on a larger context. He observes that the interactions are performed in multiple sites (places), where each site is in turn defined by the social interactions that exist within them individually.

The architectural object of both classicism and modernism contains the idea of original perfection. That is, the significance of any specific object is, in part, understood by some references to simple type forms. Eisenman (1986) explains the specific object does not so much represent type form as it is significant of this relationship; it is in fact a collection of smaller objects which inherit their own importance in reciting the story of the whole.

Architecture of the cities is always a combination of objects. Hence the objects, in the sense of both materialistic and spiritual, seemingly carry a huge significance in the outcome of architecture. Peter Eisenman (1984) contradicts this importance, by misplacing the object in a forward moving time; where the objects origin is the start of its end.

Invisible architecture

The things we cannot see are invisible. For instance the underground is invisible from above ground unless looking through a hole. However, the invisibility discussed here is not the lack of visual connection; on the contrary, it is the lack of sense of existence.

The ground today has become an ecology of architecture; filed with various kinds and patterns of structures and forms. Now seems so familiar to us this concept, that we find it hard to imagine this was not the case before man started conquering earth. However, the architects have also been trying to defy the sense of solid existence.

The house on pilots (1922-27), by Le Corbusier, became the architectural icon of this lose of existence by liberation from the ground. As the house has no direct contact with the ground, it detaches itself from the physical surroundings. The ground ceases to define the architecture as the building practically creates its own ground in the form of a platform resting on pilots. The ground is left behind on the earth. Further into the modernistic architecture, the conceptual neutralisation of the ground is more clearly carried out by Mies van der Rohe. In his Barcelona Pavilion, the podium creates its own micro context for the composition of walls and roof. Thus the building is loses the sense of solid existence on the ground. The French communist party building in Pars, by Oscar Niemeyer, is an instance of contradiction whether to touch the ground or not. He gives the ground – which is normally indefinitely continuous – a distinct form. Within this form, the building itself is again visually dethatched from the ground. It is as if the well developed above-ground and underground are loosely tied with an invisible architecture without a horizon. The quasi-topological ground level keeps you in suspension like in an Alfred Hitchcock movie.

In his Spiritual Retreat House, Emilio Ambasz uses two techniques to make the architecture invisible. Firstly he hides the building in a layer of vegetation on top and secondly he sinks the volume of the building into the topography of the site. Although both Oscar Niemeyer and Emilio Ambasz lose the importance of the architectural object to the ground; still the ground is treated as a tool of camouflage. However Peter Eisenman in his theoretical discourse "Cities of Artificial Excavation", attempts to develop an architecture deriving from the ground.

In his theoritical discourse, Manuel de sola Morales describes that his projects are not connected with the design of objects, ensembles or spaces as such; neither are they landscapes, in the synthetic, combinatory sense of the world. Rather they are ment to be true reinterpritations of the cities and sincere proposals for their transformation.

City as wisdom

If the objects lose their value completely what makes the city breath? Morales (2004) explain that the surface of the city, the urban skin, as 'superficial', that is light, inconsistent and insignificant. The skin, therefore, is an inanimate object which shapes the life inside – it is the point of contact with indoors and outdoors. The infrastructure, both mobility and services, are the vessels of a city; pumping life and binding together the functions to one another. The benches, the garbage bins, the lamp posts, the traffic lights they do not stand out as objects, but makes the composition nonetheless. Morales thinks that paying attention to urban stuff (he mentions as things) is what enables us to make the urban quantity translated into variety the main characteristics of the metropolitan territory. Not the aesthetics of the buildings and or history.

Brussels metro system – analysis and comparisons

Brussels Metro transportation system started as a pre-metro system which could be compared to German Stadtbahn systems of Cologne, Stuttgart, Essen, Hannover, etc, with important sections of underground tunnels used by various tram routes. In 1969, the first tram tunnel along line 1 was opened between Schuman and De Brouckère, and in 1970 line 2 between Madou and Porte de Namur was constructed. Currently lines 1, 2, 5 and 6 are operated as full metro lines, whereas the north-south city tunnel and the outer ring tunnel in the east are still used by trams stopping at low-level platforms.

In September 2003, a 2.7 km extension of Line 1 from Bizet to Erasme Hospital opened with 4 new stations of which the last 800m and Erasmus station are on the surface. All stations have an island platform which is directly accessible from street level without a mezzanine.

Although the Brussels underground mobility system covers most of the urban areas there are few portions, such as Schaarbeek to the North and Uccle to the south, which are loosely connected. According to the future development and expansion plan for the year 2030 however, the loosely connected areas would be integrated to create a more comprehensive mobility network. The Brussels national airport is also to be connected with the Metro network as well as the proposed logistic centre in Schaarbeek.

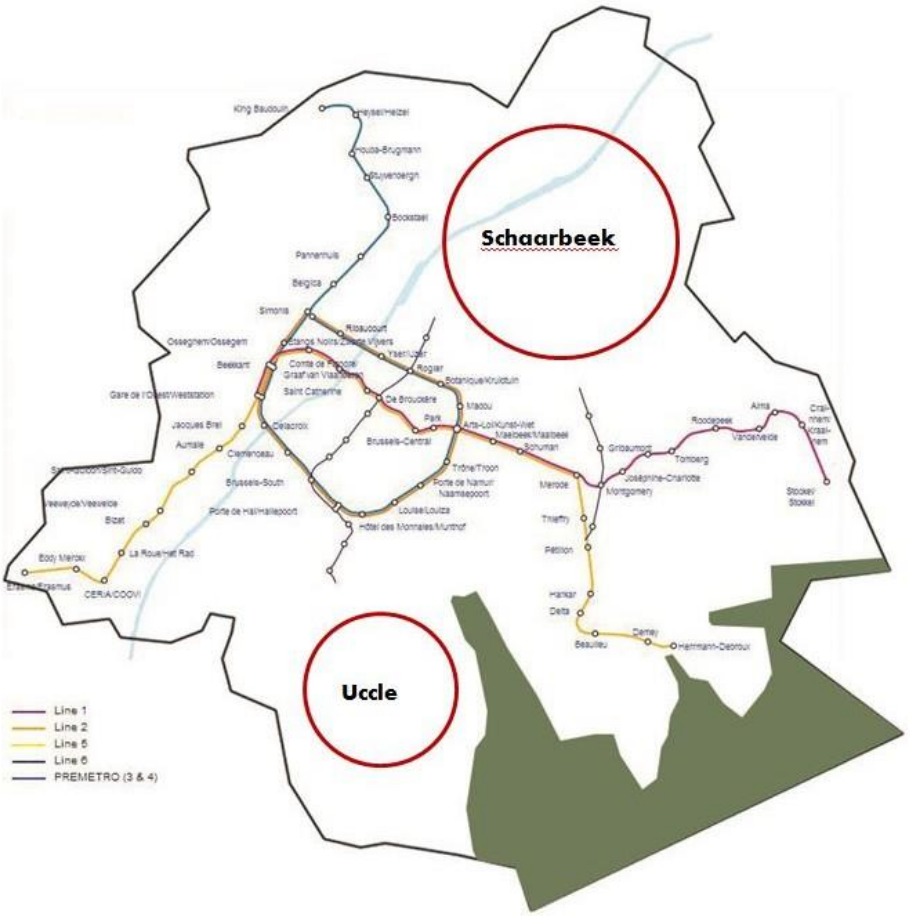


Fig 2: Brussels metro network
Source: MITB Brussels

The Brussels metro network is also properly connected with the bus, tram and train networks, with cross over points from one means of transportation to the other in multiple instances making the commute using public transportation a hassle free experience. The intercity train system is very convenient for making day trips from Brussels to the other major cities in Belgium as well as Ito other regions of Europe. Trains run frequently throughout the day. Although not frequently used, the canal running through the city also has immense potential in re-emerging as a main means of freight transportation, especially across the border to France.

Frequency of the metro

The Brussels Metro system (underground train) is of one the most convenient and fastest ways to travel to the main destinations of the city centre. There are 4 metro lines and 2 tram lines that service the Brussels city centre. Metros run frequently; every 3 minutes at peak, every 10 minutes after 8pm and every 5 minutes on weekends.

Urban logistics

Road traffic in many urban areas continues to grow at a faster rate than road capacity; which results in congestion, delay and unreliability of the network (Freight Transport Association, 1996). Limited accessibility to properties, narrow roads and parking on pavements may present

another serious problem from freight vehicles. Their extra width often leads to congestion, accidents, delays and manoeuvring difficulties that affect lorries as well as other traffic. The biggest contribution of freight transport to urban congestion can be noticed within older urban areas and city centres with narrow roads and shortage of parking space (Hicks, 1977; Civic Trust et al, 1990). These areas urgently require new sustainable solutions to existing problems associated with freight transport operations.

To assist traffic flow at those times when deliveries are permitted, co-ordination of urban freight policy with other policies is important. For example the pedestrianisation and traffic calming schemes need careful designing. The popularity of totally traffic-free areas for shoppers and pedestrians is acknowledged by transport operators but it is also apparent that the practical effect of these measures has been to reduce significantly the time available for deliveries, and the cumulative effect of applying these measures in successive town centres is making it increasingly difficult to achieve daytime deliveries (Freight Transport Association, 1996). These operating difficulties are especially severe for organisations attempting to carry out multi-drop work in towns and cities.

Urban logistics and distribution are a key element in creating mobility problems for both people (congestion, accidents etc) and goods (lost time, horrendous work conditions for deliverers etc). They also have an impact on quality of life in the city (pollution, noise,..). Nonetheless, Brussels policy in this regard is hardly out of the garage.

Urban Freight Transportation

Hicks (1977) noted that any urban area depends for its existence on a massive flow of commodities into, out of, and within its boundaries. Yet the transport of goods remains a forgotten aspect of urban transportation study. Although consideration of freight transport in urban areas continues to lag behind the analysis of the movement of people, there has been a significant increase in the attention paid to urban goods movement in recent years. The extra attention has been mainly the result of growing awareness and concern about the environmental impact of transport and the implications for the economic vitality of towns and cities caused by congestion problems.

Road freight vehicle movements clearly play an important role in the functioning of towns and cities, distributing goods to numerous locations that are vital to urban life. Urban locations served by goods vehicles include shops, restaurants, fuel to petrol stations, equipment and office supplies to commercial premises, raw materials and finished goods to manufacturers and wholesalers, supplies to schools, hospitals and public buildings, refuse collection and disposal and domestic deliveries (Freight Transport Association, 1996).

The trend of increasing demand for urban freight transport is linked directly to population and economic growth within urban areas. Furthermore, as noted by Stantchev and Whiteing (2006), urban freight transport deals primarily with the distribution of goods at the end of the supply chain; therefore many deliveries tend to be made in small loads and in frequent trips, resulting in many vehicle kilometers. As a result urban areas suffer from constantly increasing number of trucks involved in freight transport operations. By using the MetCom freight distribution system however, these vehicle kilometers can be reduced to a minimum.

Most freight in cities moves by road and goods vehicle movements clearly play an important role in the functioning of towns and cities, distributing goods to numerous locations that are vital to

urban life. The main commercial trends the MetCom targets include retail, hospitality industry, construction industry, e-commerce and home shopping.

MetCom freight distribution system

In the MetCom system, the metro transportation system is used for transportation of goods within the inner city. The existing metro stations, cars and lines are modified to accommodate to handle the freight transportation. While the passenger transportation continues undisturbed, the gaps in the frequency in the off-peak hours are used for transportation of freights.

The freights are dropped off at the goods drop off platforms adjoining the passenger drop off. However there is no connection between the two platforms, thus preventing the activities from clashing with one another. The platforms are only for loading and unloading the goods as it is a high frequency activity. The goods are then quickly moved to the safe zone to clear the drop –off zone for the next batch. From the safe zone, the goods are transported into the freight sorting unit at -3 level, using the freight elevators, where they will be sorted according to the type and size. The next stop for the goods is either the stores, located in the Palis Du Midi building or the workshops where value addition processes would take place. Activities run in the workshops include unpacking of products, preparing items for display in retail outlets, product pricing and labelling and assemblage.

Parking facility

Identifying parking facilities and access routes is important, not only because they are necessary functions, but also because they are authentic communal spaces, forming a visual continuity with open air public spaces and the symbolic places of everything that constitutes the 'urban'. Finding room for 300 vehicles in a superstructure is vastly unsustainable in a tight urban context. As the metro tunnel construction already requires digging up to 20m below ground, the volume is already created; it is just a matter of introducing the function. The functional duality of the car park encourages immediate connectivity with the surface. While the 40 slot parking unit at the -1 level caters for short stay, giving prominent access to the open market, and the MetCom drop-off and pick-up functions, the parking levels of -2 and -3 are for long stay, giving access to the metro for park and ride facilities.

Metro and tram station

The metro drop-off is at the -4 level from which there is possibility to exit in two directions. The automatic ticket controls are situated in the -2 level in either side. From the south exit there is the possibility to exit to -1 level from where there is connection towards the ramps to get to the ground level. The north exit lands you directly in the ground level. The two tram platforms accommodate three tram lines. Each of the platforms has direct access from a staircase, elevator or escalator preventing from the commuters crossing the tramlines to reach the next platform.

Urban square

The urban square gives space for different activities ranging from sports such as mini football or basketball to leisure hanging out around the reflection ponds. The atmosphere in the different portions of the urban square is designed to be different from one another. the first quarter, where the open every day market and the outdoor sports areas allows for high frequency activity whereas the second quarter of the reflective ponds and the stairwells allows for a

relaxed atmosphere. The cafes in the Palis du Midi have the possibility of extending out into the square so they can also benefit from the soothing atmosphere of the surrounding.

Landscape

The landscape strategy is derived out of the intention to establish a place – not an architectural object. The soft edges created by lines of trees direct pedestrian flow down from the ramp either towards the metro or tram stations or towards the above ground. Pedestrian and vehicle movement patterns are created in the most natural way possible. The internal islands, which are now only used as parking spaces, are taken out and space is given to the pedestrian pathways either side of the road. Trees are planted only in natural soil 3m away from the building facades, so the careful observer could know on which ground he is standing on. The outdoor paving is the usual granite paving all over giving a unifying effect.

City scale

With the introduction of the MetCom system unwanted goods transportation vehicles are kept out of the city centre. While this helps reduce congestion it is not an invitation for excessive private vehicles entering the city. On the contrary the metro transportation network encourages private vehicle users in using the metro system more for mobility within the city.

Reduced number of vehicles means more roads dedicated to the pedestrians. Though this idea sounds utopian, a city without cars, when the city is portioned into sections and with careful planning of the traffic flow there could be indeed vehicle free zones which encourage pedestrians. The project identifies ‘activity’ as the catalyst for this pedestrian movement. Though the majority of people’s daily commute is from point A to B, the walk could still be made interesting and fruitful.

Neighbourhood scale

The project makes the connection from Brussels south station towards the city centre a stretch of activity. Unlike a wide pedestrian boulevard, which Houseman would have been proud of, the project creates streetscape which encourages activity. The staircases leading to and from the underground parking lot, not only acts as a continuation of the landscape but also provides space for a small snack break. The cafes either side of the stairwell produces the necessary catalyst for the space to achieve functional coherence. The small platforms embedded with the staircase meanwhile organize the flow pattern. The second set of stairs in this eventful journey of the quarter mile leads directly to the metro station. Though they are also stairs, the ergonomics and the width of the staircase does not allow for a break. Walking down the next stairwell suddenly leads you to a public toilet; like Alice, from Alice in Wonderland, you are awestruck at this finding.

A market always attracts people of all cultures and ages, not only because of economical goods but also because of the ambiance and the atmosphere it generates. While the open every day market is connected with the MetCom for smooth functionality, it undoubtedly creates an interesting pass-through for the pedestrians.

Architectural strategy

Although the general program of the MetCom accounts for a straight forward technical solution, the architectural program give added value to the neighbourhood. While the metro, MetCom facility and car park are the main functions of the program, the architectural program includes an open market and an urban park to make the main functions glue together.

Activities, even the once usually happen behind closed factory doors, adds to the urban drama. Consequently, though the architecture is invisible, the activities are not; on the contrary, even the consolidation activities, which are normally hidden from public view, are made visible.

The workshops situated at the -1 level have visual connection with the public square at 0 level. The cafeteria of the workshops is also accessible for the general public allowing for interaction. However the employees have to go through a security check area before entering and exiting the cafeteria and the security check also prevents general public attending the work area. the reflective shallow ponds at the ground level makes ripples so that the silvery reflection is casted inside the workshop area.

Daylight is a scarce commodity in underground construction. However, in the project penetration of daylight into the underground is considered with utmost importance. Voids of 5m diameter in the roof of the metro station allow penetration of sunlight to the platforms. The commuters inside the metro station could not only see the sky and get light, but also see the activities happening outside makes the interactions ever more interesting. This quality is achieved by carefully using the staircases to create angles in the floors above.

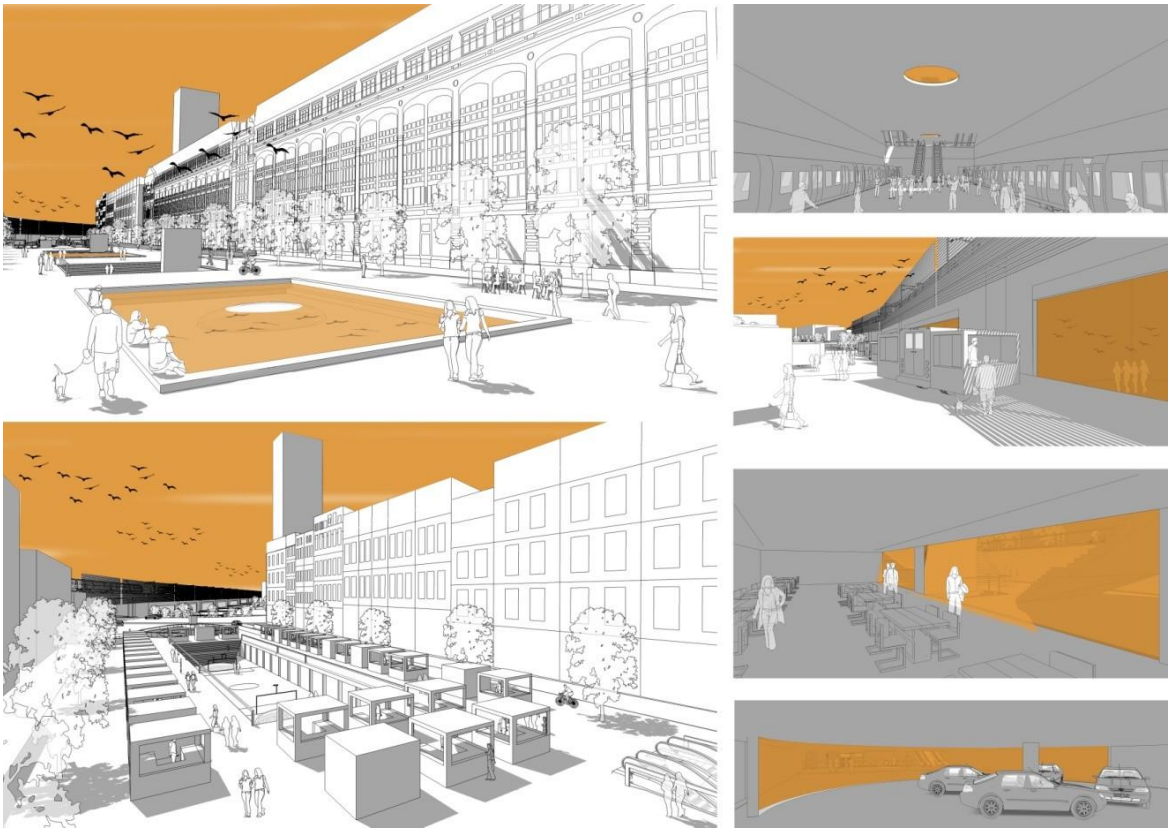


Fig 3: Proposed MetCom Facility
Source: Author

Conclusion

Although it is basically an infrastructure project, the added functions and architectural and urban design qualities makes it more of a comprehensive urban solution. The novelty of the idea of a system such as the MetCom might prevent the project becoming actually realized in the near future, however with intensive research and implementation of actual pilot projects would lead into possible breakthroughs. The hardest would be to encourage the authorities to look into the possibilities of reducing vehicular traffic in the cities; accomplishing this feat would encourage the logistics and transport companies to take up the economical MetCom system.

The MetCom system in the neighbourhood of Fountains gives rise to interesting architectural interventions. In an era where the factories move away from the cities, to bring production back into the heart of the city is rather tricky. However, the architectural intelligence, while creating a productive work environment, also helps to ease the potential tensions of the heterogenic community.

Bibliography

Bachelard G (1958) The poetics of space. Boston: Beacon.
Casey E. S., (1998) The fate of place; A philosophical history. California: University of California Press.
Cohen J.L. , (2007) Factory or landscape, the street of the moderns, in The Street belongs to all of us, Ed. Au diable vauvert, Paris.
Cohen J.L., The Future of Architecture Since 1889, Phaidon.
Corboz A.,(2001) Le Territoire comme Palimpseste et autres essais, Ed. de l'Imprimeur, Collections Tranches de Villes, Paris.
Corijn E., (2013) 'Waarheen met Brussel? Toekomstperspectieven voor de Belgische en Europese hoofdstad', VUB Press, uitgegeven onder leiding van Eric Corijn, met medewerking van Jean de Salle, Jean-Louis Genard, Christian Kesteloot, Christian Vandermotten, Pierre Vanderstraeten, Brussel.
De Sola – Morales (2008) M., A Matter of Things, NAi Publishers.
Descigine M., (2009) Intermediate natures; Birkhauser, Berlin.
Eisenman P., (1984) The end of the classical: The end of the beginning, the end of the end. In: Perspecta, Vol. 21. pp. 154-173.
Eisenman P., (1986) The futility of objects: Decomposition and the processes of difference. Harvard architecture review, v. 3, Winter 1984, p. 64-81.
Foucault, M. (1986 *1967+) 'Of Other Spaces', In : Diacritics, Vol. 16: 22-27.
Lefebvre H., (1995) The production of space. Oxford: Blackwell Publishers Ltd.
Lefevbre, H. 1991. The Production of Space. Oxford, OX, UK: Blackwell.
Lefevbre, H. 2004. Rhythmanalysis. Space, time and everyday life. London: Continuum.
Lees, L., Slater, T., and Wyly, E. (2008). Gentrification. New York: Routledge.
Lorquet, L. 2012. Urban development in Antwerp, In: Designing antwerp. Lier: Antilope NV. Available from: http://www.antwerpen.be/docs/Stad/Stadsvernieuwing/9746949_urbandevelopment_English.pdf (accessed: April 29, 2013).
Lynch, K. 1984. Good city form. Cambridge: MIT press.
Harvey D., (2006) The political economy of public space. In: Low S., Smith N., eds. In: The politics of public space. New York: Routledge. pp. 17- 35.
Hillier B., Hanson J. (1984)The Social Logic of Space, Cambridge University Press, Cambridge UK.
Ruby i. & A.,(2006) Groundscapes, The rediscovery of the ground in the contemporary architecture, Ed. G. Gili, Barcelona.
Rudofsky, B. (1964) Architecture Without Architects. A Short Introduction to Non-Pedigreed Architecture. Museum of Modern Art, New York.

Sennett R., (1994) Flesh and Stone, The body and the City.
S Lebesque., Gieskes V., (2011) The city in layers; Architecture and nature press, Amsterdam .
Shannon K., Smets M., (2010)The Landscape of Contemporary Infrastructure, Nai Publishers, Rotterdam.
Scheerlinck, k., (2012) Depth configurations, proximity, permeability and territorial boundaries in urban projects. [internet] Available from: http://dspace.cc.upv.es/handle/10251/15036 [Accessed 17th July 2013]
Urban Catalyst (2007) Urban Pioneers: Temporary Use and Urban Development in Berlin. Berlin: Jovis. Vitruvius, Morgan M. H., (1914) The ten books on architecture. [internet] Available from: http://academics.triton.edu/faculty/fheitzman/Vitruvius_the_Ten_Books_on_Architecture.pdf [Accessed 11th July 2013]
Von Meijenfeldt E. , Geluk M. , (2002) Verborgen Ruimte, de ontdekking van ondergrondse architectuur, V+K Publishing, Gouda.

Art, Cities and Social Enterprise

Grace McQuilten*
Centre for Art, Society & Transformation, RMIT University, Australia

Abstract

This paper explores the potential role of art-based social enterprises in contributing to sustainable urban development. It considers the examples of two social enterprises on opposite sides of the globe, and with contrasting relations to the "urban"; the Pacific Women's Weaving Circle in the heart of inner-city Melbourne, Australia and Dzidefo Women's Cooperative which traverses the rural context of Kpando, Ghana, with urban markets in Africa and the USA. Both enterprises use the vehicle of art to create opportunities for communities facing economic and social hardship. This paper approaches the field of social enterprise with a cross-disciplinary perspective that combines empirical, art historical and cultural studies methodologies to provide a deeper and more nuanced understanding of how communities manage the complexities of simultaneously pursuing economic, artistic and social development goals. At the point of rapid growth in this field, it considers the conditions for success, and potential risks, of art-based social enterprises in different geographic and urban contexts internationally.

Keywords: art, cities, development, social enterprise

Introduction

The Pacific Women's Weaving Circle in Melbourne, Australia and Dzidefo Women's Cooperative in Kpando, Ghana are social enterprises that use the vehicle of art to create opportunities for communities facing economic and social hardship. The following discussion of these projects explores the complex task of simultaneously pursuing artistic, economic and social goals in art-based social enterprises. The aim of the paper is to ground conceptual approaches to the field of social enterprise in an analysis of specific case studies that take into account both the lived experiences of practitioners, and also the added complexity of pursuing artistic and cultural goals. This involves a two-part methodology. The first part of the paper includes a review of literature in the field of art and its relationship to social enterprise, including perspectives from art history and theory, cultural studies, sociology and business management theory. The second part of the methodology includes in-depth case studies of two enterprises in different geographic contexts with a particular focus on how practitioners in the field navigate the tensions between artistic, social and economic goals. The case studies draw upon field research that includes; interviews with managers, employees and artists of each organisation; an industry round-table discussion held at the University of Melbourne in 2012 which explored the relationship between art, economic systems and social benefit in contemporary art practices; site visits, and analysis of selected artworks and exhibitions from each organisation. The case studies combine scholarly perspectives with more journalistic forms of writing and criticism that reflect the emergent and precarious nature of the organisations and their contexts.

*Corresponding Author: Grace McQuilten; E-mail- grace.mcquilten@rmit.edu.au

Social enterprise literature has emerged predominantly from the field of business management (Dart, 2004; Kerlin, 2010; Defourney, 2008; Zahra, 2010). As a result, there is a strong body of work that examines the structures and processes of managing social enterprises, along with factors that contribute to effective leadership and organisational development. These are all important aspects of understanding how social enterprises operate and generate returns – both social and economic - for the communities in which they work. Despite this body of literature, a significant gap has been identified in addressing the cultural, social, and non-economic dimensions of social enterprise, resulting in an over-representation of perspectives that privilege the economic, and technocratic, aspects of social entrepreneurship (Dacin, Dacin and Tracey, 2011; Valente, 2010). This is of particular importance in the context of art, which often challenges, transforms and exceeds conventional understandings of social value (Luhmann, 2002; Tanner, 2003). The analysis of cases in this paper therefore provides insight into practical issues faced by artists and art organisations in simultaneously pursuing artistic, social and economic goals, with a view to providing greater emphasis on, and attributing value toward, the artistic and cultural dimensions of these ventures.

In the arts, social enterprises have tended to emerge in cities, with a particular focus on textile art, craft, fashion and design as opposed to the areas of exhibitions, dealership and gallery sales (Barraket, 2010; Eastley, 2012).This is partly linked to accessibility, in terms of artists being able to source materials and produce items with minimal infrastructure and cost, while readily accessing markets independently of curators and dealers. It also relates to an emergence of such enterprises in developing rather than developed economies, linked with a broader global development agenda, and in a context where there is a greater reliance on self-generated income due to lack of government and philanthropic support (Terjesen, 2012; Yudice, 2003). With a continuing decline of public funding for the arts internationally, this consideration of new models of practice that enable greater degrees of financial self-sufficiency is of increasing interest to artists in a range of cities around the globe (ENCATC, 2013; Throsby, 2010; O'Connor, 2011).

The impact and social benefits of creative activity, in and of itself, has been recognized internationally and now forms part of a global development agenda. This is evident, for example, in a submission for the Economic Cooperation and Development Review in 2013 made by Irena Bokova, the Director-General of the UNESCO. The submission made a number of key recommendations focused on the importance of culture in promoting sustainable development:

> As a source of identity and strength, culture is a vital resource for empowering communities to participate fully in social and cultural life *…+ Culture is a force for inclusion that is important for communities and individuals aspiring for more effective governance and increased cultural choices *…+ The impact is especially important at the community level, where it can help empower individuals, improve living conditions and foster community-based economic growth.
>
> Bokova, 2013

This interest in cultural practice as a form of economic and social development was echoed in a prior report for the UNESCO Institute of Statistics by Hendrik van der Pol, who argued for the social benefits of embracing economic activity 'at the crossroads of the arts, business and technology' (Pol, 2007). Practices such as art, craft and design, have a unique ability to combine market participation with social inclusion, bringing together individuals in a way that was engaged with cultural context while also provides links to economic participation. While money-making may seem anathema to cultural activities, van der Pol argues, 'Culture should not only be considered as a means (or a barrier) to achieve economic growth but also as a factor of social

cohesion and human development'. This is not to say that art and culture should be monetized or commoditized (Throsby, 2010). Rather it recognizes that art and culture are already intertwined within broader economic and social systems, and indeed culture has become an important factor in worldwide economic growth (Yudice, 2003).

The emergence of social enterprise as a force links to a history of cooperatives and microfinance, while also responding to widespread cutbacks in government funding across Europe, the USA and Asia in the 1980s and 1990s (Borzaga and Galera, 2012; Kerlin, 2010). Social enterprise developed from an interest in how the market might be used to address gaps in funding for social welfare and community services. With its strong basis in the non-profit sector, it tends to prioritize social and community goals over profit-motives and in this way is connected to, but different from the microfinance industries. Indeed many social enterprises are not profit-making at all, combining multiple revenue streams to pursue their social objectives which include grants and donations. In a field review by New York's Seedco Policy Review, it was reported that of a random study of social enterprises conducted in 2001, the vast majority had lost money rather than making a profit (Seedco, 2007). The report notes, '71% lost money, 5 percent broke even, and 24 percent turned a profit'. While such information might sound alarming, this is not necessarily a sign of flaws in the model. Instead, it demonstrates that most social enterprises focus on their social goals over financial returns, just as more conventional non-profits regularly post losses in their balance sheets. By bringing together income from many and various sources including trading activities, they have the potential to extend the potential survival of the traditional non-profit in a climate of low philanthropic and state giving (Weisbrod, 1997; Sabeti, 2009).

The advantage of art, craft and design based social enterprises is that they are often based on the existing skills, creativity and resources of artists and therefore don't require significant start-up capital. This provides an important advantage in a developing-world context, where recycled materials can be sourced for production of goods and works can be created from almost anything and everything at hand. In terms of social enterprise, this also means that running costs and overheads can be adjusted according to the local context. Perhaps more important than cost efficiency is the fact that these types of enterprises provide other, non-monetary benefits for the artists involved, including space and resources to make art, the opportunity to explore and address issues of cultural identity in a changing global context, as well as skills development and participation in civic life (Farr-Wharton, 2013; Bokova, 2013).

Social enterprise therefore has the potential to re-orient the focus of urban development away from overtly commercial motives, by privileging artistic and social goals alongside the quest for economic independence (McRobbie, 2011; Social Enterprise UK, 2013). It is nevertheless important to be aware that in many examples of social enterprise, those intended to benefit may not be active agents in managing and setting the direction of the organization. As Marie Lisa Decaney observes in her study of social enterprises that work in communities experiencing poverty, 'Social enterprises that engage the poor as passive beneficiaries have a tendency to foster subservience and dependency that may lead to a hardening of social exclusion' (Decaney, 2012). This is also evident for example in social enterprises that manufacture in developing economies but where the artistic and business direction, retail and management of the business occurs in a way that is disconnected from the context of production, or NGOs focused on gap funding for their social welfare activities rather than income generation for the artists involved. Questions around the exploitation of labor, copyright of artist's work, and a condescending attitude to addressing poverty and disadvantage abound in this field, and are worthy of critical reflection (Menkes, 2012; Kolk, 2013, Davis, 2012).

This paper therefore focuses on two examples of relatively small-scale, locally-focused ventures where artists and communities experiencing disadvantage have a driving role in the enterprise, considering the degree to which they have agency and freedom in what they make, their conditions of work, how and where they generate income, how profits are distributed and how their activities support artistic goals. It compares the experience of practitioners in the urban context of Melbourne in the case of the Pacific Women's Weaving Circle, with an enterprise that combines production in a rural context of Ghana with sales in urban markets internationally in the case of Dzidefo Women's Cooperative, pointing to the difficulties of sustaining such ventures outside of an urban context. If we are currently on the brink of rapid growth in this field, what are the conditions for success, and failure, in these types of enterprises?

Case Study 1: Pacific Women's Weaving Circle

The Pacific Women's Weaving Circle is is an initiative of artists living in Melbourne who originally hail from Pacific Island nations, with the aim of generating artistic and economic opportunities for the artists involved, along with a space for social connection in what is at times an alienating urban environment for new migrant communities. The non-economic values of the group included artistic collaboration and skill sharing, the creation of a space in which to address experiences of social exclusion, and the opportunity for artists to reconnect with traditional arts and crafts. They describe:

> We realize more and more, that by being part of something like this, we ensure that these exquisite skills of craft and design unique to our beloved Pacific Islands are maintained and cherished. By investing in local knowledge, we are able to connect with Islander life and culture in our urban realities.
>
> PWWC, 2011

Their economic focus included the generation of income for artists through the making and selling of works, while at the same time encouraging a spirit of reciprocity. Maryann Talia Pau, one of the founders of the group, describes 'Our vision for the circle has always been to grow it and support women to create their own social enterprises based on crafts they love and that have meaning for them' (Pau, 2011) The group therefore embraced elements of commercial enterprise as a way of generating income for artists and to support their activities. At the same time they retained an element of resistance to the purely economic, linking to a history of artistic practice that has challenged the capitalist market by promoting alternative forms of trade (Purves, 2005). An interest in gifting and sharing, for example, is expressed in many of the group's communications. In a description for one of their exhibitions, for example, the artists explain, 'Hand-made, hand-woven and hand-gifted treasures will be exchanged during the installation, foregrounding community, tradition, and history' (Mis-design, 2011).

The term social enterprise is useful here, as it speaks to the possibility of generating income while also privileging non-economic goals. The Pacific Women's Weaving Circle describe process as taking priority over outcomes in their activities: 'Through The Pacific Women's Weaving Circle, we remind each other that the 'making' process is just as valuable as a finished basket or necklace' (PWWC, 2011).Making, trading, facilitating workshops and exhibiting their work are means for the artists to engage with a variety of audiences, including the contemporary art world. This reflects the interests and practices of the group's founders, artists Lisa Hilli and Maryann Talia Pau.

Lisa Hilli's practice engages a range of contemporary media including video, sculpture and installation, while maintaining a dialogue with traditional art forms relating to her Papua New Guinean cultural background. In her video and performance work Just Like Home (2008-2010), she documented the ways in which her mother had adapted traditional Papua New Guinean cooking techniques in Australia. She filmed her mother preparing a meal of Ai gir, a vegetable and chicken dish traditionally cooked in banana leaves. In Australia, her mother prepares the dish using tin foil, creating a disjuncture between indigenous life and industrial modernity. For the exhibition of the video work, Hilli constructed large banana trees from tin foil, under which the video was screened. Alongside the exhibition, Hilli and her mother prepared and shared the traditional meal of Ai gir with audience members. The exhibition travelled to a variety of galleries in urban and regional venues across Australia. In projects such as Just like Home, HIlli explores the ways in which social and geographic conditions influence identity, while also conscientiously traversing the boundaries of what is seen to be contemporary and traditional cultural practice. Hilli's work explicitly foregrounds the loss of cultural identity in Western cities, and the conflict between modern industrial processes and indigenous culture.

Maryann Talia Pau similarly confounds the distinction between contemporary and traditional in her practice, where the artist hand-crafts elaborate body adornments using traditional techniques from Samoa and across the Pacific. In her installation work Find your memories, Find your stars, Pau engaged with both pop culture and cultural tradition. The work was exhibited as part of the exhibition Meleponi Pasifika at the Footscray Community Arts Centre, part of the Contemporary Pacific Arts Festival, Melbourne in 2013. The focal point of the installation was a simple white dress-form mannequin sitting on the floor of a small gallery, near the wall. Pinned to the mannequin was an elaborate chain of crisp white ribbon, tightly woven into geometric shapes. Strung across the mannequin like an elaborate couture dress in the making, the chain then spread out across the floor and crept up along the wall to create a an intricate web of white shapes against the white walls, barely discernible yet striking in its subtle texture. Catching the light, the network of shapes, with their interplay of frame and space, star and shadow, alluded to the natural formations of wildlife and stars, while also connecting to the seemingly random nature of the creative process. In such works Pau draws upon traditional form, with its links to ceremony, place and identity, and brings this into dialogue with the aesthetics of contemporary fashion, drawing attention to the process of making rather than the end product.

The Pacific Women's Weaving Circle was less about the individual artistic goals of Hilli and Pau, however, than about forming a space for emerging artists and makers, with a goal to increase opportunities for income generation for women in their communities. The origins of the group were somewhat organic, beginning with the foundation of fortnightly and monthly gatherings which included anywhere between a handful and a dozen women. As people became aware of the group, the numbers increased and additional weaving circles were formed in different geographic regions (PWWC, 2011). The group also shifted to a more enterprising model as their work attained interest and attention from the general public and art world. They began selling items and running public workshops to fund the growth and development of the group. From here, they rented a studio and started employing project and administration staff to support the development of mainstream exhibitions and public projects. A key project that accelerated this growth was the exhibition Pacific Trade: Occupation & Exchange, which involved collaboration with independent fashion label Alpha 60 as part of Melbourne Spring Fashion Week in 2011 (Mis-design, 2011).

In Pacific Trade: Occupation & Exchange, the artists inhabited one of Alpha 60's high-end fashion retail stores, repurposing it for public weaving workshops, activities that promoted an economy of gifting and an art installation featuring a range of hand-woven objects displayed throughout

the store (Figure 1). The artists made stars from woven ribbon, for example, which were gifted to customers who entered the store, transforming the usual economic exchanges of a commercial shop. They also gifted knowledge and skills by providing free workshops for members of the public to learn how to weave the stars, which also provided an opportunity to experience the social and relational qualities of the weaving circle. Their installation in the store referred to Pacific Trade routes and migration. This included traditionally woven mats, a hand-made woven canoe, and an array of baskets, interior furnishings and adornments. Woven stars were suspended from the ceiling to hang over the canoe, referring to navigation by night. The front window of the store was transformed with a hand-woven dress made of brightly wrapped sweets, a play on the ideas of consumption, consumer desire, value and the superficial aspects of fashion. It was also referring to a traditional Samoan gift of sweets woven together.



Fig.1: Pacific Women's Weaving Circle, Pacific Trade: Occupation & Exchange, 2011
Photo Credit: Lisa Hilli, 2011

The Alpha60 retail store is known for a minimalist, slightly gothic, black and white aesthetic. The Pacific Women's Weaving Circle installations and activities were a strange juxtaposition in this context. Their living presence and vibrant objects, along with their focus on processes that subvert the usual economic exchanges of clothing retail, drew attention to the lifelessness of retail stores, spaces in which the end product is elevated and production is usually disguised. The incongruity highlighted the ways in which the contemporary urban landscape alienates human interaction. The artists physically occupied this de-humanized and transactional space, carving out a territory from which to raise questions of cultural exclusion and class divisions in fashion. The use of the term "occupation" pointed to histories of colonization in the Asia-Pacific region that continue to be played out in both political and cultural terms (Mignolo, 2010). Here the power-dynamic was reversed, with Pacific artists becoming the occupiers, teachers and traders, while privileging alternative forms of commerce such as gifting and exchange. They did not simply create an image of social harmony, however, instead providing a space in which to attend to political and social differences. Tensions arose for example in the process of imparting traditional knowledge to members of the public, where the artists had to negotiate the boundaries between what they considered to be sacred knowledge and the information that they wanted to openly share, addressing issues of cultural appropriation and emphasizing cultural difference rather than homogeneity (Pau, 2012).

After a period of rapid growth in 2011-12, the collective scaled back their operations to reconsider their original purposes, pointing to the difficulty of negotiating the competing goals of social enterprise. Pau describes this questioning process, stating 'As a collective, it is good; it is the whole dealing with complexity and acknowledging it. What is this space for, who is it for?' (Pau, 2012).In 2012 they returned to the simple original premise of meeting on a monthly or

fortnightly basis in an informal way, without the pressure to exhibit and pay rent and overheads that had emerged through their expansion. This was a purposeful decision to prioritize artistic and social goals. The group describes, 'some things though are absolute and consistent each time we meet: we share a great feed, we enjoy hearty laughter and we grow a deeper appreciation for the skill and ingenuity of our ancestors and peoples around us' (PWWC, 2013). Somewhat unexpectedly, this shift away from mainstream art world exhibition and profiling enabled the artists to have more time to make artwork. They were able to return to a process of making what they liked, as they liked, and according to each artist's individual interests, as opposed to collective exhibition making. Similarly, a reduced focus on economic goals also unexpectedly enhanced the economic potential and benefits to the artists, by reducing overheads and expenses. Artists were able to sell their wares independently and as a group at markets and through their own networks, while the costs of regular workshops were funded by the artists themselves contributing materials (Pau, 2012).

The Pacific Women's Weaving Circle is an example of the possibility for art and social enterprise to come together without compromising the qualities of artistic independence and critical engagement with social context. However this has relied upon an ability to navigate complex terrain, including adapting and scaling back the model over time when economic and artistic motivations started to compete. Staying small and focusing on opportunities for artists to earn income without huge financial risk has led to a more sustainable model; the group is financially sustainable without the need for, or dependence upon, external funding. However a tense relationship with commercial economic value remains. Pau describes the ways in which artistic, social and economic values coincide in her individual artistic practice:

> Getting my work acquired by NGV really set the bar for me. That got me thinking, 'Wow, if I can make a breastplate and sell it for this much, then maybe that is how I could make some money for me and my family'. But it is deeper than that; it is more complex than that. It is so much about the process and about community and culture and identity and my worth as a woman, my work and how I use these hands.
>
> Pau, 2012

Pau's description of the cultural and social facets of her artistic practice, along with the economic benefits that are simultaneously intertwined within this practice, point to the role that art is playing in international community development, as evident in the direction of UNESCO policy. However the push for cultural entrepreneurship in developing economies raises a separate set of issues, particularly in relation to the ease of access to markets in rural versus urban settings. These issues are central for Dzidefo Women's Cooperative, the second case study to be discussed in this paper.

Case Study 2: Dzidefo

Geographic context plays a significant role in determining both the sustainability and impact of art-based social enterprises. In the case of Dzidefo Women's Sewing Collective, a rural location resulted in dependence on partner organizations in urban centers for survival. Dzidefois an example of a small scale, local, art based social enterprise with a hybrid model. Dzidefo operates from an orphanage in the Volta region of Ghana, Africa. Along with producing textiles and garments for the local markets, they also manufacture for a number of international designers who sell to urban consumers. Due to the small scale and remote location of Dzidefo, they tend to produce quantities of items for customers on an ad hoc basis, rather than larger manufacturing orders which are sent to bigger factories or larger scale workshops in more

accessible regions of the country. While production is located in a rural context, the enterprise is dependent on retail trade in urban markets for survival. This makes for a precarious and hybrid model and impacts on their goals of economic sustainability.

The Dzidefo group was established in January 2008 by a local Ghanaian woman, known as "Mama Esi", who also runs the affiliated Ryvanz-Mia Orphanage. Esi was assisted by Peta Hall, a volunteer who worked with the international aid organization Village Volunteers. This link to Village Volunteers has provided an ongoing source of skilled volunteers for the group, a strategy that has increased international links and opportunities for manufacturing and sales beyond the local market, which is limited. Their studio is located in the regional town Kpando, located about four hours out of the capital city Accra. This means that sale and distribution of work to markets and shops has been difficult, particularly as transportation by road is difficult and the costs of shipping and postage are high in Ghana. Dzidefo began with ten local women designing and printing artwork onto cotton fabrics, employing a range of dying methods that include batik, wax and woodblock printing. African textiles are popular in the local markets, especially in the tourist market, while also supporting a vibrant fashion scene in Ghana. The production and sale of fabrics in the capital city Accra has been a good income source for the cooperative while also enabling a greater degree of artistic freedom for the artists; rather than being commissioned to produce particular work, for example, the artists are able to experiment with materials and ideas. Due to the economic and social conditions of rural Ghana, economic goals are a priority for the group, and as a result their practice has a more obviously utilitarian and economically oriented focus, than might be expected from a similar cooperative of artists in a more developed context.

One of Dzidefo's previous international clients was the US fashion label Osei-Duro, established by US designers Maryanne Mathias and Molly Keogh in 2009. The label sells to the US market in fashion capitals such as New York, Los Angeles and San Francisco, but produce in collaboration with local artisans in remote areas of Ghana. They describe their business in terms of social goals:

> We produce our textiles and garments in Ghana, applying traditional techniques such as hand dyeing and weaving. We aim to support the local apparel industry – on both a large and small scale – in becoming sustainable. We work towards a vibrant fashion industry, one that exceeds international production standards while respecting the rights and aesthetics of local makers.
>
> Osei-Duro, 2010

Despite this social focus, Osei-Durohas a private and for-profit governance structure, and in this sense is positioned more on the business end of the social enterprise spectrum, while nevertheless operating with an environmental and social lens. With a model that combines local artisans with international trade, a for-profit structure with socially engaged motivations, Osei-Duro provides a more problematic example of an art-based social enterprise. The following discussion explores the lack of ownership and participation of collaborating artists in this model, along with the dangers and potential benefits of trying to "do good" through social enterprise. If social enterprise is to be a model that enables independent artistic practice with flow-on economic and social benefits, then the agency and active participation of artists is a key consideration, which is impacted by specific geographic and economic contexts.

Osei-Duro designers collaborate with approximately 20 local makers, from textile design to embroidery and crochet, and at one point this included Dzidefo (Figure 2). The relationship of Osei-Duro to Dzidefo was short-lived, however, pointing to the difficulties of bringing together a

community-driven and grass roots artistic practice, as is the case in Dzidefo, with the commercial demands of a for-profit enterprise in a fast and furious urban marketplace of USA. The cooperative were contracted for manufacturing work. After a few small production runs, the variation in quality and efficiency was too unpredictable for the commercial requirements of Osei-Duro's model, leading to the end of their collaboration. In the realm of art, variation and difference are highly valued qualities. However in the realm of commercial fashion production, sameness and consistency are qualities that trump individuation. This raises the question of whether an art enterprise can translate, and indeed whether it should translate, from a local to an international market. In the example of Dzidefo, the group lost potential revenue by not meeting Osei-Duro's expectations; however this might have been for the benefit of their ongoing artistic and social goals.



Fig. 2: (Left) Exterior view of Dzidefo workshop in Kpando, Ghana, 2012
Photo credit: Grace McQuilten
(Right) Osei-duro and Dzidefo Collaboration, 2010
Photo credit: Molly Keogh, Producer / Leila Hekmat, Photographer, Copyright ©Osei-Duro

The Osei-Duro enterprise continues to work with many other cooperatives and individual artists in Ghana along more conventional and economically rational lines. This benefits their fashion label in a number of ways. They have access to highly skilled and creative textile artists and craftspeople, which brings a strong aesthetic point-of-difference to their finished work. It also means that the business can produce ethically in a lower-cost economy, while creating indirect social benefits to the Ghanaian community. Many advocates working in the space of development in Africa are pushing for exactly these kinds of opportunities to collaborate with international industry. Secretary General of the United Nations, Ban Ki-moon argues, "Africa does not need charity – Africa needs investment and partnership *…+ Joining forces with civil society and private sector, including non-traditional players like the fashion industry, has become indispensable" (Menkes, 2012). One of the complexities of this business model, however, is the integration of traditional Ghanaian aesthetics into a non-Ghanaian product, which draws upon the talents of local artists to create work for a US-owned and managed business. Questions about cultural appropriation abound in the field of fashion, and have come to the fore internationally in recent times with a number of law suits in the US relating to the appropriation of indigenous artwork and cultural references in mainstream fashion (Tillotson, 2011; Karmali, 2013; Wilkinson, 2012). This is an issue of particular relevance for social enterprises in developing economies, where businesses may be started by aid organizations or ambitious social entrepreneurs who come and go without a deep engagement with local context. Jon Hugget, an advisor in the field of social enterprise, warns against the tendency to celebrate the heroic individual in philanthropy and social enterprise, which often inflates the perceived importance of highly educated, articulate, networked individuals. This focus on the "meritorious" individual is often at the expense of valuing the collaborative work and efforts of the communities who are intended to benefit:

> Meritocrats in government and philanthropy give support, contracts and capital to those they trust. Trustees are usually well-spoken and well-heeled. Awards ceremonies can show a hierarchy, with the great and the good at the top, the entrepreneur in the middle, and the 'beneficiaries' at the bottom.
>
> Hugget, 2012

Instead, Hugget suggests that social enterprises should embrace more of a ground-up approach, providing tools and opportunities to those who seek to benefit, rather than those who seek to help. In his words, 'the best way to solve social problems was to give power to those with the problem, who are rarely meritocrats themselves'. This question of power in social enterprise points to an issue that is relevant for all arts-based social enterprises – the degree to which artists and communities can also respond to problems in the enterprise structure when business starts to impact negatively upon social outcomes.

This was evident in the journey of The Pacific Women's Weaving Circle, which changed and adapted its model, scaling back its engagement with both mainstream exhibiting practices and commercial activity, in order to negotiate tensions between the group's social, artistic and economic goals. This involved striking a balance between their need for money to support the costs of their organization, their aim to generate income for their artists and their social goals in terms of providing a space to address issues of social exclusion and to preserve cultural knowledge, all while enabling a degree of artistic freedom. The degree of independence was much more difficult to secure for Dzidefo, partly due to the geographic isolation and reliance on external partners to grow sales in urban markets.

Conclusion

The findings of this paper suggest that art based social enterprises are more successful when located in cities, where artists have ready access to local markets and greater independence in managing the distribution and sale of their work. It is evident that the process of balancing multiple and conflicting goals in art based social enterprises is ongoing, and requires a clear understanding of intended purposes, continual reflection upon, and acknowledgement of, failure and compromise, and a willingness to change and adapt as circumstances shift. By bringing together empirical research with theoretical perspectives from art history, cultural studies and social enterprise, this paper has revealed that art as a social enterprise treads a fine line between privileging economic development for communities and collapsing back into the logic of commercial business. The ability of such organizations to navigate this territory depends, in great part, on the agency and active participation of those intended to benefit. An understanding of impact in this context therefore requires an understanding of the experiences of practitioners, along with a valuing of the artistic and cultural, as well as economic, goals of each specific enterprise.

The limitations of the paper include the select number of organisations studied. Further research is indicated that provides cross-comparison with a greater number and variety of organisations, including attention to the impact of economic and business models and geographic context, as well as artistic and cultural goals.The findings of this paper point to the need for cross-disciplinary approaches to the field that privilege the perspectives of practitioners alongside critical and theoretical approaches to measuring impact and sustainability. This approach will serve to deepen and enrich our understanding of the complexities involved in the simultaneous pursuit of social, cultural and economic goals in developing communities in an increasingly urbanized world.

References

Barraket, J, Collyer, N, O'Connor, M and Anderson, H. (2010) "FASES: Finding Australia's Social Enterprise Sector," Queensland, Australia: Australian Centre for Philanthropy and Nonprofit Studies, Queensland University of Technology.

Bokova, I. (2013) 'The power of culture for development: economic cooperation and development review', Paris: United Nations Educational, Scientific & Cultural Organisation (UNESCO).

Borzaga, C, and Galera, G. (2012) "The concept and practice of social enterprise. Lessons from the Italian experience," International Review of Social Research, vol. 2, no. 2, pp. 95-112.

Dacin, M, Dacin, P and Tracey, P. (2011) "Social Entrepreneurship: A critique & future directions," Organization Science, 23 March.

Dart, R. (2004) "The Legitimacy of social enterprise" Non-profit Management and Leadership, vol. 14, no 4, pp. 411-424.

Davis, B. (2013) "A critique of social practice art: What does it mean to be a political artist?" International Socialist Review, Issue no. 90.

Decaney, M. (2012) "Social Enterprises and the Poor" Copenhagen, Denmark: Copenhagen Business School.

Defourny, J. and Nyssens, M. (2008). "Social enterprise in Europe: recent trends and developments"Social Enterprise Journal, no. 4.

Eastley, K. (2012) "Learning from Branching Out; An exploration of Social Enterprise in the Tasmanian Arts Sector." Hobart: Tasmanian Regional Arts.

Farr-Wharton, B, Dick, T, Ruiz-Gutierrez, J, Guillaumon, S, Casado, T, Gomes, L and Johnston, L. (2013) "Giving Voice to cultural enterprises from the global south," Lismore: Southern Cross University.

Hugget, J. (2012) "Social enterprise and meritocracy: watch out for the blindspots"The Guardian, 19 October.

Karmali, S. (2013) "Feathers Ruffled at H&M"Vogue, 12 August.

Kerlin, J. (2010) "A comparative analysis of the global emergence of social enterprise"Voluntas, vol. 21, pp.162-179.

Kolk, A, Rivera-Santos, M and Rufin, C. (2013) "Reviewing a Decade of Research on the 'Base/Bottom of the Pyramid' (BOP) Concept," Business & Society, vol. 53, no. 3.

Luhmann, N. (2000) Art as a Social System, Meridian, Crossing Aesthetics, Stanford: Stanford University Press.

McRobbie, A. (2011). "Re-thinking Creative Economy as Radical Social Enterprise," Variant, no. 41

Menkes, S. (2012) "Rebranding Africa," The New York Times, 14 May.

Mignolo, W.(2010) "Delinking: The Rhetoric of Modernity, the Logic of Coloniality and the Grammar of De-Coloniality." In Globalization and the Decolonial Option. London; New York Routledge.

Mis-design (2011), exhibition catalogue and archival documentation, viewed March 28th 2014, http://mis-design.tumblr.com.

O'Connor, J with Cunningham, S and Jaaniste, L. (2011) "Arts and creative industries: A historical overview; and an Australian conversation." Sydney: The Australian Council for the Arts.

Osei-Duro (2010), fashion label and online store, accessed January 20 2014, http://www.oseiduro.com/about

PWWC (2011) Pacific Women's Weaving Circle, viewed 28 March 2014, http://www.pacificwomensweavingcircle.com.au

Pau, M. (2011) "Interview", The Design Files (August).

Pau, M. (2012) "Industry Roundtable on Creative Social Enterprise [transcript]."Melbourne: University of Melbourne.

Purves, T. (2005) What we want is free: generosity and exchange in recent art, Albany: State University of New York Press.

Pol, H. (2007). "Key role of cultural and creative industries in the economy', Canada: UNESCO Institute for Statistics.

ENCATC (2013)"Responding to the crisis with culture: Towards new governance & business models for the cultural sector", Brussels: ENCATC Policy Debate Report.

Sabeti, H. (2009). "The Emerging Fourth Sector." Washington: Fourth Sector Network Concept Working Group.

Seedco (2007). "The Limits of Social Enterprise: A Field Study & Case Analysis." New York: Seedco Policy Centre.

Social Enterprise UK (2013). "The People's Business: The State of Social Enterprise 2013." London: Social Enterprise UK.

Tanner, J, (2003). The Sociology of Art: A Reader. New York: Routledge.

Terjesen, S, Lepoutre, J, Justo, R and Bosma, N. (2012). "Report on Social Entrepreneurship: Global Entrepreneurship Monitor." London: Global Entrepreneurship Research Association.

Throsby, D. (2010) Economics of Cultural Policy. New York: Cambridge University Press.

Tillotson, K. (2011) "Urban Outfitters' hipster panty is a Navajo no-no."Star Tribune, 14 October Valente, M. (2010). "Demystifying the struggles of private sector paradigmatic change: business as an agent in a complex adaptive system." Business Society, vol. 49.

Weisbrod, B. (1997). "The Future of the Nonprofit Sector: Its Entwining with Private Enterprise and Government." Journal of Policy Analysis and Management, vol.16, no. 4.

Wilkinson, I. (2012) "Are people letting Karl Lagerfeld off the hook for his Native American headdresses?"NY Magazine, 11 December.

Yúdice, G. (2003)The Expediency of Culture: Uses of Culture in the Global Era. Durham: Duke University Press.

Zahra, S. A., Gedajlovic, E., Neubaum, D. O. and Shulman, J. M. (2009) "A typology of social entrepreneurs: motives, search processes and ethical challenges."Journal of Business Venturing, no. 24.

Sustaining Sense of Place of Kandy, Sri Lanka: The Role of Commercial Spaces

Nushra, M.N.F., Weerasinghe, U.G.D.[*]
Department of Architecture, University of Moratuwa, Sri Lanka

Abstract

Developing a historically important city while retaining the essence of that place is a crucial issue confronted by architects, urban designers and planners worldwide. It should neither be a repetition of elements nor total disregard of conservational norms: if that city is an urbanized living city, many facets such as public services, commercial activities and conservation issues require consideration. Understanding the sense of place is considered as the means of ensuring healthy and sustainable development in a historical city. Sense of place is always related to human interaction with places and is reflected in commercial spaces, which have the potential of creating an identity to a city. Therefore the objective of this research is to explore the sense of place in commercial spaces of a living historical city.

Key words: historical city developments, urban conservation, sense of place

1. Introduction

Preserving the 'sense of place' in a historical context has become a crucial issue with today's new development programs and many theories have been established in this area of study based on the issues that arose from time to time. These theories prove that a proper understanding of the sense of place for a particular space is needed for a positive development in future. Relph, (1976) has written in-depth regarding the increasing level of placelessnes, stating that the current scale of destruction and replacement of the distinctive places of the world suggests that placeless geography is increasingly the more forceful of these, even though a considerable diversity of places persist.

There is a research gap regarding the sense of place in the historical context and especially in relation to commercial spaces. It is inevitable that the cities have to undergo to changes from time to time and developments had to take place. Thus preserving the 'sense' of that place is important even if the place cannot be preserved (Steven, 2007; Shu-Yi, 2010). It could be perhaps that the commercial aspect of the city is neglected when it comes to the preservation of a historical city and it should be noted that in a living historical city like Kandy the two facets cannot be segregated. Sense of place is always related to human interaction with places and thus it is reflected in commercial spaces. They also have the potential of creating an identity to a city and therefore the research is to explore the sense of place in commercial spaces located in a historical city.

[*] Corresponding Author: Weerasinghe, U.G.D.; E-mail- gamini.weerasinghe@gmail.com

2. Research objectives

Primary objective

Understanding the attributes of 'sense of place' in a historic city and exploring the means of preserving it through commercial spaces.

Secondary objectives

- Understanding what is 'sense of place'
- Exploring how the concept of ' sense of place' has been handled in the past
- Identifying the constrains which hinder the developments in historical cities from conserving its 'sense of place'
- Suggesting strategies to preserve the 'sense of place' in a historic context in future.

3. Methodology

An intensive literature review was conducted on the subject area and a theoretical framework was developed based on the concepts of 'sense of place' as discussed by numerous scholars. The research was case study based, with the city of Kandy - a living historical city - being selected for the research. Three different commercial spaces from within Kandy city were selected for the data collection based on the time period they were built. The reason for selecting 'time period' as a criteria to select the samples was that it is with 'time' the changes occur in any city and it is more appropriate for a historical city as well. Therefore the selected sample areas were:

a. Kandy Municipal Market,
b. Kandy City Centre,
c. Part of a commercial street

The first stage of data collection was done through observation; each case was observed for particular period during the weekends and the weekdays and important details were gathered by photographs as well as personal notes. The factors that were observed during the visits were;

- ✓ the activity types
- ✓ most crowded spaces
- ✓ type of people visiting the place
- ✓ their behavior patterns
- ✓ their interaction with the salesmen
- ✓ interaction with other visitors
- ✓ the type of shopping etc

The second phase of data collection was by means of questionnaires and semi-structured interviews. Two questionnaires were prepared separately for the local visitors and the foreigners; along with the questionnaires some information were collected from them by casual conversations. The interviews were informal, and conducted with the salesmen. A total of 61 questionnaires were filled from the three study locations: 22 from Kandy Municipal Market, 20 from Kandy city centre and 19 from the Commercial street.

Methodology of data analyzing

The data collected by the observation was analyzed based on the spaces in which the observation took place.

Example: Activity- More people were seen chatting with each other; it was analyzed as to where it occurred? What was the reason for that? Whether there was any special characteristic in that space? Whether there was any architectural element that supported that function? Thereafter contribution of that particular activity to generate an intangible quality was analyzed and finally the connection between the tangible component or space that produce an intangible quality which help to create a sense of place is made.
The data collected from the questionnaires, interviews and the casual conversations were interpreted based on the theoretical framework as they require qualitative questions and answers. Further, the fact that respondents were from separate groups of people and the difference in the age group of the local visitors were considered when analyzing the questionnaires.

4. Defining 'Place' and the concept of 'sense of place'

All the literatures which try to address the issue of the cities losing their 'sense of place' try to come out with ways by which the sense of place can be measured and all of them are intangible facets which are beyond the physical appearance of a building or places. Phil Turner & Susan Turner (n.d . p.14) perceive 'place' as an objective dimension whereas the 'sense of place' is its subjective dimension. According to Dovey (1999) the concept of 'place is aligned with group of terms, such as 'identity', 'community', 'character' and 'home'. A place is given meaning by the activities of the people (Norberg-Schulz,1980; Relph, 1976). For Najafi & Shariff, (2011) it is the relationship of the people with the physical along with the former. For Hauge (2007), the ingredients which give identity to a place generates the 'sense' of that place. Jiven & Larkham, (2003) argue that this identity has close relationship with the history of a place. Hayden (1997) further states that the urban landscape should help the citizens to define their public past.

4.1 Importance of retaining the 'sense of place' in living historical cities

One of the major problems identified in the historical cities is the repetition of the same elements without a meaning and thus affecting the sense of that place. As a result s, when one building sets a wrong example, as all the buildings are not designed or renovated by professionals sensitive to principles of urban conservation, many other buildings also have the tendency to follow them because of the lack of knowledge of the people. Hence Steven (2007) insists that the city as a whole should be considered when proposing renovations for old buildings or construction of new buildings. Also Shu-Yi, (2010) insists upon the fact that the locals and their lifestyles should be considered rather than the purely focusing on tourism especially, which is a much debated topic in contemporary development and conservation plans.

4.2 Role of commercial spaces in retaining the 'sense of place' of historic cities

Commercial activity is considered as one of the important functions that have been there even before the civilization of mankind. Even though it was not in an advance form as it is now, it had the basic concept of selling and buying. The beginning of the commercial activity can be considered as the Barter system where goods were exchanged between two individuals or

parties. This small action constitutes many social as well as cultural aspects to it apart from its commercial purpose, because the human interaction between two individuals is strongly felt in this action. Hence the setting or the place, where this action takes place, which is the architecture, has a powerful impact on commercial activities; the degree of the impact depends

on how that architecture is relevant to that particular place, especially the spirit of the place (Day, 2002).

Unfortunately, the so called 'historically or culturally important places' are affected by the name of 'commercial purposes' as a result of the development around the world. Thus Hayden (1997) criticizes them by saying that "The process that transforms places demands analysis. As a field of wild flowers becomes a shopping mall at the edge of a freeway, that paved over meadow, restructured as freeway lanes, parking lots, and mall must still be considered as place, if only to register the importance of loss and it has been damaged by careless development."(Hayden, 1997: 37).

5. Theoretical framework

The main theoretical framework is derived from the literature review. That is to identify the intangible qualities that are generated by the tangible components or the spaces to create 'sense of place'. At the same time the tangible components and the spaces are compared with reference to the past. Therefore the intangible qualities that are derived from the literature survey and the tools that help to explore them in the case studies are discussed below.

5.1 Roots

According to Day (2002), 'root', is knowing the past which, in time and place give context to individual life; connecting individuals with community, nature, even identity and self-esteem. For Relph (2008), a public place is an expression of community, where communally held beliefs and values and interpersonal involvements are reflected through the landscape, the street and the buildings. This notion envisages that architecture should reveal the 'culture' of a place, because 'culture' means, the ideas, customs, and social behavior of a particular people or society (Oxford Dictionary, n.d.). Based on this argument, some scholars refer to culture itself as what makes the sense or the spirit of a place (Durrell , as cited in Jiven & Larkham, 2003).

As such, the following are the aspects which should be looked in to when examining whether a particular place has the component of 'root' which will give a sense of place to it:

- The building's impact on the culture of the place
- The building's contribution towards the reinforcement of the community and vice versa
- Reflection of the beliefs and values of interpersonal involvements of the people and the place through the building
- The building's image as an expression of the community

5.2 Honesty

Relph (1976) insists that places become 'placeless' by losing their authenticity where either stereo 'type conventions' or 'technological sophistications' siege them. Relph further states that by losing the essence or the honesty of a place, people who are living there also lose their true

identity, because peoples' identity is mostly related to the place where they are associated with. Accordingly, certain considerations are derived to decide whether a building or a place has a sense of honesty:

- Authenticity of the building
- Authenticity of the tangible components of the building
- Unselfconscious experience of the building
- The building's impact on the symbolic quality of the place

5.3 Sustainability

For Day (2002), social, cultural, economical, ecological and health are the factors by which sustainability of a place should be measured. These aspects can be into two spheres as socio cultural and ecological, economical and health, because these two have become the two extreme problems in the contemporary world. The contribution of built environment for these two issues is comparatively large. Its negative impact has an effect on the past, present and the future of a community, and an understanding the past as well as creating the architecture of the people would help to sustain those five aspects ,which are categorized as:

- Ecological, economical and health
- Social and Cultural

5.4 Memory

Making connections with what one heard or read in the past with what he sees in the present is an inevitable nature of human mind. Thus memory has the power to create a bridge between the past and the present. Accordingly, what one perceives in the present must be a tangible component that should be able to trigger a memory of the past. "Place memory" says Hayden (1997: 36) "is the key to the power of historic places to help citizens define their pasts; places trigger memories for insiders, who have shared a common past, and at the same time places often can represent shared pasts to outsiders who might be interested in knowing about them in the present". Therefore, in order to understand the sense of a place through the facet of memory, the following aspects should be considered:

- The contribution of the built environment in remembering the specific place as a historic city
- The contribution of the built environment in defining the public past of the citizens or the community

5.5 Place attachment

According to Cross (2001, p.1),

> "…place attachment is more than an emotional and cognitive experience, and includes cultural beliefs and practices that link people to place".
> Yi-Fu Tuan (as cited in Cross, 2001, p.2)

refers place attachment as '*topophiolia'* and says it is ".. the affective bond between people and place or setting". As a result of having an attachment towards a place, man eventually takes care of what he does to that place and his future actions and impacts to that place is decided or defined by it. Accordingly it should be concluded that a building in a historical city, which is also

an action made by man should be able to enhance this attachment toward itself as well as to where it is located, because it will shape the future of the city as well.
Therefore the following aspects are derived which help to decide the component of 'place attachment' of a building:

- The impact of the building on the peoples' attachment to the place
- The feeling of belongingness
- The attitudes of the people about the building

5.6 Identity

A place is considered as something that gives an identity not only to that place, but also to those people who live there. Thus 'identity' is considered as the vital ingredient that creates a 'sense of a place'. Relph, (1976) explains that the identity of a place is expressed in three ways; they are the' physical appearance', 'observable activities and functions' and 'meanings or symbols'. These three aspects Relph (1976) says, express a 'socially structured' identity. Thus he tries to explain that an identity of a place expresses a 'common identity' of a community.

Especially in a historical city, there is more potential to express the identity of not only the present state and lifestyle of a community, but also the 'public past' of that community as to what kind of activities and rituals took place in particular spaces.

> "Group identity is thus closely linked with the form and history of a place, creating a sense of place"
> (Jiven & Larkham, 2003:69)

Based on the following three areas, the element of identity is discussed:

- Expression of common identity through the physical features.
- Expression of common identity through the activities.
- Expression of common identity through the symbols and rituals.

6. Kandy

Kandy is selected for the case study as it is a living historical and cultural city. One of the widely debated topic related to Kandy is in how the new developments should respond to its historical, or Kandyan architecture and beautify the city; yet a forgotten topic is that while adopting certain elements from old architecture and having new buildings in order to discipline the city, the character and the essence of the place deteriorates and thus the city losses its life in certain activities. Although Kandy is a service city with commercial activities, despite being a cultural city, the commercial or the service sector of the city is either ignored or forgotten when development takes place. It is only confined to providing buildings for those function while the human relationships and behavior patterns related to functions are being neglected. Therefore the value of the 'place' is lost. Thus a comparison of the new infills in the city for the commercial activities and the old shopping areas, and extent to which they help to preserve the value of the city by sustaining it as a 'place' along with the experience of the people require consideration.

7. Case study Analysis

Analysis of all three case studies is beyond the scope this paper. As such, a detailed discussion is confined to an analysis of the Kandy market, while only a summary of the findings are explained for the Kandy City Centre and the Shopping street.

7.1 Kandy municipal market

The current Municipal Market in Kandy was built in 1957 in the same place where the old market had been. It is located in the centre of the city providing ample facilities for the public (Karunaratna & MSA :Sri Lanka, 1999).



Fig 1. Kandy municipal market- built during the post independent period.
Source: author

7.1.1 Roots

The building's impact on the culture of the place

The building which was built during the post independent era exhibits the features of vernacular as well as Kandyan architecture; among them the Kandyan roof, colonnaded lobby, courtyard and the corridor are some important features. The tangible components and the spaces are significantly a response to the traditional architecture of the place.

The market complex itself is a living example of the commercial culture that existed many years in the country as well as the city; that is the traditional 'pola' (fair) and the stalls where the buyer and the seller interact with each other. Other than the physical appearance and the observable functions of the market, there is closeness between the buyer and the seller; they have regular customers who visit their shop for the sake of friendship.

The building's contribution towards the reinforcement of the community and vice versa

The market complex and the community reinforce each other in two ways. One is the traditional pola in the heart of the city and it was observed that it is the busiest and the bustling part of the whole complex. The second is how the people think that the architecture of the building reinforces their culture and religion. The responses to the questionnaire indicate that the roof reminds most respondents of the temple of tooth, and Kandy city being the one of the most

sacred places for Buddhists and its connection with the historical importance create a bond between the building and the community.

Reflection of the beliefs and values of interpersonal involvements of the people and the place through the building

A noteworthy response from all the questionnaires is that the place is friendly; both the locals as well as the foreigners mentioned this and would recommend this building to someone else as a place that is a full of friendly people.

Such friendliness and hospitality had been valued by all users and aided by the interpersonal involvements of people since early days. It is reflected through the architecture which enhances this interaction: how the corridors help people to pause and talk for a while; the view towards the



Fig. 2 The corridor as an interactive space for the people.
sourece: author

central courtyard give them a feeling that they are in a relaxed space and this makes them stay in those places for a longer period (Fig.2). The stalls being opened to the corridors as well as the 'pola' function add more value to it.

7.1.2 Honesty

Authenticity of the building

The market complex cannot be defined as an authentic place based on the physical appearance as it was built responding to the traditional architecture. Yet the expression of the architecture and the experience of those who use it becomes authentic, because of the familiarity of functions to which people have been used to.

Unselfconscious experience of the building

The spaces are unselfconsciously experienced by the public because of many reasons such as the functions and the methodological zoning layout which is not only defined by the type of goods they sell but also the colours and the smell of the goods, the volume of the space and its density as well as the noise of the people. This is very well noted by the all the respondent said it is for

them to find the places and some mentioned the reasons as zoning , organized manner and familiarity and others even though did not mention a particular reason yet they don't have a problem in finding their way.

The building's impact on the symbolic quality of the place

The building helps to retain the symbolic quality of the place through its response to the traditional architectural features which is supported by the respondents.

7.1.3 Sustainability

Ecological, economical and health

The courtyard, the small windows to the road side, the roofing material in the corridors and the building being opened to the interior make it possible for the building to get natural light and ventilation (Fig.3); no mechanical ventilation systems are used in the building and this makes it ecologically, economically as well as health wisely a sustainable building (Fig.3).

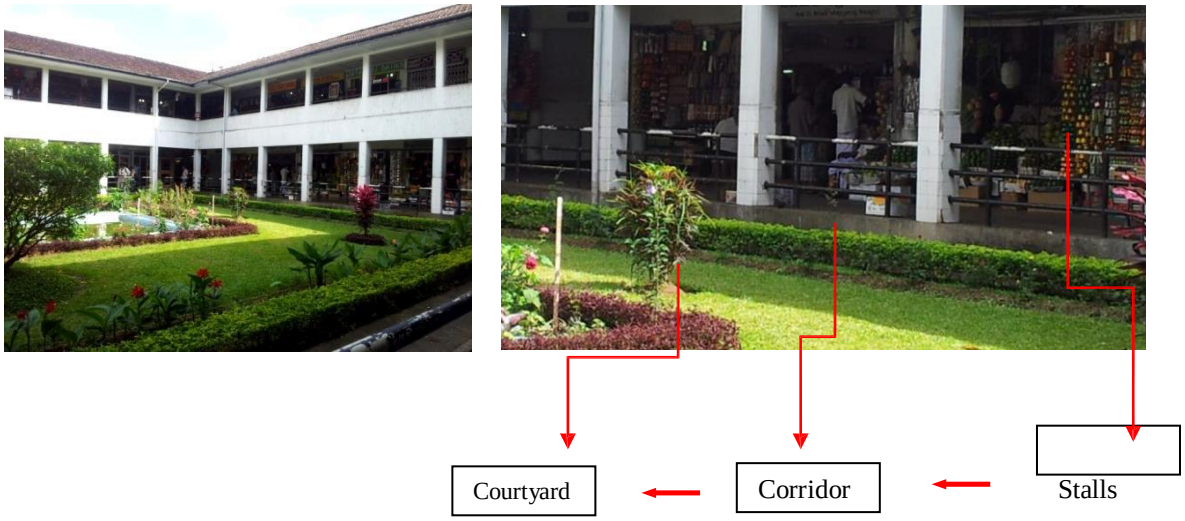


Fig 3. Stalls opened towards the court yard and composition of spaces within the market source: author

Social and Cultural

The building could be considered as a sustainable building, which not only functions with natural light and ventilation but also social and cultural sustainability which helps to carry the trails of the past to the future as well. In these modern days where every action has become computerized, having a well organized traditional 'pola' in the middle of the city is a cultural sustainability and continuing the tradition of a close relationship between the salesman and the customer is another social sustainability; The Tradition is being taken to the future through the 'pola' and the other commercial activities.

7.1.4 Memory

The building's contribution in remembering Kandy as a historic city

The building helps to remember Kandy as a historical city by its architecture. In spite of being a building that was built as a response to a particular type of architecture, the building itself is being able to mark an era in the history of the country as well as the city. Even though new

materials are used (concrete), the building able to make it belonging to the city. Yet based on the response of the people, only those who are above the age of twenty do see these kind of connections between the building and the past.

The building's contribution in defining the public past of the citizens or the community

The important fact is that the type of commercial activity and the interaction between the salesmen and the customers help the people to define their public past. The commercial activities in the past have always been encouraged public interaction and creating new ties in the past society. That is evident through the salesmen's' responses that they have their regular customers and when another customer approaches the place, they introduce the former to the other. Further, the forecourt of the market acts as a gathering space as well as a space for other small vendors to sell their products.

7.1.5 Place attachment

The impact of the building on the peoples' attachment to the place

One of the interesting facts that were found through the survey and the casual interview is that most of the people have an attachment towards the building because of their childhood memories; especially those who are above twenty years old and all the respondents related the building with their childhood memory. More than fifty percent of them have a sensitive attachment towards the place because once they used to come here with their parents. They are able to narrate where they used to stay and wait till their parents bought goods, how the salesmen used to make them sit near the edge of the corridor and give them fruits and sweets etc.. Thus they relate their attachment with reference to some the spaces in the building.

The feeling of belongingness

People from all income levels visit the building; not only because of the prices of the goods but they are used to the place, according to the respondents. The welcoming nature of the spaces is one of the reasons why most of the people like to visit the place and it is evident through more than 70% of the responses.

The peoples' attitude about the building

A majority of the respondents indicated that they are proud of the building, which is in a prominent location of their city. Yet only those who are above thirty years old have a solid reason as to why they are proud of this building and more than eighty percent of those who belong to the younger generation do not have an idea as to why this building is important to them.

7.1.6 Identity

Expression of common identity through physical features

The physical appearance is very much apparent that they represent or have connection either with the temple of tooth relic or vernacular architecture. The Kandyan roof represents the roof style of the temple and the colonnaded lobby reminds the columns in the temple of tooth. Even though the details of the columns are not similar to that of in the temple the proportions have a

connection. The small openings or the windows also have the decorative finishes which reminds of the detailed decorations of the temple. The corridor and the courtyard have connection with the traditional architectural features where they have been used in the 'walawwa' houses (ancestral houses) of the Kandyan period.

Expression of common identity through the activities

The architecture enables traditional type of commercial activity to be carried out. At the same time, the building acts as a public gathering space. Both spatial as well as the social factors help to enhance this function of the building. Spatially, the access to the building, the hierarchy of spaces enables a high degree of interaction.

More than 70% of the responses confirmed that they are used to this building for a long time and feel as if it is their own place; thus it helps them to do whatever they want to a place where they are not worried about being noticed by others, especially because the functions that happen in the spaces as well as the people who visit the place are not something new to them. Having a linear corridor and the evenly distributed stalls and the 'pola' which do not focus on one particular place is another important reason for it.

Expression of common identity through the symbols and rituals

The market building is decorated with certain objects during special occasions; the spaces are converted according to the seasonal festivals that take place in the city or the country and even though they are very small changes, they have the potential to create a large impact as representing a common identity of a community.

7.2 The Kandy City Centre and Commercial Street

Kandy City Centre

One of the major problems identified in the building is that it lacks authenticity in spaces as well the architectural elements and features. They either do not have the same functions or does not help to create the required spatial quality. As a result of this the building does not promote healthy activities that would reveal an identity of the people as well as the community (Fig. 4).

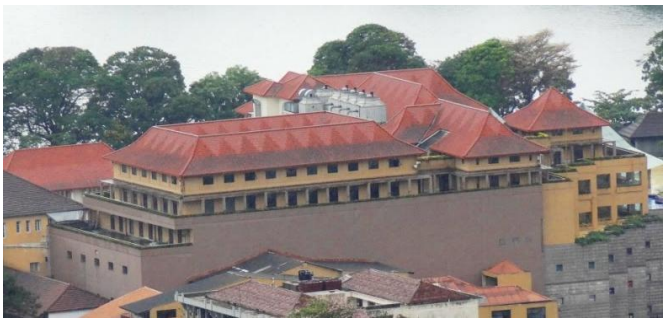


Fig 4. Kandy City Centre
Source: http://www.panoramio.com/photo/75362199

The main issue with the spatial configuration is that the zoning and the layout are confusing to the people and this is revealed by responses of the public as well as the observations. Further,

the conflicting spatial attributes from the entrance to the interior reduce the intangible qualities that could create a sense of place. Thus the fact that repeating the elements would not help to

create a 'sense of place' and it is not an effective method of responding to a historical city is proven by the studies.

The shopping street

The selected commercial street is a part of the Yatinuwara weediya fro5 Dalada veediya junction to the Colombo street junction (Fig. 5). It consists of old as well as contemporary buildings. Most of the

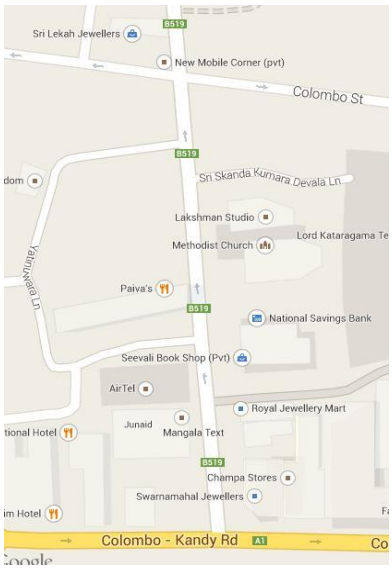


Fig 5. The shopping street
Part of commercial street in the city (Yatinuwara veediya-from dalada veediya to the Colombo street junction)- consist of buildings that belong to various time periods and is undergoing many changes
Source: https://www.google.lk/maps/@7.2938558,80.6350899,18z

buildings are commercial and there is one chapel and an entrance to the 'Katharagama devalaya' is located in the street. The street consists of one of the oldest houses in Kandy, the 'Giragama walawwa' as well.

The intangible attributes generated by architecture to create a sense of place in the street is contradicting with each other mainly due to the fact that the street consists of historical as well as contemporary buildings. As a result certain important factors regarding the sense of place of the street could be noticed:

- Even though the old buildings and their façades and functions do help to retain the sense of place, the contemporary buildings have become a threat to them
- The width of the street which is a dominant factor has given more priority to the vehicles rather than the pedestrians.

8. Remarks

The research reveals that the relationship between the architecture and the functions contribute towards the creation of a 'sense of place' in a building .

The factors that help to generate the intangible qualities that create a sense of place in the market are architectural features and elements such as roof, columns, windows, openings, handrails and etc.; the spaces are the forecourt, entrance lobby, corridor, courtyard and the stalls; the spatial qualities are zoning, methodical layout, response to the streets, contextual response, volumes of the spaces and the visual connections between the spaces.

Nevertheless, none of these factors contribute to generate the intangible qualities in isolation. On one hand they are inter-related to each other and on the other hand they correspond to the needs of the people. Thus they are designed based on a meaning and a purpose which was a characteristic found in the pre -colonial period of Kandy.

Example: The methodical layout which was identified as a positive attribute of the market complex is formed with spaces such as stalls, corridors and courtyards; these spaces are demarcated out of architectural features such as columns, handrails, openings, etc; they respond to each other and have clarity in their volumes according to the hierarchy of the spaces such as:

- The forecourt is a large open space
- Entrance lobby is an enclosed space yet its volume is smaller than the forecourt and the corridors
- The corridors: most of the corridors being one side opening to the courtyard .

Simultaneously, this layout is acknowledged by the people because they are zoned in a way that is easy for them to move, find the places and engage in shopping activity. Hence the architecture of the building is able to generate the intangible qualities that create the 'sense of place'.

Thus it can be seen that the municipal market is able to generate sense of place more successfully because it has responded to the architecture of the place while simultaneously integrating how people use those spaces; thus the building, place and the people are

harmonized. Kandy City Centre on the other hand has tried to respond to the architectural elements in an objective way while ignoring the subjective phase of the place. The shopping street is in-between these two where a few old buildings contribute to retain the quality of the place while the others don't and as a result, it does not contribute towards 'sense of place' effectively.

9. Conclusion

The study on the above three case studies reveals that it is not only objective response to the built fabric that contributes to the 'sense of place' of a building or a street, but an integration of the needs of the public and how they move and use a space with the correct response to the architectural elements and spatial qualities of the place; this subjective response helps to generate the intangible qualities that create a 'sense of place'.

This paper which focused on the commercial spaces in a historical city and their 'sense of place' reveals that the architecture should be able to generate certain intangible qualities that would

eventually contribute to create the 'sense of place'. The research which was conducted based on the frame work indicates that the 'sense of place' of each case study area differs from one another owing to various reasons. The contribution towards sense of place in the Municipal market is strong, and shows that it has more sense of place compared to other two: the Kandy City Centre does not contribute towards sense of place, while the shopping street is in-between the two extremes.

10. References

Day, C. (2002). *Spirit & place: healing our environment, healing environment*. Oxford; Boston, MA: Architectural Press.

Hauge, Å. L. (2007). Identity and Place: A Critical Comparison of Three Identity Theories. *Architectural Science Review*, *50*(1), 44–51. doi:10.3763/asre.2007.5007

Hayden, D. (1997). *The power of place: urban landscapes as public history.* Cambridge, Mass.; London: MIT.

Jiven, G., & Larkham, P. (2003). Sense of Place, Authenticity and Character: A Commentary. *Cartfax Publishing*, *8*(1), 67–81. doi:DOI: 10.1080/1357480032000064773

Karunaratna, N., & Madhyama Samskrtika Aramudala (Sri Lanka). (1999). *Kandy, past and present, 1474-1998 A.D.* Colombo: Central Cultural Fund, Ministry of Religious and Cultural Affairs.

Najafi, M., & Shariff, M. K. B. M. (2011). The concept of place and sense of place in architectural studies. *International Journal of Human and Social Sciences*, *6*(3), 187–193.

Norberg-Schulz, C. (1980). *Genius loci: towards a phenomenology of architecture*. New York: Rizzoli.

Phil Turner, & Susan Turner. (n.d.). Place, Sense of Place and Presence. *Social Informatics Research Group, School of Computing Napier University, Edinburgh, EH10 5DT*.

Relph, E. C. (1976). *Place and placelessness*. London: Pion.

Sense of place: design guidelines for new construction in historic districts a. (2007). preservation alliance for the greater Philledelphia.

Shu-Yi, W. (2010). In Search of Authenticity in Historic Cities in Transformation: The Case of Pingyao, China. *Asia Research Institute*, *133*.

Reduction of traffic noise due to improved road conditions: Evidence from Matara & Hambantota, Sri Lanka

S.M.N. Sethunga[*], **J.A.P. Bodhika, W.G.D. Dharmaratna**
Department of Physics, University of Ruhuna, Matara, Sri Lanka

Abstract

"Road traffic noise" is becoming a serious problem for civilians living close to roads with heavy traffic in Sri Lanka. According to the statistics of Department of Motor Traffic, Sri Lanka, the total number of registered vehicles has been increased up to 5.07 million by the end of July-2013. The increase of motor vehicles with inadequate road conditions would contribute to enhance the noise pollution. Previous studies had found that some citizens living in urban areas exposing to heavy noise have developed hearing disorders. This matter has been often overlooked in developing countries, in contrary, some developed countries which have better road conditions, have started to use materials that produce low tire noise and good sound absorption surface layers for roads. In this study, a comparison of noise level is performed before and after the improvement of road conditions in selected urban areas in southern region of Sri Lanka. All measurements were carried out before and after rehabilitation and widening of respective roads. B&K Type-2250 hand held analyser was used to measure noise level and experiments were carried out in 2013, before the rehabilitation, and 2014, after the rehabilitation, respectively. Traffic volume of the roads studied was counted manually. Noise data were recorded at distances of 200 m for Class A and 400 m for Class B roads along the sides of selected roads. A-weighted equivalent continuous sound pressure level at each location, L_{Aeq}, for 15 minutes time period was measured. An internationally recommended IMMI noise mapping software was used to map the noise distribution. Noise maps constructed before and after the rehabilitation of roads were compared. The average noise levels in the vicinity of Class A and Class B roads studied have decreased the noise level by 0.35 - 12.03 % after widening/improving the roads. The maximum drop of noise contour for Class A highway was found to be 3.5 dB or 6.2 % even with the increase of traffic volume by 61.5% during the period studied. For Class B roads a maximum of 5.8 dB or 12.0 % drop of traffic noise level was recorded. The width of the highest noise contour (having L_{Aeq} = 75-80 dB) was decreased by 74.3 % and 30.3 % for Class A and Class B roads respectively. It can be concluded that widening and improving the conditions of the roads have effectively reduced the traffic noise pollution, even though the volume of traffic has been increased. It also proves the importance of using noise maps for the development and redesign of cities as the removal of noise-pollution could contribute so much to better quality of life in Sri Lankan urban cities.

[*]Corresponding Author: S.M.N. Sethunga; E-mail - nsethunga@gmail.com

Keywords: *Road traffic noise, Noise level variation (NLV), Noise map, Road improvements, L_{Aeq} value*

Introduction & Literature Review

Unwanted sound disturbing humans is called noise. Noise may have the most pervasive environmental impact on people. Long term and short term exposure to high noise levels causes adverse health effects, disturbing their normal activities and ultimately degrading the quality of life (Guidelines for community noise 1999; Ishiyama and Hashimoto, 2000; Onuu 2000; Stansfeld and Matheson, 2003).

Noise pollution has been a problem in many urban cities in the world and vehicular traffic noise is known to be the most prominent noise in cities. The effects of traffic noise on civilians are one of the concerns in developed countries in the world. Technically, the quantity L_{Aeq} (A-weighted equivalent continuous sound pressure level) has been almost universally adopted for traffic noise assessment (European Union, 2000). Noise level contour maps drawn using the quantity L_{Aeq} (Subramani *et al*., 2012) have been produced for many cities in order to analyse Noise Level Variation (NLV) and used for improvements/widening of roads as well as for the development of cities. Internationally, noise level investigations by noise mapping are adopted by Environmental Impact Assessment (EIA) in urban planning and design. Many developing countries have often overlooked traffic noise pollution in their cities.

At the international level, the World Health Organization (WHO) together with the Organization for Economic Co-operation and Development (OECD) are the main bodies that have collected data and developed their own assessments on the effects of exposure to environmental noise (Green Paper, 1996). OECD has reported the thresholds for noise nuisance as follows (in day-time L_{Aeq}); at 55-60 dB (A) noise creates annoyance; at 60-65 dB(A) annoyance increases considerably; above 65 dB (A) constrained behaviour patterns, symptomatic of serious damage caused by noise arise. WHO has suggested a standard guideline value for average outdoor noise levels of 55 dB (A), applied during normal daytime in order to prevent significant interference with the normal activities of local communities. The National Environment act 47, 1980, has given the maximum permissible noise level in day time as 63 dB for "mixed residential areas", which means an area consisting of residences and commercial establishments. For the first time in Sri Lanka, the authors had produced a noise contour map of the city of Matara, which clearly identified areas of high noise pollution (besides roads A2, A24 & B275) in the city, exceeding the maximum allowed level of 63 dB (Sethunga *et al*., 2013). A recent study has reported a degradation of the hearing level of workers who had exposed to a long period of heavy noise at the Matara bus stand, which is located within the day time noise level contour of 75-80 dB (A) of the Matara noise map (Sethunga *et al*., 2014).

The noise produced by vehicles has been categorized into two types, namely, “engine noise” which dominates at low speeds and “tire noise” at high speeds. The cross over speed for constant-speed driving is often referred to as 40-50 km/h for cars and 60-70 km/h for trucks; implying that tire/road noise dominates at all highways and motorways driving conditions and power unit noise dominates in urban driving (Sandberg, 2001). Some literature in early 1970’s, the transition speed had been stated as 50-70 km/h for cars and 70-90 km/h for trucks, which may be due to the low quality of vehicles used in 1970’s. Tire noise often spread in low frequency broadband (600-1000 Hz) in broad band spectrum of 0-20 kHz (Hanson *et al*., 2004). The frequency spectrum depends on the design of the tire and the nature of road surface.

Different road surfaces emit different frequency patterns and therefore, the information on the road conditions, such as asphalt, concrete, gravel etc. have to be considered in noise analysis and prediction models. A great deal of research work has been investigated in developing a road surface that reduces tire noise generation and propagation. A useful overview on low noise road surfaces has been written by Losa *et al*., in 2001 and a more recent in-depth review has been made by Sandberg *et al.,* in 2013.

Developed countries having better roads and vehicles with low noise emission are mainly interested on reducing "tire noise". Recent research and experiences in the United States and European countries have shown the interest on quiet pavements for noise mitigation (Morgan, 2006). Quiet pavement can be an alternative or a supplement to more traditional noise abatement types such as wall type noise barriers and vegetation type noise berms used in many countries. Road improvement for noise mitigation often becomes an attractive solution when considering the initial cost, sanitation, or aesthetics (TR News, 2005).

In Sri Lanka "engine noise" and the noise due to bad driving habits dominates in many cities. Under poor road conditions, vehicles are forced to run at lower speeds, in low gears, with accelerated engines over long periods of time. Especially, when drivers waste more time at a traffic bottleneck, some of them behave unethically ringing the horn and accelerating engines. Body vibrations of older vehicles also contribute to noise under poor road conditions. Therefore, better road conditions for smooth traffic flow undoubtedly should reduce the traffic noise on Sri Lankan roads. By having high-speed runways (Express-ways or free-ways) for long-distance commuters may have consequences of increasing noise, especially tire noise, however, such roads more often run through remote areas with not much impact on civilians (TR News, 2005).

According to the statistics published by the Department of Motor Traffic, Sri Lanka, the traffic volume in the country has been increased by 10% annually since 2005 and 5.07 million vehicles have been registered by July, 2013 (RMV statistics, 2014). Therefore, it is essential to take actions to improve the traffic flow in all cities, as already started in many cities in Sri Lanka. In this context, it is highly advisable to study the noise contour maps of cities in re-designing road structure of urban cities. Due to the construction of Southern Expressway and, new airport and sea port at Hambanthota, most of the access roads have been developed. This paper presents the results of a study on the comparison of noise level before and after the improvement of road network of Class A and Class B roads in selected areas in Matara and Hambanthota cities in Southern Province of Sri Lanka. The objective of this study is to highlight the importance of strategic city planning to improve the life pattern and health condition of civilians by reducing exposure to heavy noise over a long period in addition to the enhancement of aesthetic value of the cities.

Methodology

Traffic noise level measurements were carried out at some selected locations of main roads in Gandara; A2 (Matara Tangalle road), in Matara city; A24 (Matara-Akuressa road) and B275 (Matara–Hakmana road), and in Hambanthota; B562 (Mirijjawila–Sooriyawewa road), B622 (Hungama-Middeniya main) and B631 (Hambantota – Gonnoruwa – Meegahajandura road. Noise level measurements and traffic count at each location were taken before and after the completion of reconstructions of the road. Traffic count was recorded manually before and after each measurement. The number of lanes and nature of road surface was also recorded.

Traffic noise measurements were carried out using Bruel & Kjaer (B&K) Type-2250 hand held analyser (IEC 61672-1; 2002 Class1) and the instrument was suitably calibrated using type 4231, B&K sound level calibrator ('Instruction Manual', 2004). The analyser was placed on the centre line of the carriageway, i.e., 5m from the centre of 2-way A or B type road and 10 m from the centre of 4-way A or B type roads. In order to avoid the interference with the reflected sound from ground the analyser was fixed 1.2 m above the ground level. A-weighted sound pressure levels (L_{Aeq}) were recorded in sound level meter in decibels for a total 15 minutes; i.e. 5 minutes continuously in automatic mode and repeated three times at each location. Same procedure was followed for all selected locations in Class A and B roads. Measurements were taken at distances of about 200 m along Class A roads and about 400 m along Class B roads to study the noise level variation (NLV). Garmin e-Trex 20 hand-held GPS navigator was used to locate the positions.

Irregular noises such as passing of an ambulance, dog barking, sound of low flying planes, and other emergency vehicles was rejected. Especially, noise emitted from modified exhaust systems of vehicles and some vehicle horns were separately marked. Noise data were not studied in rainy days and festival days. Rainy days were avoided to disregard the noise generations due to tyre-road interactions. As the wind speed could significantly affect the accuracy of data, UA 1650 90mm wind windscreen, spherical shaped porous foam plastic material, was used to minimize the wind effect. Atmospheric data such as wind velocity (ms^{-1}), humidity (%) and atmospheric temperature (^0C) were measured at the time of measurement using Kestrel 4500 pocket weather tracker.

Computer aided noise calculation (IMMI) software, which incorporates the methodology outlined in the XP S 31-133 elementary library in IMMI software, was used to map the noise level. The measurements were fed into the programme. The factors, number of lanes, distance edge of carriageway to road centreline, driving direction, attenuation areas and reflections were considered during the noise calculation in IMMI software. The relevant guidelines given for noise mapping in the manual ('Instruction Manual', 2004) were followed.

Findings, Analysis & Discussion

Recorded noise data were categorized according to the road types (Class A, Class B, etc.) and analysed separately. Noise maps at the vicinity of sections of the selected roads were prepared using the output of the software.

Two noise maps constructed for 4 km portion along the main road A24 and 3 km portion of the road B275 in Matara city, before and after road improvements are shown in Figure 1 and Figure 2 respectively. Here the measurements taken in September-2013 (before the improvement) and in March-2014 (after the improvement) were compared. Note that the circled portions (Black circle) of both roads in Figure 2 were not improved at the time of this study. Therefore, these portions were not considered in the comparison. However, the measurements in these two portions of the roads were included in last two columns (under without road improvements) of Table 1. The traffic volume on road A24 has been increased by 420 vehicles per hour during this period, which is after the opening of the southern highway. However, after the reconstruction of the road, the highest noise contour, 75-80 dB, along the road has been shifted to lower value, 70-75 dB, except at the circled area. The relative average spreading of noise contours (noise contour width) has been decreased by 6.20%. This was the result of converting 2-way asphalt A24 road to a 4-way asphalt road of better condition, widened with sidewalks and carpeted.

The traffic volume of B275 road, drawn in the same figures, has been increased by 360 vehicles per hour during this period. The road improvement (except the circled area) of B275 was only layering of asphalt and no significant increase of road width or number of lanes. Figure 1 & 2 shows that there is no any shift of traffic contours but its overall relative width have increased. However, the width of the highest noise level contour, 75-80 dB, has been reduced due to the improvement of road condition. Therefore, such a highly saturated road the improvement of road condition alone is not sufficient to completely control the noise pollution level. More details of shifting of noise contours and its spread besides of A24 and B275 are given in Table 1. Last two columns of Table 1 show the measurement taken in circled (no improvements) portions of the road.

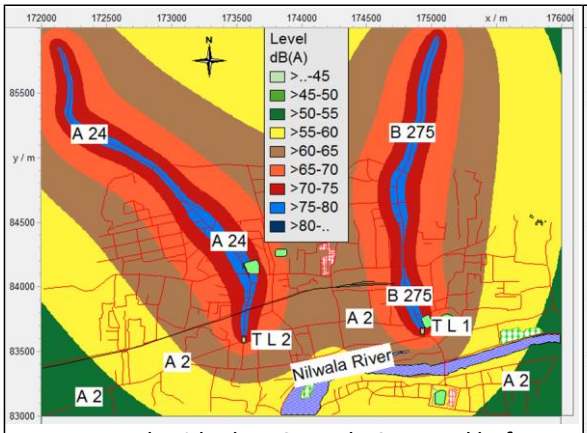


Fig 1: NLV beside the A24 and B275 road before improve the road condition. Source: author

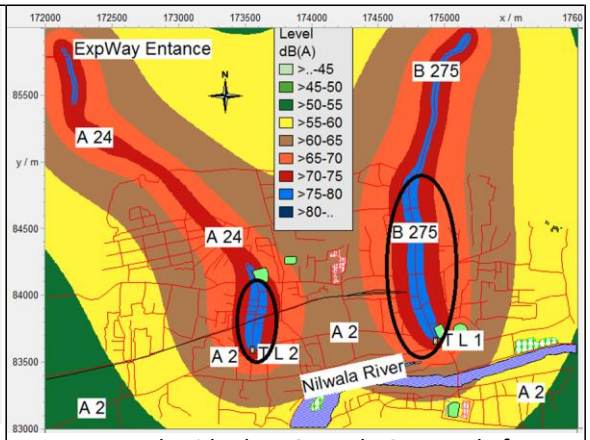


Fig 2: NLV beside the A24 and B275 road after improve the road condition. Source: author

Table 1: Different NC vs. Distance Spreading beside the A24 and B275.

Road	Status	NC in (dB)	With road improvement		Without road improvement	
			MNCW (B)	MNCW (A)	MNCW (B)	MNCW (A)
A24	Numbers of tracks were increased from 2 to 4 with the road improvements. ATV (B) = 780 ATV (A) = 1200	80 <	10	-	-	-
		75-80	70	18	30	70
		70-75	115	52	90	110
		65-70	208	175	170	188
		60-65	370	320	320	390
		55-60	620	570	545	700<
B275	Numbers of tracks were not changed. ATV (B) = 630 ATV (A) = 990	75-80	33	23	58	65
		70-75	86	80	108	125
		65-70	172	**175**	205	245
		60-65	285	**345**	345	365
		55-60	480	**530**	600	630

ATV (B) - Average TV (Vehicles per hour) 'Before' road improvements
ATV (A) - Average TV (Vehicles per hour) 'After' road improvements
MNCW (B) - Maximum Noise Contour Width in metres 'Before' improvement
MNCW (A) - Maximum Noise Contour Width in metres 'After' improvement
Last two columns compare the circled portions (without road improvement)

The circled portioned of the A24 and B275 roads in Figure 2 were not developed at the time of data collecting period. According to Figure 1 and Figure 2 noise levels at unimproved road sections (circled area) of A24 and B275 have increased due to the increase of traffic volume. It can be easily identified that the width of noise contour bands in circled areas has increased considerably due to traffic volume. After improvements the width of the highest noise contour (having L_{Aeq} = 75-80 dB) was decreased by 74.3 % and 30.3 % for class A and class B roads respectively.

Figures 3, 4, 5 & 6 is further evident that the noise level and width of higher noise contours besides two way main roads have decreased after their improvements, even though traffic volume has increased with time. These roads are still not saturated with its traffic volume. The circled area in Figure 3 was well improved and the noise level is decreased significantly in compared with non-improved part of the same road for same traffic volume. Figure 5 & 6 shows an improved portion of road near Middeniya town. Their relative noise contour and its width have decreased and average L_{Aeq} values are given in Table 2.



Fig 3: Before road improvement between 171-172 km post in A2 highway. Source: author

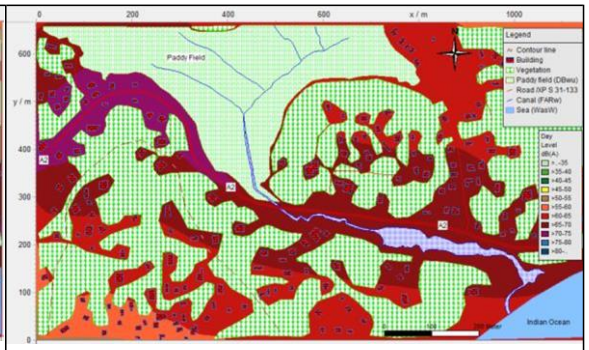


Fig 4: After road improvement between 171-172 km post in A2 highway. Source: author

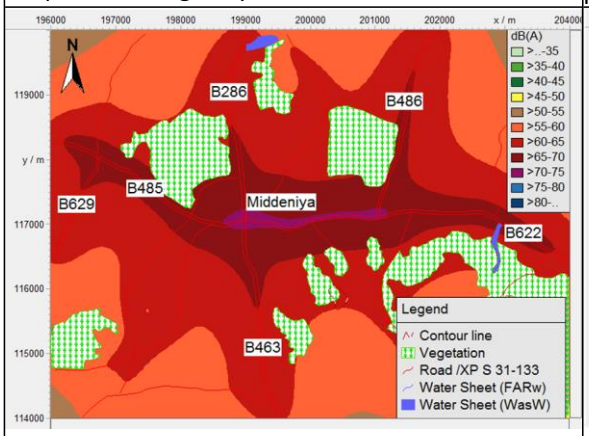


Fig 5: Before road improvement of B622 near at Middeniya Town. Source: author

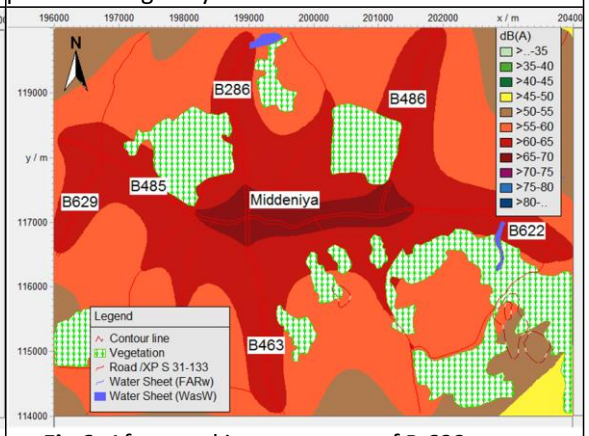


Fig 6: After road improvement of B 622 near at Middeniya Town. Source: author

Roads given in fig. 7, 8, 9 & 10 are B562 & B631, very recently developed access roads to "Mattala Mahinda Rajapaksa International Airport" (MMRIA) and Hambantota Sea Port. Those Roads were improved to four way tracks from two way tracks. Figures show that, the road improvements have decreased the noise levels besides four-way main roads, even though traffic volume has increased.

More quantitative information for all cases discussed above is summarized in Table 2. Only the portions of the roads with improved conditions are considered in this comparison. It is clear that the average road traffic noise level has decreased with the road improvements, even though the

average traffic volume has increased. B275 road is at the margin and the number of lanes has to be increased for further reduction of traffic noise.

Table 2: The percentage value of NLV and its spreading

Road	Num. of tracks		Ave. TV		L_{Min}		L_{Max}		L_{Ave}		St. Dev.	Average NLV (%)
	Bef.	Aft.	Bef.	Aft.	Bef.	Aft.	Bef.	Aft.	Bef.	Aft.		
A2	2	2	750	780	53.8	41.6	73.1	75.6	67.3	52.9	7.15	-3.27
A24	2	4	780	1260	44.1	41.6	79.6	75.6	56.4	52.9	7.10	-6.20
B275	2	2	630	990	47.2	46.3	77.7	79.6	57.1	56.9	6.54	-0.35
B562	2	4	330	450	41.1	38.2	84.2	79.6	52.9	50.4	6.39	-4.73
B622	2	2	330	390	49.5	47.2	70.9	67.8	60.7	58.6	3.85	-3.46
B631	2	4	270	510	36.5	29.2	72.9	63.7	48.2	42.4	6.94	-12.03

Ave. TV – Average Traffic Volume, Bef. – Before road widening/improvements, Aft.– After road widening/improvements, St. Dev. – Standard Deviation, NLV – Noise Level Variation.

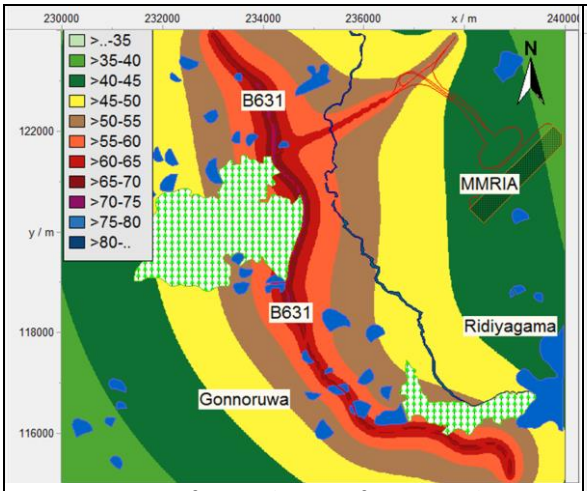


Fig 7: Before widening of B631 road.
Source: author

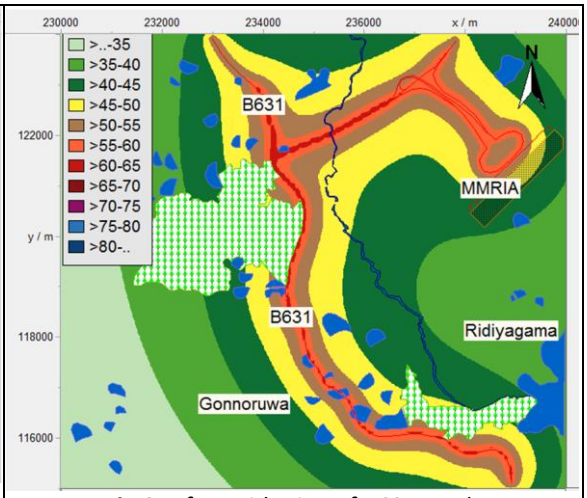


Fig 8: After widening of B631 road.
Source: author

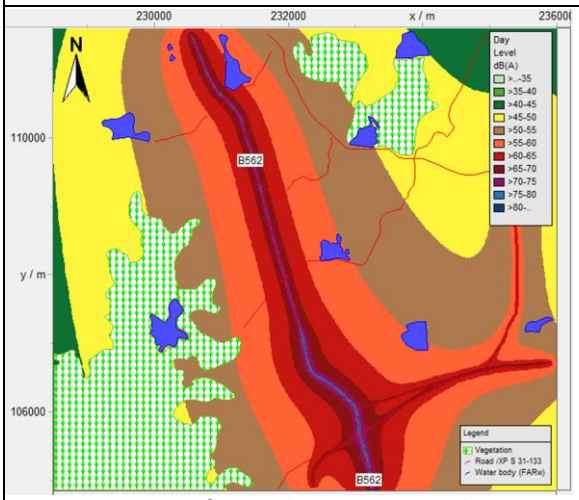


Fig 9: Before widening B562 road.
Source: author

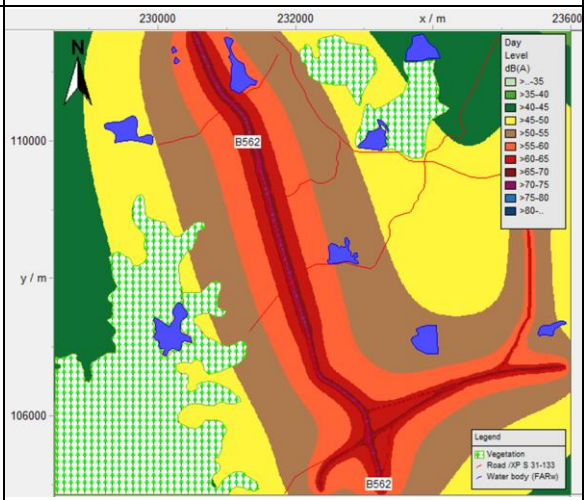


Fig 10: After widening B562 road.
Source: author

According to Table 2, the results revel that the road traffic NLV besides the Class A and Class B roads have reduced due to road widening/improvement even though road traffic volume has

increased (TV in Table 2) with time. The last column in Table 2 shows the percentage decrease (- sign) of average noise level due to widening/improvement of roads. It clearly shows that the increase of number of tracks has caused the highest drop of noise level as expected.

Conclusion

The average noise level is found to be reduced in the vicinity of roads studied after widening/improving the roads, even though the traffic volume has been significantly increased. The highest drop of noise level of Class A roads was found to be 3.5 dB or 6.2 % of A24 road even with the increase of traffic volume by 61.5%. For Class B roads, the maximum drop of noise levels was recorded to be 5.8 dB or 12.0 %. Minimum drop of traffic noise level of Class A and Class B roads were found to be 2.2 dB or 3.27 % and 0.2 dB or 0.35 % respectively. The width of the highest noise contour (having L_{Aeq} = 75-80 dB) was decreased by 74.3 % and 30.3 % for Class A and Class B roads respectively. The increase of number of lanes has effectively reduce the traffic noise level.

Although, the improvement of road condition reduces the noise pollution, when the traffic volume is increased beyond a certain value the number of lanes has to be increased to reduce the traffic noise. It clearly indicates that a good traffic flow has to be maintained on roads to maintain a low noise level. This would be the case for most roads in urban cities in Sri Lanka, because the engine noise dominates the noise level produced. The tire noise would be important only when the road conditions are improved and vehicles move at high speeds. As an example, if the highway traffic noise, which would be dominated by tire noise, has to be reduced, the quality of the surface of the road has to be improved with a suitable surface layers. It can be concluded that the noise pollution has to be studied and noise maps of cities have to be considered in planning and designing development of roads in cities in order to maintain the noise level at the recommended levels.

Acknowledgement

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References:

European Union (2000) 'Unsafe Levels of Noise in Europe', Risk Observatory Thematic Report 2, pp 31-32, 48. https://osha.europa.eu/en/publications/reports/6905723.

Green Paper (1996) 'Future Noise Policy', European Commission, Commission of the European Communities, Brussels, 1996, COM (96), 540 final

Guidelines for community noise (1999), World Health Organization, Geneva, Switzerland, (Edited by Berglund, B. Lindvall, T. & Schwela, D. London: United Kingdom), pp 21-36.

Hanson, D.I. James, R. S. NeSmith, C. (2004) 'Tire/Pavement Noise Study', National Center for Asphalt Technology (NCAT), Report 04-02, 227 Technology Parkway Auburn, AL 36830, pp 22-26.

Ishiyama, T. & Hashimoto, T. (2000) 'The impact of sound quality on annoyance caused by road traffic noise: an influence of frequency spectra on annoyance', *JSAE Rev*, Vol. 21, Issue 2, pp. 225–230.

Losa, M. Licitra, G. Berengier, M. & Cerchiai, M. (2001) 'Physical characteristics of road pavements and noise emissions' Inter noise-2001, pp 28-30.

Morgan, P. (2006) 'Guidance manual for the implementation of low-noise road surfaces', FEHRL REPORT 2006/02, pp 18-23, 35-39 & 49-55.

Onuu, M. U. (2000), 'Road traffic noise in Nigeria: measurements, analysis and evaluation of nuisance', *J. Sound & Vibration*, Vol. 233, pp. 391–405.

RMV statistics (2014), Department of Motor Traffic Sri Lanka, http://www.motortraffic.gov.lk/web/index.php?option=com_content&view=article&id=84&Itemid=115&lang=en, visited on 04/05/2014.

Sandberg U.L.F. (2001) 'Tire/road noise-Myths and realities', Plenary paper published in the proceedings of "The 2001 International Congress and Exhibition on Noise Control Engineering", the Hague, Netherlands, pp 2-3.

Sandberg, U. Zurek, B. S. Ejsmont, J. A. & Ronowski, G. (2013) 'Tyre/road noise reduction of poroelastic road surface tested in a laboratory, Proceedings of Acoustics 2013-Victor Harbor, Australian Acoustical Society, pp 1-8.

Sethunga, S.M.N, Bodhika. J.A.P. & Dharmaratne, W.G.D. (2013) 'Traffic noise contour mapping in Matara City-Sri Lanka', Proceeding of International Conference of Cities, People& Places (ICCPP-2013), PP 227-237.

Sethunga, S.M.N. Bodhika, J.A.P. Dharmaratna, W.G.D. (2014) 'Preliminary results of a study on health impacts on human beings due to long term exposure to heavy noise', Proceedings of the One Health International Conference, University. of Peradeniya, Sri Lanka, Pp 12.

Stansfeld, S. A. and Matheson, M. P. (2003), 'Noise pollution: non auditory effects on health', Br. Med. Bull, Vol. 68, pp. 243–257.

Subramani, T. Kavitha, M. & Sivaraj, K.P. (2012) 'Modelling of traffic noise pollution', International Journal of Engineering Research and Applications (IJERA), Vol. 2, Issue 3, May-June 2012, PP 3175-3182.

TR News (2005) 'Transportation Noise: Measures and Counter Measures', Transportation Research Board of the National Academics, Number 240, pp 3, 20.

'Architecture of Fear': An Analytical Investigation on 'Negative Impression' in Architectural Design Articulated by 'Integrated Spatial and Space-Related Aspects'

Nipuni Dayasagara*, Prasad Botejue , Senaka Dharmatilleke
Department Of Architecture, University Of Moratuwa, Sri Lanka

Abstract

Architecture of fortification; iron bars and iron spikes, cinder blocks and barking dogs, razor ribbon wires, glass spines and security alarms- The city has been armed with apparent evidences all over the city. The built fabric has been transformed into an ideal representation of 'contemporary fears' of citizens. Often people scare to use lifts, narrow walkways, rear staircases, darken basements, high roof tops or largely open public places. In such places they fear being murdered, abused, abducted, or stabbed.

The investigation primarily measures the 'required sense of safety' in an urban public realm with respect to the architectural design principals, spatial and space related aspects. The four case studies of the research will be focused on 'public buildings' filling the 'research gap' within the field of study existed between two main levels of 'city fabric' and 'individual dwelling'. The research outcome reveals the 'controlling power' of 'fear in space' that has influenced user psychology and behavior accordingly, including 21 integrated architectural aspects behind the cause.

Concurrently, the investigation emphasizes possible design interventions to diminish such negative impressions composing 'positive motives' which supports public cohesiveness, interaction and free movements in built-sphere in which architectural design becomes a 'tool' in order to manipulate 'sense of safety'.

Keywords: space based fear, Negative Impression, Spatial Science, integrated design Aspects, architectural space psychology

Introduction

Architecture creates places. Archetypically people use these places to live and survive. To be secure from threats, fears, offences or any other depraved effects. People have emotions and fear is such emotion. People do fear for many reasons, and they have relationships to their internal lives, and are influenced from the external effects. Though fear is emotional, it can be physically demonstrated. Certain languages can translate 'emotional expressions' into 'physical

*Corresponding Author: Nipuni Dayasagara; E-mail- nipuni.tharupaba@gmail.com

manifestation'. Physical stimuli create psychological influences based on certain scientific norms. 'Architecture' is such 'expressive language' that gives rise to the 'physical manifestation of fear'. This phenomenon between 'architecture', 'place', 'people', and 'fear as an emotion' will be fundamentally explained through 'Architectural Space Psychology'. The 'unnecessary manifestation of fear in place' is designated as 'Space Based Fear' which is a 'negative impression'. The investigation essentially questions how such impression is evoked in a place giving rise to an 'inaccurate spatial expression'. Accordingly, the investigation hypothesizes that it is an 'articulation of spatial and space-related aspect' which is a 'by-product' of 'architectural design'.

The need of time

Crime, fear, safety, and insecurity:

They have become a common set of words in the contemporary generic jargon. People do scare to walk on streets, to use underground passes, or overhead-walk ways, and stay in public places and public buildings even till the bus or train reaches. Perhaps they fear to be at their own home where there are no security alarming systems, barking dogs, glass spines, or iron hooks which facilitate the mental comfort for residents.

'Fear' has never been absent from human association; only it has been evolved responding to vast socio-cultural, economic and political changes brought into human society from time to time. The mushrooming population demands more 'cities' for people to live. The urbanization brings the built sphere into much critical and complex environment. In order to increasing proportions of this fear, people enhance security as means of safety. Consequently,

> "fear and anxiety has become the mental condition of modern life"
>
> (Vidler, 2002)

Hypothesis

The investigation 'Architecture of Fear' examines the affiliation between the 'architecture' and 'fear' being based on the following hypothesis:

> "Architecture holds an expression which creates/evokes an impression to its user. Such impression can affects user either positively or negatively. 'Fear' is such a 'negative impression' which is a 'by-product' of architectural design, articulated by 'integrated spatial and space related aspects''.

Background

The issue was raised up once after the industrial Revolution. Human life was overwhelmed with fear, misery and distrust. Though the situation was an outcome of political, economic, and socio-cultural influences in combination, people experienced them through their living environment. They were manifested all the way through architectural design of the time.

In mid-90's, the researchers focused their attention on 'security' or 'safety' in relation to the architectural design. In 1961, Jane Jacobs wrote her famous book "The Death and Life of Great American Cities" convincing some critical ideas with reference to the planning and designing decisions arisen at the time. Afterward, few books written by Oscar Newman and Barry Poiner;

"Defensible Space" and "Beyond Defensible Space" emphasized certain upheaval concepts on the aspect of 'being secured'. Accordingly, architects, designers, and planners were questioned, whether they are partly responsible for the proliferation of insecurities at contemporary living contexts.

In late 90's, a set of researchers brought some rebellious concepts changing the direction that so far the 'safety' was measured in respect to the architectural design. It was a more psychological approach which emphasized the 'feeling secure' in a particular place. Concepts such as 'Mirror's By Kevin Sites, 'Building Paranoia' by Steven Flusty, 'Inside Fear' by Anne Troutman, 'Abject Terror' by Dora Epstein and 'Walls of Fear and Walls of Support' by Peter Marcuse; remark germinal ideas in which architecture evokes forgotten memories, misery illusions, nightmares, severe drops and tremendous pains in human life, generating 'fear' along with, or before, or after.

Human fear becomes much critical and complex phenomenon with respect to the contemporary architectural design and physical settings of cities. The investigation reveals current status of the phenomenon established on above mentioned theoretical frames to robust the argument wherever it is necessary.

Introduction to the research body

The research analysis will be dualistic in nature which investigates two variable components of 'place factor' and 'user factor' which are examined using six methods of data obtaining and implementation.

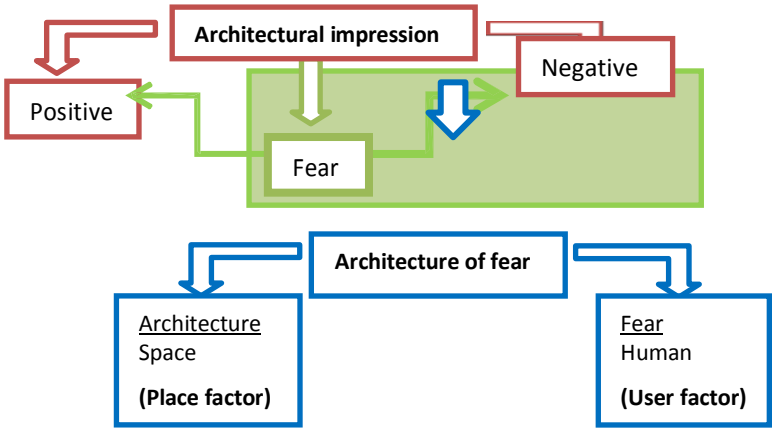


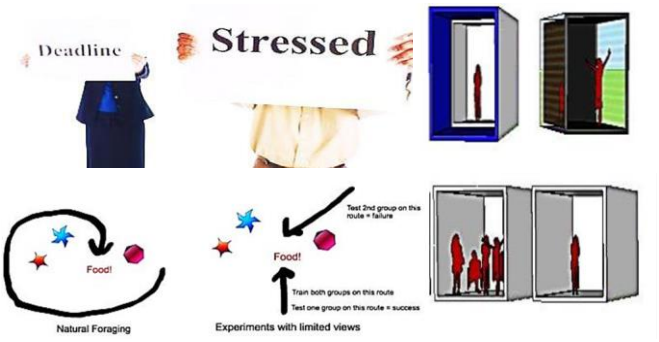
Fig. 1:The Subject Model
Source: Author

User factor

1. Individual centered behavioral analysis
2. Semi-structured open-interviews
3. Cognitive maps and direct word drafts

Place factor

4. Place centered behavioral analysis
5. Auto-photo- elicitation
6. 3d sketches and sectional drafts



The final data will be presented in 'Progressive Drafts' and they will be directed into a 'Comparative Space Centered Evaluation'. it is a backward process from 'place' to 'space', with contribution of precedence studies, field works, co-related studies and literature evidences to identify 'potential spatial and space related aspects' of 'Space Based Fear'.

Impression in Architectural Design

Evolution of human civilization sturdily proved that 'fear' had been constantly associated with man and environment since early classic core to contemporary modernism, and it had been defined through vast socio-cultural, political, and economic dimensions chronologically.



Fig. 2 The French Revolution
Source: english-online.at



Fig. 3: The Palace - Forbidden City, Beijing
Source: intochinatravel.com



Fig. 4: "Postmodernism through fear and misjudgment" by R.E Salter
Source: relevancy22.blogspot.com

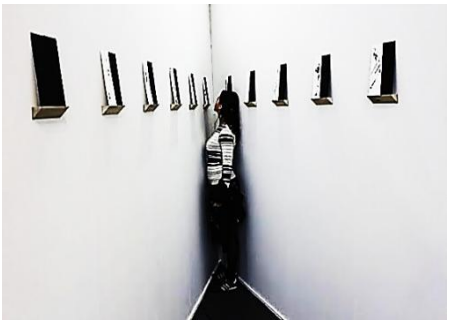


Fig.5: 'Fear of Contemporary' – an installation presented to the International Art Fair conducted by the Art Forum- Berlin.
Source: refusetobeacoward.com

Fear, Space and Public

People move through city in a particular manner, 'fear' plays a significant role in their 'mental mapping' of the cityscape into places-they will go and they will not. A space can give a message "avoid this place or protect yourself"(Abject Terror -Ellin, 1997, p. 139). Fear which influences citizens has become a 'substantial power' to limit the public life. Consequently the potential social benefits of public buildings have been diffused by public fear in current cities.

'Fear in public' is once a 'tool' in order to minimize the anti-social behaviors in public. 'You are on CCTV cameras' or any other such messages are intentionally used to warn the customer. If this 'sense of required fear' is exceeded, such places will be dis-attached from user where the

space impresses user negatively. Instead, the public quality can also be manipulated through positive architectural design strategies more desirably.






Fig. 6: Fear and Public
Source: vimeo.com

Analysis of 'Case Studies' Focusing on Four Shopping Centers

- Nugegoda Supermarket - NSM
- Liberty Plaza - LP
- Borella Supermarket - BSM
- Majestic City - MC






Table 1: Progressive Draft – NSM - 02

User introduction	Journey of the customer	Space syntax	ICBM: author's observation
Sample number : **03** Portrait:  Gender- female Age limit- 30-40 Number of visits- Several times	  	Though the entrance is wide, it has been blocked with a decorative wall.  1st floor is open enough with daylight. 	She entered by entrance no-03, and walked in GF and FF with her baby. Passing the stair way to the SF, she came down and returned to the same entrance, and waited more than 20minutes. She was accompanied with a man later and started the journey again up to the SF.

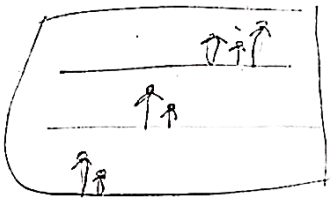
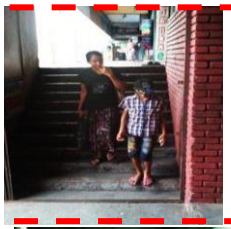
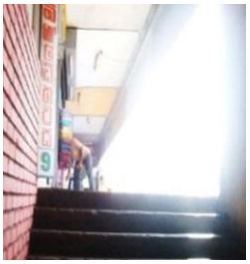
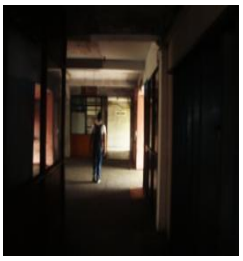
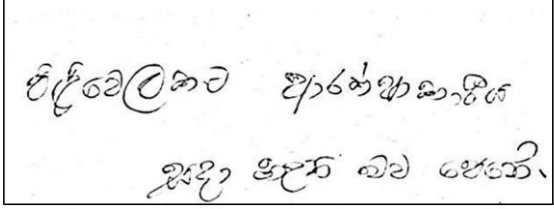
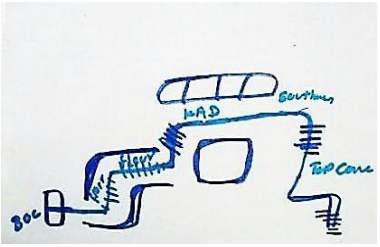
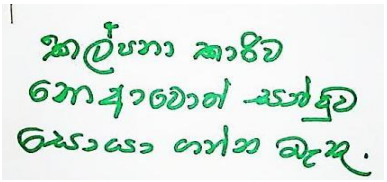
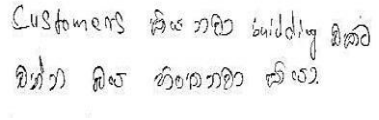
	 		
Cognitive map / explanation draft		Salient features –open interviews	
		She said that she never visits the top floor lonely. Though she scared of walking there, did not mention a reason for that. Her draft explained well, the reason behind her behavior.	

Table 2: Progressive Draft – BSM - 01

User introduction	Journey of the customer	Space syntax	ICBM: author's observation
Sample number : **01** Portrait:  Gender- female- A lady With her son. Age limit- 35-40 Number of visits- First time	   	GF exterior passages are fully opened with clear daylight.  Entrance is clustered and blocked in view.  	She walked at the outer corridor And found that she should enter inside. She hesitated, peeped inside several times before enter. Only she went up to the SF, again glimpsed into several lobbies and turned back. Her behavior was extreme fast. She did not allow her son to go far from her at any time.

Cognitive map / explanation draft	Salient features –open interviews
	She strongly mentioned that this is not a good place to come to anyone. Further she advised the author (interviewer) to not to go inside lonely for any work.

Shop owners/ shop workers		
Sample No & portrait	**Cognitive map/direct word expression**	**Salient features**
 Sample No- **01**		'I fear the staircase. And if there is no one who is familiar at adjacent shops, I close the shop or else I asked my son to be here'.
 Sample No- **02**		'I'm five years here now; still I fear thinking I won't able to come to the shop. Passages and stair cases are extremely messed.'
 Sample No- **03**		'I have no fears here but lot of customers tells that. So they ask their work to be taken in the morning or noon. They don't take specially evening appointments to visit here'.

No complaints were recorded from above 18 interviewed samples in MC. They all made positive responses only. To further support the statement, few extra customers and shop owners/workers also were interviewed. They also made equal responses that place is good enough to be and work, and no traces of fears they do experience within the place. Some expressive drafts of samples are shown below.

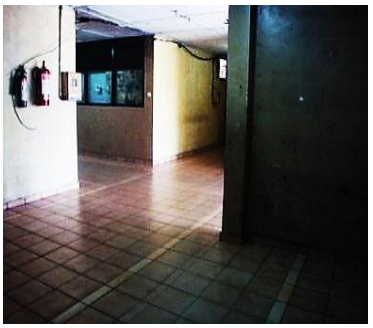


Identifying Hotspots

Identified 'critical places' are the 'hot spots' that were established being based on the data collected from progressive drafts of **60 samples** including customers, shop owners and workers.

Nugegoda Supermarket

Staircases, Dark passage with set of closed shops, Second floor, Blind ends, Entrances, Passage junctions, Rear passage.


Liberty Plaza

Lift lobby, Atrium, long passages.





Borella Supermarket

Entrances, Staircases, Passage ways, Stair case lobbies, Blind-ends, Basement.





Majestic City

No hotspots were identified in MC through sample explanations. Although In relation to the above identified hotspots in other three shopping malls, similar places in MC also were selected for the Space Centered Evaluation.



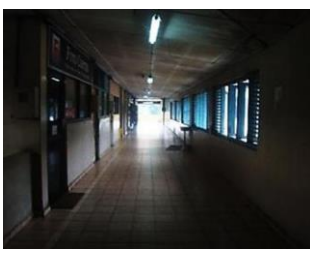


Space Centered Evaluation

According to the evidence of sample customers; the highest number of hotspots was recorded in BSM, and then NSM, and next LP. And no hotspots were identified in MC. Among identified hotspots of BSM, NSM and LP, some were mutual such as passage ways, staircases, blind ends, and entrances. Initially the evaluation was focused on one specific hotspot to identify the preliminary potential aspects, and rest of hotspots was evaluated with reference to them into following order;

- Analytical Case- (01) – Passage/ walk ways
- Case 02 – Stair cases and stair lobbies
- Case 03 – Entrances
- Case 04 – passage ends
- Case 05 – passage junctions







Ground Floor First Floor Second Floor

Fig. 6: Passages in NSM – Condition of daylight and Intensity of available light



Ground Floor First Floor Second Floor

Fig. 7: NSM passages during night time (5.30 – 8.00 pm) and intensity of availablelight
Source: Author

As it is shown using Analytical Case- (01) – Passage/ walk ways - the comparison will be proceeded with focus on major similarities and dissimilarities among the four case studies.

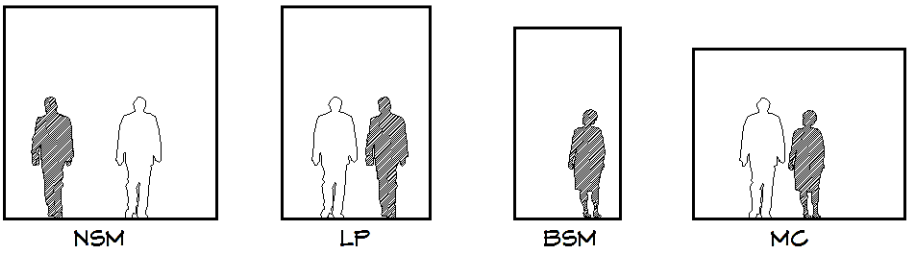


Fig. 8: Proportional Cross Sections of Four Passages

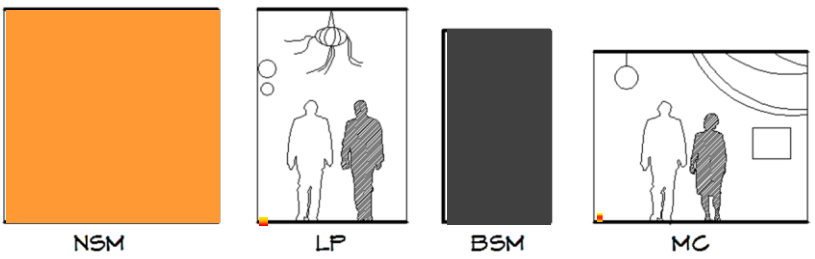
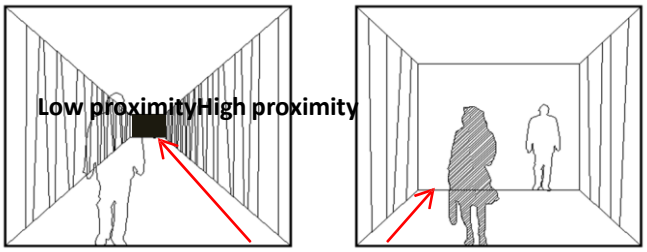


Fig. 9: Apparent colour variations and intensities in passages of four shopping centers
Source: Author

As above paradigms are shown different architectural aspects are critically evaluated using above five cases of hotspots. Further randomly selected examples are shown below.

Eg 01:



Eg 02:

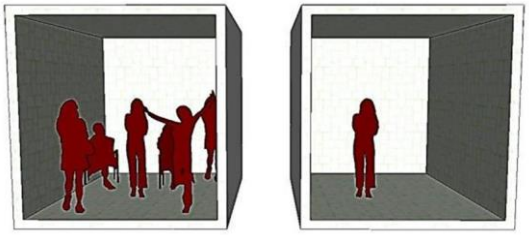


Fig. 10: Aural and Somatic Isolation

'Silence' is a critical aspect in terms of space based fear, particularly in public.

Eg 03:

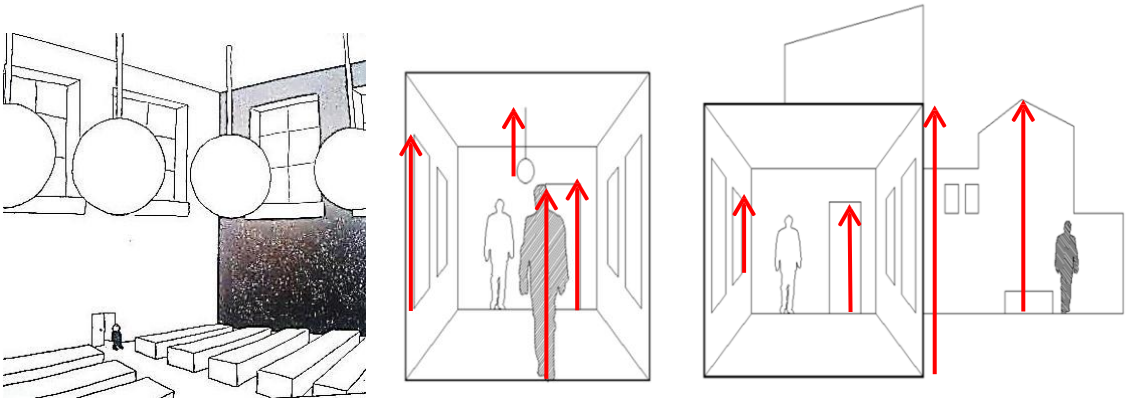


Fig 11: "An example of conflicts of scale in buildings"
Source: Psychology for architects (Canter, 1974, p. 39)

This 'conflict in scale' is highly capable of influencing the user psychology; the uncomfortable, in-appropriate application of scale is a heavy component in space based fear.

Eg 04:

Power of Navigation- The overall arrangement of walkways (passages) in LP was criticized by the sample customers.



Fig.12: Mental Representation of Space – by sample no: 04, 07 - LP

Eg 05:



Fig. 13: A Passage junction at NSM and LP
Source: Author

Eg 06:

The image indicates two robust sounds in public; the 'sound of people' and 'sound of vehicles'. Further user demonstrated well the misery of dying animals-which she experienced only through sounds at the rear side of the market. It proved the influential power of audial sensation towards the human mentality.



Fig. 14: The cognitive map drawn by the sample No- 06 – NSM

Eg 07:

> "Symmetry has the quality of perfect balance but it often provokes a strange uneasiness, even in the works of great masters"
>
> (Day, 2002, p. 66)

'Symmetry' becomes a high influential reason of space based fear once it is strongly integrated with repetition+ reflection + high volume + low proximity + high enclosure. This combined effect can be changed with the impact of some other aspects, such as the lighting level, shape and proportion, tactile and visual experiences.

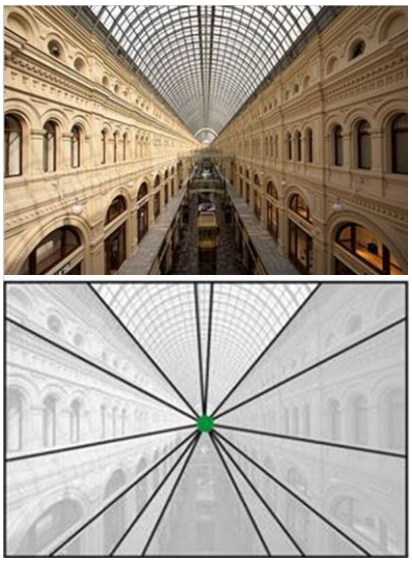


Fig.16: Perfect Symmetry
Source: us.whitewall.com



Fig.15: Dostoevsky Metro Station
Source: robertodemicheli.com



Fig. 17:Intergalactic Bus Tunnel by Jason Hoover
Source: cruzine.com

Table 3: Identified 21 Potential Spatial and Space Related Aspects

Aspect number	Spatial or space-related aspect
Aspect 01	Shape and Proportion
Aspect 02	Lighting level
Aspect 03	Enclosure – ratio of Solid and void
Aspect 04	Visibility
Aspect 05	Mutual Surveillance
Aspect 06	Hierarchical structuring - organization
Aspect 07	Visual Experience -Views and Colours
Aspect 08	Volume, Scale, and Proximity
Aspect 09	Power of Navigation
Aspect 10	Order - Details and Objects
Aspect 11	Shadow, Reflection, and Movement
Aspect 12	Tactile experience
Aspect 13	Aromatic experience
Aspect 14	Audial Sensation
Aspect 15	Aural and somatic isolation
Aspect 16	Activity pattern
Aspect 17	Graffiti and vandalism
Aspect 18	form
Aspect 19	Repetition
Aspect 20	Symmetry
Aspect 21	Landscape

As the space centered evaluation proved that all identified aspects were inter-connected and inter-related, aforesaid 21 aspects are classified as 'Integrated Spatial and Space Related Aspects'.

> "As the elements and principles become more familiar, new connections, relationships, and level of meaning are established"
>
> (Ching, 1979)

Integrating them among one to another into varying levels, different compositions are established. Such 'integrated compositions' are uncountable. Following corridors in BSM have natural sun light; one side is almost opened- low solid ratio, and visible. But often people do scare to walk along. Applying the rest of identified aspects; it was noticed that they are narrow, low proximity; hence the end of the journey is either blind or not known. They are poor and harsh in tactility and visual experience. There is neither surveillance nor human attraction.



Fig. 18: Two passages in BSM
Source: Author

Accordingly, the presence, or the absence, or the richness, or the infertility, of a single or several 'spatial aspects or space-related aspect' was revealed as the logical basis behind the phenomenon. Moreover, similarly it had been the reason of such 'uncountable variations' that given rise to an 'inaccurate spatial expression' produced a 'negative impression' to user.

Architectural Design Interventions to Diminish Space Based Fear

As the integrations of spatial and space-related aspects are uncountable, the remedial actions to be followed are countless. These strategies are fundamentally based on literature evidences and author observation.

Day and Sites similarly emphasized the contribution of social network promoted by the activity pattern of a building to diminish space based fear,

> "keep activity going – especially during night time which are the dangerous hours"
>
> (Day, 2002, p. 144)

Generate functions to make available people in places -they will become 'watch-dogs' who keep their eyes on place which supports to ensure safety and diminish somatic and aural isolation.

The Integration of natural setting and day light has high power of diminishing space based fear. Eg.

> "Imagine two-entry ways to groups of small offices. One is a dark hallway with lift, fire stairs and rows of name plates and buttons.
> The other is an 'individual café atmosphere' in a sunlight plant- filled winter – garden, receptionist and activity round the photocopier guaranteeing human presence; different appearance, different atmosphere, different approach to visitors"
>
> (Day, 2002, p. 155)



Fig. 19: The Indoor Garden at BSM
Source: Author

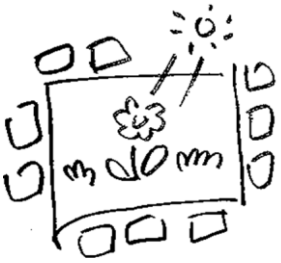


Fig. 20: The Cognitive Map - Sample No: 05 – NSM
Source: Author

"Architecture we look better in our hopes than our fears" (Ellin, 1997),hence promote built-sphere to increase visibility, it will provide better mutual-surveillance and will ensure the safety in public. Shape the design for user interaction;

> "informal seats like low walls and sun-facing steps, where you can see and be seen – unlike proper seats which inhabit strangers sitting close enough to meet"
>
> (Day, 2002, p. 113)

Ellin says the houses that she "remember with textures and details in their structure – window, floor, door, walls-feel safe to me; inhabited by smells and sounds, they mitigate the anxiety of the outside world and hone her focus and insight, giving the sense of comfort"(Inside Fear - Ellin, 1997, p. 155).Ultimately the task of architect is unparalleled, accountable and enormous. Mitigating negativity is crucial, but then what? To fill the gap, place positivity through architectural design.



Fig. 21: A wall painting – BSM
Source: Author

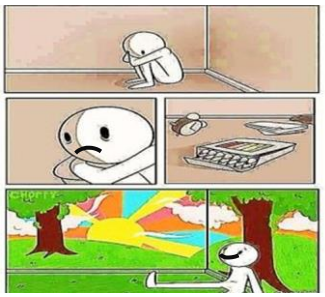


Fig. 22: A simple change can bring a good positive motive to user mind
Source: facebook.com

Conclusion

The investigation explored ‘architecture’ as an expressive medium that given rise to the physical manifestation of fear, together with its inherent ability of transforming a set of psychological emotions into cognitive substances. ‘The physical manifestation of ‘fear’ was demonstrated as two-fold phenomenon. The ‘positively impressed fear’ on user was possibly essential when it was demanded by the place in terms of social ethics, justice, discipline, security and law. ‘Negatively impressed fear’ on user was profoundly named as a ‘by-product’ of architectural design which was a result of ‘inaccurate spatial articulation’ which given rise to an ‘unnecessary fear’. The 'space based fear’ did not appear as a result of single architectural aspect as the space was a complex combination of numerous elements and principals. Hence the space based fear was a result of ‘integrated spatial and space related aspects’ as the research convinced. The nature of this space based fear is ‘place specific’. As paradigms; though ‘aural and somatic isolation’ was identified as an actual powerful contributory aspect of negative impression in public, it might not be such influential reason in private. Then, another aspect or few could be prominent among the rest.

The investigation further emphasized the ultimate task of an architect to select, test and implement the ‘accurate integrated composition’. However in public, undeniably it was a challenge. Certainly the space base fear rooted deep with certain complex psychosomatic, sociological, biological and coincide cultural facts. Hence, it could be divergent on the basis of age, gender, past experience, knowledge and other personal biases. But, architect can examine user variations, see how public places are functioned, and copy the good specimens. The designer could walk along every passage, up and down in every staircase, open every door, look through every window, even in his very first sketch design, to grasp how the user perceives the space. To reach the innate anticipatory imagination of the architect, and to transfer that same set of expressions to user, the ‘accurate integrated compositions’ must be chosen. He must be able to visualize the subsequent ‘impression’ of the place to avoid influences of distrust, fear psychosis, phobias and such negative influences through space. This fear in space might be the cause of distasted public buildings and further degradation of vibrant social interactions in communal life.

Architectural design interventions suggested at the aim of diminishing space based fear were the ‘accurate compositions’ between the same identified potential spatial and space related aspects. On the other hand they indirectly supported and promoted cohesiveness of that particular place and increased the unity in public, where people desired to be. Typically, as the effect of space was not clear or not known, user could not react. ‘Living with fear’ in long term, can unconsciously harm to user mental health and social well- being. People do hypnotherapies and many other cures, yet the ‘Space Treatment’ is either not branded or disregarded. Architect can replace fear by harmony, turn negativity to positivity considering the ‘discussion between user and space’ and the deep relationship of user psychology and spatial science into architectural design.





"Design gives the way to the physical manifestation of our fears. Almost Always , these take the shape of walls"

(Ellin, 1997, p. 115)

References

Beri, P. (2010). Form Follows Feelings The Architecture of Pramod Beri 1st Edition.jpg.

Canter, D. V. (1974). Psychology for architects. London: Applied Science.

Colquhoun, I. (2004). Design out crime: creating safe and sustainable communities. Amsterdam; Boston; London: Architectural Press.

Day, C. (2002). Spirit & place: healing our environment, healing environment. Oxford; Boston, MA: Architectural Press.

Dovey, K. (2009). Becoming places. London; New York: Routledge.

Ehrenzweig, A. (1734). The hidden order of art : a study in the psychology of artistic imagination. University of California Press.

Ellin, N. (1997). Architecture of fear. New York: Princeton Architectural Press.

Fear. (2014, January 6). In Wikipedia, the free encyclopedia. Retrieved from http://en.wikipedia.org/w/index.php?title=Fear&oldid=589436282

Hillier, B., & Hanson, J. (1988). The social logic of space. Cambridge [England]; New York: Cambridge University Press.

Hoose, E. V. (n.d.). Why shopping malls inspire violence. Retrieved February 3, 2014, from http://www.salon.com/2013/10/26/why_so_much_violence_happens_at_the_mall_partner/

Newman, O. (1978). Defensible space: crime prevention through urban design. New York: Collier Books [u.a.].

Poyner, B. (1983). Design against crime: beyond defensible space. London; Boston: Butterworths.

Shonfield, K. (2000). Walls have feelings: architecture, film, and the city. London; New York: Routledge.

Tolman, E. C. (1948). Cognitive maps in rats and men. Psychological Review, 55(4), 189.

Top 10 Strong Human Fears. (2011). Listverse. Retrieved January 9, 2014, from http://listverse.com/2011/09/30/top-10-strong-human-fears/

Vidler, A. (2002). Warped space: art, architecture, and anxiety in modern culture. Cambridge, Mass.; London: MIT.

Williams, R. J. (2004). The anxious city: English urbanism in the late twentieth century. London; New York: Routledge.

Urban Green Space in a High-Density City: User Expectations, Accessibility and Experience in Context of Dhaka

Nawrose Fatemi*
Department of Architecture, University of Asia Pacific (UAP), Dhaka, Bangladesh

Abstract

This paper starts from the debate with 'the problem of the simplistic notion that more green spaces are required when density is increased is that it does not consider the characteristics of people living in higher density environments'. In Dhaka, a critical imbalance has been observed between users' need and aspiration of the urban green space use and the available quantity they benefit from. The City possesses only 0.12 acres greeneries and open areas per thousand population, while it needs to devote a range between 6.25 and 10.5 acres of total open space per thousand population, according to NRPA (National Recreation and Park Association recommendation). With the phenomenal rise in the level of urbanization and urban growth, the City suffers the loss of its precious open space for urban infill. And the gap between the amount of open space required for a healthy living and the amount of open space available continues to widen. As the City is densely developed, it leaves little scope to have more open spaces inside. Consequently, concentration should be paid in retaining, up keeping and exploiting the potentials of existing urban open spaces, greeneries, and lakesides and improve their quality for urban life. This paper analyzes the urban green space use and their potentials by a correlational study between DHANMONDI Lake & Lakeside Green Spaces and *HATIRJHEEL* & Lakeside Green Spaces. *And a number of observations, interviews and informal questionnaire survey on the users has been conducted to study the user accessibility, their expectations and the manifestations of these user-perceptions in the day-to-day use.*

Keywords: Urban Green Space, High-Dense City, User Perceptions, Accessibility, Physical Use

Introduction

The world population is expected to increase by 2.3 billion between 2011 and 2050, passing from 7.0 billion to 9.3 billion (United Nations, 2011). Developing regions such as Asia, South America and Africa will have a faster pace of the urbanization process. Large and fast growing cities are expected to emerge in these areas (UN-Habitat, 2010). Globally, more people live in urban areas, with 54% of the world's population residing in urban areas in 2014. In 1950, 30 % of the world's population was urban, and by 2050, 66% of the world's population is projected to be urban (United Nations, 2014). The population living in urban areas is projected to gain 2.6 billion, passing from 3.9 billion in 2014 to 6.3 billion 2050 (United Nations, 2014). Such densification tendencies will also put a lot of pressure to the infrastructures and facilities of the existing big

*Corresponding Author: Nawrose Fatemi; E-mail- nawrose@uap-bd.edu

cities. It can be argued that these densification tendencies have negative and positive implications on the physical and social quality of greeneries and open areas (Lau, 2014). The scarcity of buildable land and the demand for other land uses places an immense pressure on land for greeneries and open areas. High building and population densities and incompatible mixing of land use creates crowding, lack of privacy, and poor environmental quality (Coorey, 2007). Existing parks and other green spaces in higher density areas may become so congested with users or attract new 'undesirable' or 'incompatible' uses that they actually deter additional use. This is what is making urban consolidation - without additional green space - highly inequitable (Boone et al., 2009; Pincetl & Gearin, 2005; Randolph, 2006; Sister et al., 2009).

Maat and De Vries (2006) suggest that as density increases, the amount of green space in a locality also should be increased. But one of the key simplifications, and potential shortcomings, of this statement is that people living in high densities are assumed to be homogenous in regards to their need for green space. In this paper, the aim is to investigate the heterogeneity of user preferences on green space use, depending on their characteristics. It also observes their responses in terms of experience and accessibility. A number of past research efforts have focused on open space in the Western cities but few focus on cities from other parts of the world. Critical factors and design considerations for open spaces in some highly dense South Asian cities such as Dhaka will differ greatly from their Western counterparts. Past research significantly focuses on the physical requirements in open spaces while widely neglecting its social requirements. This paper analyzes both the physical and social requirements of urban green space and user response based on literature survey, a number of observations, interviews and informal questionnaire survey on the users.

Dhaka City and Its Urban Green Spaces

Dhaka, being the 11th largest megacity comprises a total population of 16.98 million (United Nations 2014). The UN report (2014) also projected that Dhaka would become the 6th most crowded city by 2030 with a population of 27.37 million. Rapid and unplanned urbanization, commercial development, along with population pressure have caused the loss of precious open space to urban infill. But the image of past Dhaka is not derived from its concrete parts like building, roads etc.; it is much deeper and more fluid. Parks and open spaces are an integral part of this images out of which Dhaka is emerged (Mowla, 2003). In this context, Halprin's (1979) quote is appropriate: 'Our collective perception of cities depends on the landscape of open spaces. They lace a city with their voids…. City is not so much a construction as a landscape of open spaces'. The British author, James Taylor has stated in his 'Topography of Dacca', after his visit of 1824, which Dhaka looks like the Venice of the orient. The large open spaces with the lushness of nature surrounding the habitation; the water of the DULAI KHAL flowing across the town, and the water boundary by the SHITALAKHYA and the BURIGANGA - all these natural features made the city beautiful (Farida, 1999).

The problems of urbanization in Cities, like Dhaka, in all developing countries are intensified by high population growth and rural-urban migration. For Dhaka, the problem is further aggravated by limited land supply, lower land utilization and lack of proper policy and planning of land use. Obviously the ever-growing urban population is creating an increasing demand for space. This rapid influx of population to the city provides stimulus to construction of built-up areas in huge proportion. Within this junk of concrete, open green spaces acts like its lungs, being used as essential part inside the city for its environmental and ecological balance. Other than this passive need, they have had an evolving role in the life of city residence. This role has ranged from relief the city to the mediator between humans and nature (Sadeghian &

Vardanyan, 2013). Therefore, one of the primary needs of open spaces in urban life is for recreational purposes during the leisure time. The importance of recreation in people's physical, intellectual and emotional development is now undisputed (Farida, 1999).

Indeed, recreational facilities and open spaces, which are accessible to the general public, provide an integral and necessary part of urban living, particularly in areas of high density. According to Jepson (2007), 'Urban open spaces are crucial to city residents because, if done right, these spaces not only provide aesthetically pleasing escapes, but also enhance the emotional well being of the city's residents as well as advance the interests of environmental advocacy, social justice and inclusion'. In the cultural and climatic context of Dhaka, people have the tradition to perform many leisure activities in outdoor spaces in urban life. Such leisure activities are Travel (walking or wandering); Personal Care and Exercise (sports, active play); Social and Institutional Activities (meeting, talking, parties etc.); and Cultural and Communication Activities (hobbies, passive play etc). For passive recreation, open spaces like parks and gardens and for active recreation play fields/ grounds, stadia, open-air theater and similar facilities are essential within a city boundary (Farida, 1999).

Moreover, the globally acknowledged planning standard, National Recreation and Park Association (NRPA, 1990) recommends a range between 6.25 and 10.5 acres of total open space per every 1,000 residents. But Dhaka City possesses only 0.12 acres greeneries and open areas per thousand population. Ideally a city needs to keep its 40%- 50% of land open, or free, but in a compact or dense situation like Dhaka, recommended lower margin is about 25% of urban space (Mowla, 1985; Farida, 1999). Since the environment of the city constitutes sharp physical and social divisions, provisions for preserving existing green spaces and the creation of new green areas have not been considered in any of the Master Plans devised earlier (Siddiqui et al., 2000). Later in the timeline, in recognizing the importance of green spaces to the environment, the Structure Plans of 1995–2015 strongly recommended the construction of new green areas, and also suggested that the present greeneries should be preserved (SDNPBD 2005). In the first master plan of 1959, there were 1338 acres (5%) of open space comprising around 20 notable Open Parks, lakes and recreational spaces. Among those, there is only 853 acre of land for open spaces comprising only 13 notable parks and lakes in all over the city at present. Dhaka structure plan suggests that the open space should be at least 20% for its future generation (DMDP 1995). But in Dhaka urban greenery, park greenery or tree covered spaces constitutes less than 15% of the city landscape (Tabassum & Sharmin, 2009). Now, in old Dhaka only 5% of land and in new Dhaka 12% of land is green and open (DMDP 1995).

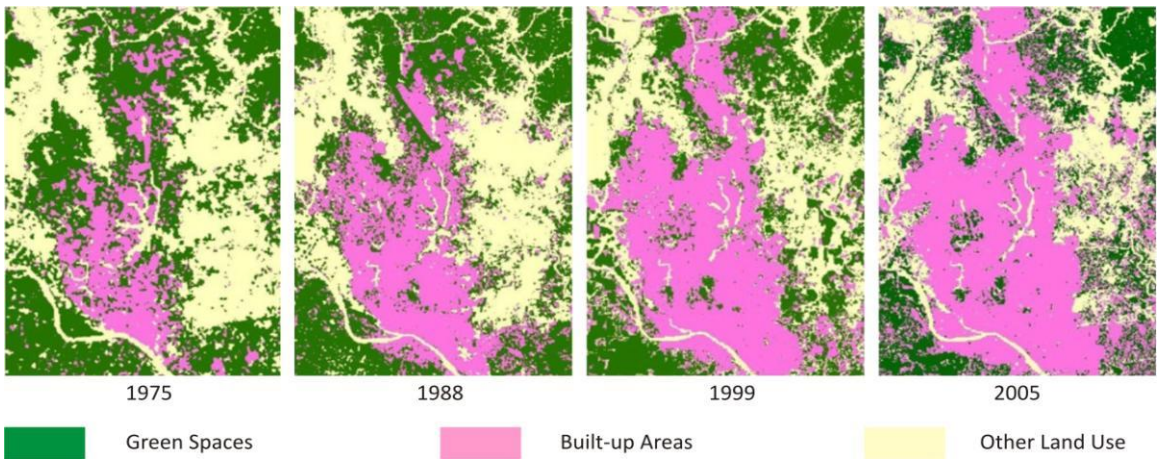


Fig. 1: Spatiotemporal changes in green spaces in Dhaka (Byomkesh et al., 2011; modified by author)

Based on spatiotemporal green space dynamics (Fig. 1), it was found that the green spaces of Greater Dhaka are rapidly decreasing. Estimates of green spaces using satellite images from 1975 to 2005 revealed that the rate of change in green spaces was consistently high, and in the last 30 years a total loss of 8,617 ha was observed in comparison to the base year of 1975. In 1975, green spaces occupied 44.8% of the total area, which dropped to 35.7%, 31.2% and 24.1% in 1988, 1999 and 2005, respectively. On the other hand, the built-up area expanded from 13.4% (5,550 hectares) to 49.4% (20,549 hectares) from 1975 to 2005. In other words, the net increase in urban area was 14,999 hectares over the period (1975–2005), suggesting a huge growth in the human landscape and a subsequent reduction in the natural landscape (Byomkesh et al., 2011).

Therefore, presently, there is a shortage of open space, particularly that of parks and greeneries in Dhaka city. And the gap between the amount of open space required for a healthy living and the amount of open space available continues to widen. At a certain point this paper would attempt to study the user accessibility, their expectations and the manifestations of these user-perceptions in the day-to-day use.

High Density Developments and Green Space Interactions

Open and green spaces near higher density dwellings must cater to very diverse populations – older people, children, adolescents, parents, wealthy people and the poor – with diverse expectations about the functions that green space should perform (Seeland et al., 2009; Barbosa et al.,2007; Hillsdon et al.,2006). A 'one size fits all' approach to green space design for higher density areas will be prone to failure. Most commonly discussed claims; counter-claims and debate on high density developments and its implications on quality of urban green space are: accessibility, crowding, privacy, safety, social interaction, environmental quality, and the overall provisions for open space and a few other similar topics. These topics are attributed to the physical and social qualities of open space (table 1). Such factors among others will influence the use and user satisfaction of open spaces.

Table 1: Factors and Variables Influencing Urban Green Space

Factors	Variables
Physical Qualities	Adequacy of open space provisions Accessibility Climatic comfort Facilities, Amenities and Maintenance Aesthetics
Social Qualities	Crowding Privacy Safety Social interaction
Human Factors	Preferences Socio-cultural differences Lifestyle & habits Demographic background Economic backgrounds

Provisions of Urban Green Space: If density increases, it might be one option that people would start living more and more taller buildings; thus freeing up land for parks which are needed in larger numbers to cater the increased population. But the reality is with the increase in population and scarcity of urban land, there is considerable demand for urban capacity. The

demand for residential, commercial, Government, Institutional, and Community land uses, infrastructure and services have consequences on the provisions for urban green space (Coorey, 2007). The opportunities to increase urban density tend to involve the loss and not gain, of surviving green spaces (Breheny, 1992).

Accessibility: In high-density cities, the provisions for open and green space is claimed to be less, so it can be hypothesized as having easier and better access to open and green spaces. This also allows accessibility to open and green spaces at any time of day (Coorey, 2007). However, users' accessibility will also depend on the quality of its open and green spaces, the transportation system (distance, cost or time) and the attractiveness of the activity centre (Abubakar & Aina, 2006). Some attributes (comfort and image, access and linkage, uses and activity and sociability) also strengthen the access and responsiveness of open and green spaces (Carmona et al., 2003). Therefore, it can be argued that, even though high density can promote accessibility prima facie, it gives no guarantee that density alone would result into more satisfactory use, both qualitatively and quantitatively.

Privacy: Higher density can bring together intolerable numbers of people attributing to crowding and lack of privacy. When residential land use are combined with a high ratio of secondary or public land uses, a high number of visiting population is attracted to residential developments, bringing together different social groups. The mixing of different user groups in common public spaces of these developments may have implications on residents' sense of privacy (Coorey, 2007).

Safety: Open spaces being located in mixed use settings bring together a variety of user groups in common use of open space. Such conditions may create lack of safety due to unfamiliarity among users and mix of different social groups. Therefore, although a large number and variety of activities in open space creates conducive settings for safety, high intensities of use and mix of user groups may cause unsafe conditions (Coorey, 2007).

Social interaction: Research discuss that when high intensities of necessary and optional activity takes place in satisfactory conditions of open spaces, more social activities will be encouraged (Gehl, 1996; Moirongo, 2002). Mixed uses bring residents and visitors together creating a possible lack of privacy and safety but it may have positive implications for better social interaction. In the parks, plazas, markets, waterfronts, and natural areas of our cities, people from different cultural groups can come together in a supportive context of mutual enjoyment. As these experiences are repeated, public spaces become vessels to carry positive communal meanings. (Carr et al., 1993)

Crowding: High-density living is identified as affecting both crowding and privacy (Masnavi, 2000). High density as well as incompatible mixing of land uses may have implications on congestion and crowding in open space. It is suggested that high collectivism, a non contact culture and high population density combined with high crime rates may contribute to the experience of crowding in public and semi-public spaces (Iwata, 1992). Crowding is therefore not only related to physical space but also to a social condition (Chan, 1999). The value and contribution of open space being for relaxation, interactions, and creating a sense of community may be questionable in such conditions.

The adaptability and tolerance to crowding, safety, and privacy levels are also influenced by the socio-demographic and economic backgrounds of the users.

Urban Green Space Use and User Experience: Dhaka Context

The success of urban spaces is associated with its quality - the quality of open space, as mentioned earlier, has both a physical and social dimension. The quality of experience has been often referred to as 'total satisfaction' (Stewart & Cole, 2001). Therefore, 'satisfaction' or 'experience quality' is found to be a credible indicator of the quality of an open and green space. Here, two case of urban green space use and user experience in Dhaka context: DHANMONDI Lake & Lakeside Green Spaces and HATIRJHEEL & Lakeside Green Spaces are studied. The scope of the study is limited to user satisfaction or experience quality.



Fig. 2: DHANMONDI Lake & Lakeside Green Spaces

In 1956, when DHANMONDI was developed as a planned residential area, about 16% of the total area was designated for these green spaces in the development plan. Now, DHANMONDI Lakeside open area covers approximately 31 acres and water body is about 54.6 acres. 'DHANMONDI Lake and Lakeside Area Development Project' (Fig. 2) was undertaken by Dhaka City Corporation (DCC) under the Ministry of Local Government and Rural Development (LGRD). Beginning from IGATOLA (DHANMONDI Road - 2) the lake extends up to Road - 27 (new 16A), and bounded by the MOHAMMADPUR-LALMATIA area in the north, SATMASJID Road in the west, BGB (Border Guard Bangladesh) Gate (DHANMONDI Road - 2) in the south and in the east by KALABAGAN residential area. It is 3 km in length, 35-100m in width, with a maximum depth of 4.77m. DHANMONDI Lake and its environment is truly depicted by Islam (2014):

> ''The trees with rustling leaves and the chirping birds, ripples of the lake and tranquility of the surroundings evoke a sense of serenity to the mind. The combination of heavenly blue sky and green earth is an escape from the chaotic city life. DHANMONDI Lake is much more than a water body surrounding the area. It offers an activity packed package where people can seek refugee from the hustle bustle of the city life. From health to culture, food to fun –

> DHANMONDI Lake has it all and Trends will take a stroll along the lake to see what it offers.'' Islam, 2014

ATIRJHEEL & Lakeside Green Spaces: This urban green space was developed through the HATIRJHEEL-BEGUNBARI development project (Fig. 3). The prime intention was to preserve the lake and its surrounding areas as retention basin. Afterward, roadway and walkway along the periphery of the lake was constructed. The lake and its surrounding areas were planned for recreational purpose covering an area of 320 acre.

The place is located in a prime location of Dhaka. It is well connected with the road network system of the city. The place was generously designed with walkways, viaducts, and bridges, systematically landscaped with trees and shrubs. The inauguration of the HATIRJHEEL project promised enriching urban living in a densely-built, traffic-congested, and green-starved Dhaka city. Amidst ongoing expansion of lands, legal or illegal, HATIRJHEEL opens up possibilities of re-configuring land within an existing urban fabric. It contributes to land's conservation by value addition; lakes and roads are mere intervening means of land development (Ghafur, 2013).



Fig. 3: HATIRJHEEL & Lakeside Green Spaces

HATIRJHEEL and its environment are truly depicted by Ghafur (2013):

> ''Here urbanity unfolds by modern translation of our primordial relation with water. Newly planted trees will mature while deepening HATIRJHEELs presence in our collective urban memory. HATIRJHEEL is already a stage set for celebration -fireworks illuminating its night sky and reflecting upon its water is indeed a spectacle unmatched in Dhaka's living memory. HATIRJHEEL, however, is neither a space of spectacle nor a space of utility - a 'lake' linked to a drainage system and 'roads' - despite their visual primacy. HATIRJHEEL appears full of possibilities as it captures collective imagination by pushing our desire of how we might live''.
>
> Ghafur, 2013

Comparative Analysis according to Variables: A comparative analysis between these two urban green and open areas can clarify their influence on user Accessibility, Expectations and overall satisfaction or experience quality. The variables for the analysis are: Physical qualities (such as Accessibility, Mode of accessibility); Social qualities (such as Activity hours, Safety, Privacy &

Crowding, Social interaction) and Human factors (such as Response Level are followed by gathering of Detailed Information of Studied Urban Green and Open Areas (Table 2).

Table 2: Detailed Information of Studied Urban Green and Open Areas

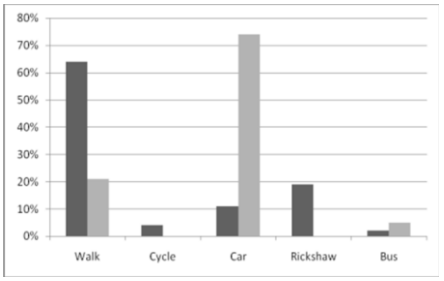
Particulars	DHANMONDI Lake & Lakeside Green Spaces	HATIRJHEEL & Lakeside Green Spaces
Area	85.6 acre	320 acre
Type	District Park like green space	Metropolitan Park like green space
Access	The place is located in the city center well adjacent to the major public transport hub of the capital. Thus, the place is well reachable. it is very accessible from its immediate catchment area mostly the surrounding localities of DHANMONDI area.	The place is located in a prime location of Dhaka. It is well connected with the road network system. But the transport routes of HATIRJHEEL are prohibited for use by Non-Motorized Vehicles (NMV), where in Dhaka city, many people depend on NMVs as their major transportation option.
Physical Features (within site)	Sitting plaza and kiosk for food and drinks, souvenir shop, skating arena, fast food restaurant, boat club, open amphitheater	Sitting plaza, water courtyard, islet for aviary, water taxi, walkways and deck, viaducts and bridges
Site Surroundings	Mostly Residences with a few commercial development	Mostly Residences with a few commercial development

Accessibility: Both The places are located in the prime location of Dhaka and well connected with the road network system. But the transport routes of HATIRJHEEL are prohibited for use by Non-Motorized Vehicles (NMV), where as in case of DHANMONDI, NMVs are allowed. Again, HATIRJHEEL area has become less hospitable for walking as there is little or no consideration for traffic management. Driving in wrong direction, reckless car driving, motorcycle stunts and consequently the increased number of road accidents in recent times are seriously affecting a pedestrian friendly walking environment. Conversely, in case of DHANMONDI lake, it has very pedestrian friendly walking environment as people mostly come from its immediate catchment area.

Accessibility Mode: It is observed that in DHANMONDI lake, people from nearby neighborhood use these places mostly. Only a few of these users come from a greater distance due to exercise purpose and due to some for its attractive design features. High dominance of pedestrian user (64%) are observed along with a few NMV users (4% cycle & 19% rickshaw)(table 3).

Table 3: Daily average use of transportation to access

Location	Walk	Cycle	Car	Rickshaw	Bus
DHANMONDI Lake	64%	4%	11%	19%	2%
HATIRJHEEL	21%	-	74%	-	5%



Conversely, in case of HATIRJHEEL, as It is a motorized vehicle oriented development, people from a greater distance are found more in number instead of people from nearby neighborhoods. dominance of motorized vehicle users (74% car & 5% bus) are observed (table 3).

Activity and Activity hours: The findings from survey show that in both areas mainly three types of activities are taking place in the lakeside like recreation, social gathering and health related activities. in case of DHANMONDI lake, Morning and evening is highly used for jogging and walking (23% & 41%). Pick hour is 4-6 pm; average stay of people is 2-3 hour and less used during noon (16%). For recreation & social gathering, 29% people pass time by sitting & gossiping, and the rest 6% pass time by eating or boating Mainly teenagers (39%) enjoy this lake side for free open space (27%), nice environment (65%) and easy access (18%). Designed sitting place, walking, plantation and others help this place to be an effective urban open space both as community and metropolitan level. Conversely, in case of HATIRJHEEL, users come mostly in the evening and night for recreation & social gathering (70%). Mainly teenagers (68%) enjoy this lake side for free open space (58%), nice environment (32%) and easy access (10%).

Safety: In case of DHANMONDI, for inadequate lighting facilities a few spaces become crime spot after sunset. Conversely, in recent times, a growing concern of HATIRJHEEL is security and safety. Frequent criminal activities such as open drug dealing, extortion, mugging, stalking and floating illegal prostitution (especially after sundown) have greatly increased in recent times.

Social interaction: Overall study shows mostly the presence of health conscious people (64%) in case of DHANMONDI (jogging 23% & walking 41%). Whereas, the scenario of socialization at HATIRJHEEL is comparatively better (70%). But in this case, accessibility problem is a huge barrier for the growth of neighborhood interaction.

Response Level: According to the variable analysis DHANMONDI lake and lakeside area works better. Here presence of visitors is observed all day long (though the number varies in different times) due to its better design quality, visual accessibility and easy mode of transport. However, lack of play and recreation facilities, restricted time for visitors and inadequate lighting facilities contribute to the reduction of response level. Alternatively, in case of HATIRJHEEL, it is a very potential space that has promised to enrich our urban living in a densely-built, traffic-congested, and green-starved Dhaka city. But Illegal sewage connections and dumping of wastes, Driving in wrong direction, reckless car driving, motorcycle stunts and other similar disturbances restrict the number of desired user group people visiting the place.

Conclusion

As the city is densely developed, it leaves little scope to have more open spaces inside. Therefore, one major focus should be in retaining, up keeping and exploiting the potentials of existing urban open spaces, greeneries, and lakesides and improve their quality for urban life.

This study concluded with HATIRJHEEL as a prospective urban open space and its comparable intervention, DHANMONDI Lake; both having the potential to effectively transform a neglected backyard into an active recreational open space and busy commercial strip respectively. Here, awareness towards some regular phenomena need to be addressed such as Illegal settlement, anti-social activities, taking drugs, mugging and similar activities. Beside this, the physical use of such open spaces depends on its facilities and amenities (such as landscape, age wise facilities, parking facilities, access facilities, games and sports facilities). Moreover, as a whole, the space should be interacted with great degree of permeability and transparency. Some focal points and

activity centers will be needed to act as activity generators inside these spaces. In conclusion, for the livability of Dhaka City it has become imperative to develop adequate amount of quality urban green spaces especially at the time when rapid urbanization and enormous population growth challenge the public realm of this high-density city.

References

Abubakar, I. R. & Aina, Y. A. (2006) 'GIS and Space Syntax: An Analysis of Accessibility to Urban Green Areas in Doha District of Dammam Metropolitan Area, Saudi Arabia', In Map Middle East Conference: Proceedings of International conference, Dubai: March 26-29.

Ambrey, C. L. & Fleming, C. M. (2012) 'Public Green Space and Life Satisfaction in Urban Australia', In Proceedings of the 56th AARES Annual Conference, Fremantle, Western Australia: February 7-10.

Barbosa, O., Tratalos, J., Armsworth, P., Davies, R., Fuller, R., Johnson, P. & Gaston, K., (2007) 'Who Benefits from Access to Green Space? A Case Study from Sheffield, UK', Landscape and Urban Planning, vol. 83, pp. 187-95.

Boone, C. G., Buckley, G. L., Grove, J. M. & Sister, C. (2009) 'Parks and People: An Environmental Justice Inquiry in Baltimore, Maryland', Annals of the Association of American Geographers, vol. 99, no. 4, pp. 767-787.

Breheny, M. (1992) 'The Contradictions of the Compact City: A Review', In Sustainable development and urban form, London: Breheny, Pion, pp.138-159.

Byomkesh, T., Nakagoshi, N. & Dewan, A. M. (2011) 'Urbanization and Green Space Dynamics in Greater Dhaka, Bangladesh', Landscape and Ecological Engineering, vol. 8, no. 1, pp. 45- 58.

Carmona, M., Heath, T., Oc, T. & Tiesdell, S. (2003) Public Spaces- Urban Spaces: The Dimensions of Urban Design, Oxford: Architectural Press.

Carr, S., Francis, M., Rivlin, L. G. & Stone, A. M. (1993) Public Space, Cambridge: Cambridge University Press.

Chan, Y. K. (1999) 'Density, Crowding, and Factors Intervening in their Relationship: Evidence from a Hyper Dense Metropolis', Social Indicators Research, vol. 48, no. 1, pp. 103-124.

Coorey, S.B.A. (2007) Design of Open Spaces in High Density Zones: Case Study of Public Housing Estates in Hong Kong, Unpublished PhD Thesis, University of Hong Kong.

Dhaka Structure Plan (1995), DMDP: Dhaka Metropolitan Development Plan (1995-2015), Dhaka: Government of Bangladesh.

Farida, N. (1999) 'Urban Life and Use of Public Open Space- Study of Responsive Public Open Spaces for Supporting Urban Life of Dhaka City', Research for Urban Life, Specially Dhaka City: Its Past, Present and Future, Asiatic society of Bangladesh.

Ghafur, S. (2013) 'Prospects of Hatirjheel as a desiring-machine', The New Age, December 2.

Gehl, J. (1996) Life between Buildings: Using Public Space, Copenhagen: Arkitektens Forlag.

R. Hafiz (2002) 'Agricultural Practices, Human Settlements and Ecology of a Semi-Tropical Region', In AGRO-ENVIRON, Proceedings of the 3rd International Symposium on Sustainable Agro-Environmental Systems: New Technologies and Applications, Cairo: Samie-El-Kassis-Arafat, 26-29 October, pp. 77 .

Halprin, L. (1979) 'The Collective Perception of Cities', In Urban Open Spaces, New York: Taylor, Cooper-Hewitt Museum and the Smithsonian Institution.

Hillsdon, M., Panter, J., Foster, C. & Jones, A., (2006) 'The Relationship Between Access and Quality of Urban Green Space with Population Physical Activity', Public Health, vol. 120, pp. 1127-1132

Islam, T. (2014) Dhanmondi Lake – A wonderful escape, The New Age, March 18.

Iwata, O. (1992) 'Crowding and Behavior in Japanese Public Spaces: Some Observations and Speculations', Society for Personality Research, vol.20, no. 1, pp. 57-66.

Lancaster, Roger A. (1990) Recreation, Park and Open Space Standards & Guidelines, USA: National Recreation and Park Association.

Lau, H.M. (2014) Investigating the Small Public Urban Open Spaces at High-Density Cities: A Case Study of Hong Kong, Unpublished Master Thesis in Sustainable Development, Department of Earth Sciences, Uppsala University, Sweden.

Maat, K. & De Vries, P. (2006) 'The Influence of the Residential Environment on Green-space Travel: Testing the Compensation Hypothesis', Environment and Planning, vol. 38, no. 11, pp. 2111-2127.

Masnavi, M. R. (2000) 'The Compact City in Practice: The New Millennium and The New Urban Paradigm', In Achieving Sustainable Urban Form, London; New York: Williams- Burton- Jenks, E & FN Spon, pp. 64.

Mishu, M. R., Barua, U. & Stoican, I. A. (2014) 'The Changing Nature of Urban Public Places in Dhaka City ', Urbanism Arhitectură Construcţii, vol. 5, no. 4, pp. 5-16.

Moirongo, B. O. (2002) 'Urban Public Space Patterns: Human Distribution and the Design of Sustainable City Centers with References to Nairobi CBD', Urban Design International, vol. 7, pp. 205-216.

Mowla, Q.A. (1985) Sun and the Built Form - with Special reference to Dhaka, Unpublished M.Arch thesis, Department of Planning & Architecture, University of Roorkee, India.

Mowla, Q. A. (2003) 'Towards a Paradigm of Livable City - the Case of Dhaka', Jahangirnagar Review, vol. XXVII, pp. 43-54.

Pincetl, S. (2010) 'From the Sanitary City to the Sustainable City: Challenges to Institutionalizing Biogenic (Nature's Services) Infrastructure', Local Environment, vol. 15, no. 1, pp. 43 - 58.

Randolph, B. (2006) 'Children in the Compact City: Fairfield as a Suburban Case Study, Sydney', In Creating Child Friendly Cities, proceedings of the 2nd National Conference on, ARACY and the Urban Research Program, Griffith University, Sydney: October 30 – 31, pp. 1-33.

Sadeghian, M. M. & Vardanyan, Z. (2013) 'The Benefits of Urban Parks, a Review of Urban Research', Journal of Novel Applied Sciences, vol. 2, no. 8, pp. 231-237.

Seeland, K., Dübendorfer, S. and Hansmann, R. (2009) 'Making Friends in Zurich's Urban Forests and Parks: the Role of Public Green Space for Social Inclusion of Youths from Different Cultures', Forest Policy and Economics, vol. 11, pp. 10-17.

Sister, C., Wolch, J. & Wilson, J. (2009) 'Got Green? Addressing Environmental Justice in Park Provision', GeoJournal, vol. 75, pp.229-248.

SDNPBD (2005) Green Cities Plan for the Planet, Bangladesh, Dhaka: Department of Environment

Siddiqui, K., Ahmed, J., Awal, A. & Ahmed, M. (2000) Overcoming the Governance Crisis in Dhaka City, Dhaka: University Press

Stewart, P, W & Cole, D. N. (2001) 'Number of Encounters and Experience Quality in Grand Canyon Backcountry: Consistently Negative and Weak Relationships', Journal of Leisure Research, vol. 33, no. 1, pp. 106-120.

Tabassum, S. & Sharmin, F. (2009) 'Comparative Analysis of Responsive Parks at Urban Neighborhood in Terms of Accessibility: The Case of Dhaka', In Lessons for Sustainable Development: Proceedings of the Urban Forestry Conference 2009, editor: S. Maruthaveeran, N. A. Yahya & A. A. M. Noor, Malaysia: Sarawak, 17-19 Nov 2009, pp. 60-68.

UN-habitat (2010) UN-Habitat Annual Report 2009.

United Nations (2011) 'World Population Prospects: The 2010 Revision', Department of Economic and Social Affairs, Population Division, New York.

United Nations (2014) 'World Urbanization Prospects: The 2014 Revision, Highlights', Department of Economic and Social Affairs, Population Division, New York.

The Effect of Street Canyon Geometry on Outdoor Thermal Comfort in Colombo

N G R Perera*, W M S B Weerasekara
Department of Architecture, University of Moratuwa, Sri Lanka.

Abstract

Although life in the equatorial tropics is largely an outdoor phenomenon, modern urban development has by and large failed to facilitate such living in a climatically pleasant manner. The approach then, should be an attempt to make the equatorial urban outdoors thermally comfortable. (Emmanuel, 1993)

The primary approach to the research is to quantify and compare the thermal comfort implications of critical canyon geometry in warm humid Colombo. It explores street canyons that are currently existing as well as projected under the Sri Lanka, Urban Development Authority Development (UDA) Plan for 2020. Thus, the task is twofold; to report on the thermal comfort effects of the most widespread urban canyons in the city, and secondly to project the change that will occur with the growth of Colombo's built fabric, therefore canyon geometry.

The urban fabric simplified using the Local Climate Zone (LCZ) system and surveyed shows the most predominant street canyons essentially encompass the compact low-rise and mid-rise areas of the city. The research reveals that thermal comfort cannot be achieved within the existing and projected urban canyons, for the peak time of the day.

Keywords: Outdoor Thermal Comfort / Urban Heat Island (UHI)/ Urban Morphology/ / Sky View Factor (SVF) / Height to Width Ratio

Introduction

Outdoor open spaces and streets in particular are an integral part of healthy city life. A comfortable thermal environment is vital in creating the proper stage for social activities that people partake in, especially on a routine basis.

The deeper understanding of the microclimate of these outdoor spaces and with it the characteristics of outdoor thermal comfort is essential in establishing the proper background for climate sensitive urban design.

The urban canyon, which is a simplified rectangular vertical profile of infinite length, has been widely adopted in urban climatology as the basic structural unit for describing a typical urban open space. (Ali-Toudert & Mayer, 2006) The research is a focus on the climate sensitive design of these canyons, with an emphasis on the design applicability of the results, in the context of warm humid Colombo, Sri Lanka.

*Corresponding Author: N G R Perera; E-mail- nareinperera@gmail.com

The study is a research initiative to identify the critical canyon geometry in the city, and thereafter to project the thermal comfort implications of future urban development.

Background

'Urbanisation' is used to refer both to the movement of people into cities and to the transformation of 'natural' into urban land-cover. An urban land-cover consists of closely spaced buildings, impervious surfaces and managed outdoor spaces. Currently, just 2–3% of the earth's ice-free land area corresponds to this definition – yet half of humanity resides in these areas, and it is here that human activity is concentrated. Currently, cities are the foci for the planetary flows of energy and materials, which are used to construct the physical city and sustain its functions (Decker et al., 2000). As a consequence, cities are directly and indirectly responsible for global changes in the atmosphere, hydrosphere, geosphere and biosphere. (Mills, 2007)

The major anthropogenically induced urban temperature anomalies are manifested in the Urban Heat Island (UHI) effect, a microclimatic anomaly characterized by warmer nighttime temperatures in the core of a city compared to the surrounding rural environment. (Emmanuel & Fernando, 2007)

Urban Geometry Impacts on Urban Temperature

The impact of the impinging solar radiation on the climate near the ground depends on some extents to the height (H) of the buildings to the space (width) between them, namely the H/W ratio of the spaces between the buildings. (Perera, 2001)

Oke (1981) introduced the term "Urban Canyon" and presented detailed quantitative analysis of its energy balance and results of measurements dealing with an urban canyon in Vancouver, British Columbia, having a H/W ratio of nearly 0.9. In this study, it was found that about 60% of the mid-day solar gain was transferred as sensible heat to the air contained in the volume of the canyon, about 30% was stored in the canyon materials (to be released during the night), and about 10% was consumed by evaporation from the canyon surfaces. (Oke, Kalanda, & Steyn, 1981)

A given urban density can result from independent design features, which affect the urban climate in different ways such as;

- Fraction of a land in a given urban area covered by buildings (land coverage)
- Distances between buildings, including streets' width.
- Average height of buildings.

The density of the various built areas in a city affects the local climate in each one of the discrete urban areas. By its cumulative effect, the overall density determines the modification of the regional climate by urbanisation. Such modifications occur mainly in the air temperature, wind conditions, radiation balance and natural lighting. (Emmanuel, 1993)

Several attempts have been made to express the intensity of the heat island as a function of a specific urban physical feature. Thus Oke (1981) has expressed the intensity of the urban heat island as a function of the Sky View Factor.

Urban Heat Island

The UHI is directly linked to two of the most serious environmental issues of the twentieth century: population growth and climate change. (Stewart & Oke, 2012)

Heat islands occur in almost all urban areas, large or small, in warm climates or cold. The traditionally described heat island is that which is measured at standard screen height (1–2 m above ground), below the city's mean roof height in a thin section of the boundary layer atmosphere called the urban canopy layer. Air in this layer is typically warmer than that at screen height in the countryside. (Stewart & Oke, 2012)

It is in this scale that the people using the urban outdoors, experience such microclimatic effects. Therefore, this becomes the focus of this study.

The reasons behind the urban climate anomaly have been thoroughly examined in the last decades. The main reasons have been found to be urban geometry, i.e. the ratio between building height (H) and distance between buildings (W), as well as surface material properties. The nocturnal heat island increases with increased H/W ratio because nighttime cooling is hindered. (Johansson, Emmanuel, & Rosenlund, 2004)

Thermal comfort in warm, humid outdoors

Urban climate studies from the warm, humid region lag far behind those from the temperate zone (Roth, 2007).

The practice of applying universal thermal comfort indices to analyse the thermal conditions in the tropics continues to be the norm. Studies specifically estimating the outdoor comfort conditions in the tropics are very rare. The few that exists confirm that warm, humid dwellers typically prefer higher temperatures and have greater tolerance to warming. One of the earliest such studies was conducted in Dhakka, Bangladesh (Ahmed, 2003). An outdoor temperature range of 27.5 – 32.5^{o}C under calm conditions was considered 'acceptable' in Dhaka when the relative humidity ranged between 70-80%. The acceptable relative humidity range can be increased by adding ventilation into the mix. (Emmanuel, 2011)

Thermal comfort studies in Colombo, Sri Lanka

Emmanuel, (2004) analysed historic trends in thermal comfort in the Sri Lankan primate city of Colombo and correlated them with land cover changes. He found that, 'an increasing trend in thermal discomfort – particularly at night – is seen especially at the suburban station and it correlates well with hard land cover changes. The relative importance of land cover in city centre vs. rural areas is clearly visible. Hard cover has more effect on thermal discomfort in city centre than in rural areas' (Emmanuel, 2004)

The study by Emmanuel et al., (2007) in Colombo, found that the lowest daytime mean radiant temperatures result from high H/W ratios of streets. 'This has a positive effect on thermal comfort; the increase of H/W ratio from about 1 to 3 leads to a decrease in PET by about 10 °C. Differences in air and surface temperatures, as well as PET, are small during the night. The results show that strategies that lead to better air temperature mitigation may not necessarily lead to better thermal comfort. However, shade enhancement through increased H/W ratios is

clearly capable of significant reductions in PET, and thus, improved outdoor thermal comfort'. (Emmanuel, Rosenlund, & Johansson, 2007)

Method

The primary approach to the research is to quantify and compare the thermal comfort implications of critical canyon geometry in warm humid Colombo. It explores street canyons that are currently existing as well as projected under the Sri Lanka, Urban Development Authority Development (UDA) Plan for 2020. The most predominant canyons are further categorised according to the canyon orientation as a limitation to the scope of the study. Thus, the task is twofold; to report the thermal comfort effects of the most widespread urban canyons and to project the change in the degree of influence when Colombo develops.
The adopted research process is approached under the following steps and rationale;

- Survey - Establish predominant Urban Street Canyons in Colombo - establish critical street canyon geometry, as worst case scenario effecting the city
- Critical canyon selection and case study simulation matrix - set basis for a changing urban canyon morphology and focus
- ENVI-met simulation - project effects of future urban development

Method limitations encompasses a simplified urban context using the LCZ system, a focus on only predominant canyon geometry and simulation of urban canyons of uniform materiality.

Survey- Establish predominant Urban Street Canyons in Colombo

The initial task of the research was to establish a representative form of street canyons prevalent in Colombo.

The approach adopts the Local climate Zone classification system to simplify the urban context. The simplified context allows the particular street canyons to have a consistent form throughout its length, unlike in a real life situation, where the canyon geometry varies. The LCZ system classifies urban blocks into ten building type zones and seven natural type zones. The survey analyses the combinations they generate and the frequency at which they occur in the urban fabric.

LCZs are defined as 'regions of uniform surface-air temperature distribution at horizontal scales of 10^2 to 10^4 metres' (Stewart and Oke, 2009).Their definition is based on characteristic geometry and land cover that generates a unique near-surface climate under calm, clear skies. The factors considered include vegetative fraction, building / tree height and spacing, soil moisture and anthropogenic heat flux. The comprehensive nature of the classification system with its thorough coverage of all likely urban land use/land cover classes means that a given LCZ class is comparable across many different cities. (Stewart, 2011)

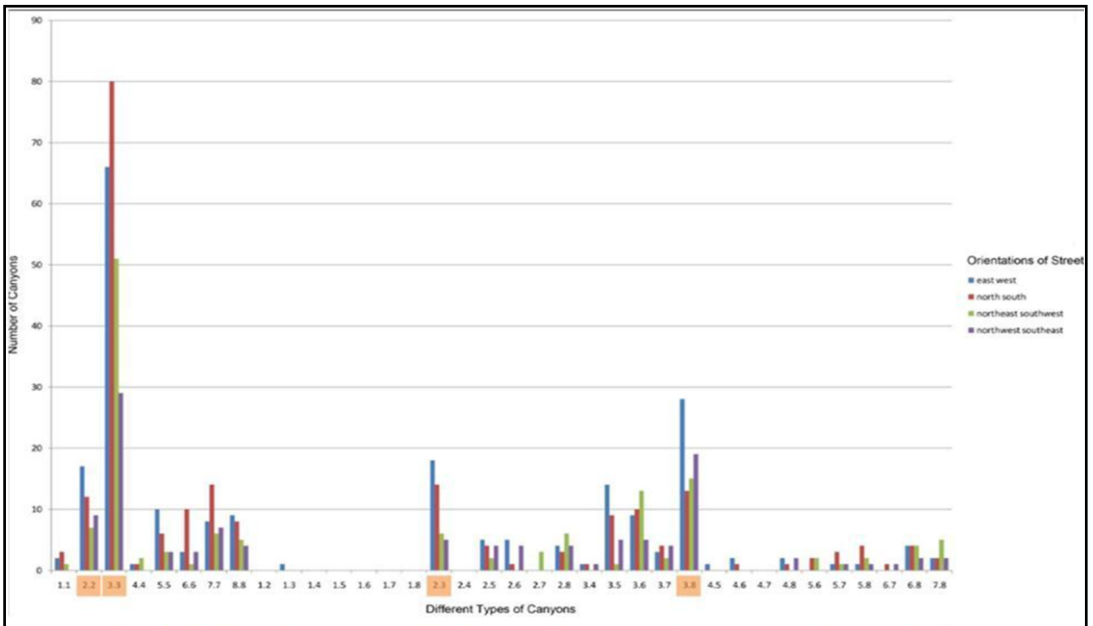


Fig 1 - LCZ combinations, orientations and frequency of occurrence. Source - Author

The canyon survey is based on the work of (Perera, Emmanuel, & Mahanama, 2012), where a LCZ classification map of Colombo was developed. It differentiates street canyons between simplified LCZ morphologies in terms of zone combinations, therefore building heights and orientation of the street.

Building height to street width (H/W) is the basic component defining canyon geometry. Yet, the survey limits itself to building height as the primary variable and thus, does not take into account the street width variations in the initial classification.

Fig 1 demonstrates the LCZ combinations and the frequency at which they occur. The results show the following combinations as the most predominant, therefore will form the basis for the next step in this research.

- LCZ3 - LCZ3 (Compact Low-rise-Compact Low-rise (North-South)
- LCZ3 - LCZ8 (Compact Low-rise-Large Low-rise (East-West)
- LCZ2 - LCZ2(Compact Mid-rise-Compact Mid-rise (East-West)
- LCZ2 - LCZ3 Compact Mid-rise-Compact Low-rise (East-West)

Critical canyon selection and case study simulation matrix

Four sites, which represent the predominant canyons established by the survey, are selected around Colombo Metropolitan area. Fig 2 shows the geographic locations within the city together with the LCZ classification.



Fig 2: Case study site selection
(Source: LCZ map (Perera et al., 2012). Graphic (Author)

Simulation Case Study Matrix

Having identified the critical canyons, six case studies are formulated according to how the urban fabric will develop in the future. Five of those modifications are related with the canyon geometry while the sixth one dealing with the orientation of the street. They are based on the two major variables the height and the width, limited by maximum building allowed as per UDA regulations and similarly, application of street widths defined in the UDA development plan for 2020. Table 1 summarises the application rationale.

Table 1: Simulation case study matrix

Case	name	Description / basis for application	Building height protocol	Street width protocol
Case 01	Existing Case (E)	Existing morphology of selected sites are applied	As per existing context	As per existing context
Case 02	LCZ Case (L)		Maximum height as per LCZ classification	Existing street widths
Case 03	LCZ + UDA Proposal Case 01 (LU1)		Average height of the buildings according to LCZ	Minimum Street Width according to the regulations for that particular average height
Case 04	LCZ + UDA Proposal Case 02 (LU2)		Maximum height as per LCZ classification	Minimum Street Width according to the regulations for that particular Maximum height
Case 05	High Density Case (HD)	Maximum plot coverage of 65%	Maximum height as per LCZ classification	Minimum Width of the street according to the UDA proposals
Case 06	Orientation case (O)	The street orientation is rotated by 90^0	As per existing context	As per existing context

Table 2 outlines the input data as per the simulation matrix presented in Table 1. The input data is site specific. Selected sites fall within varied development zones defined by the UDA development plan for 2020. Therefore, the regulations that apply differ. The street and building lines are defined for each individual street and thus not dependent on the development zoning.

Table 2: Site specific Input data for simulation cases

Site Name	LCZ Block	Maximum No: of Floors			Plot Coverage (Existing Value to 65%)	Development Zone	Min: Street Line Width	Min: Building Line Width
		LCZ	UDA	Apply				
Fonseka Road	Block (A)=LCZ3	3	9	3	46% to 65%	Special Primary Residential Zone	12.19m	15m
	Block (B)=LCZ3	3	9	3	35% to 65%			
Boyd Place	Block (A)=LCZ3	3	5	3	47% to 65%	Concentrated Development Zone	No	12m
	Block (B)=LCZ8	3	5	3	46% to 65%			
19th Lane	Block (A)=LCZ2	9	6	9	50% to 65%	Mixed Development Zone, Sea Front Zone	No	12.2m
	Block (B)=LCZ2	9	6	9	46% to 65%			
Dharmapala Mawatha	Block (A)=LCZ2	9	12	9	48% to 65%	Concentrated Development Zone	No	24m
	Block (B)=LCZ3	3	12	3	47% to 65%			

ENVI-met simulation

As Ali-Toudert and Mayer (2006) states; it is a three- dimensional non-hydrostatic model for the simulation of surface-plant-air interactions, especially within the urban canopy layer. It is designed for micro-scale with a typical horizontal resolution from 0.5 to 10 m, and a typical time frame of 24–48 h with a time step of 10 s at maximum. This resolution allows the investigation of small-scale interactions between individual buildings, surfaces and plants. ENVI-met was validated for Sri Lanka by Emmanuel & Johansson (2006).

ENVI-met inputs;

- Meteorological:
  - Wind speed and direction at 10 m above ground
  - Roughness length (Zo)
  - Initial temperature of the atmosphere
  - Specific humidity at 2500 m
  - Relative humidity at 2 m level
- Morphology:
  - Site plan (incl. buildings, trees, man-made surfaces
  - Height of buildings and trees
- Surface property:
  - Ground, building and all surfaces plus water

ENVI-met outputs;

- Ambient temperature (T) - The T values and variation of T values
- SVF - The SVF due to Buildings
- MRT- MRT values, variation of MRT values in the form of contour plots
- PMV – PMV values through contour plots using Leonardo Maps presentation tool

The mean radiant temperature (MRT) is defined for the real environment in practice (actual non-uniform enclosure) as “the uniform temperature of an imaginary enclosure in which radiant heat transfer from the human body equals the radiant heat transfer in the actual non-uniform enclosure” (ASHRAE, 1997). In the outdoor environment, it is complicated to determine MRT because the body exchanges radiation with various sources. The magnitude of the radiation from the different sources varies greatly in space and time. The MRT is calculated by ENVI-met for a standing person considering all radiation aspects. (Ali-Toudert & Mayer, 2006)

The most commonly used thermal comfort indices are based on the heat balance of the human body, e.g. the predicted mean vote (PMV), the new effective temperature (ET*), the standard effective temperature (SET*), and the physiologically equivalent temperature (PET). These indices have in common that they take into account all environmental variables influencing thermal comfort (Ali Toudert, 2005). For this study, we utilise PMV for comparative studies. The limitation in generating PMV in ENVI-met is that it is only depicted as contours in graphic form, unlike the MRT data that is tabulated form. The PMV data is presented as maximum and minimum because of this limitation. PMV is evaluated on a seven point thermal sensation scale, with '0' being the neutral threshold.

The main limitations of the ENVI-met software are as follows;

- Buildings are modelled as blocks where width and length are multiples of grid cells
- Buildings have no thermal mass and constant indoor temperature
- Albedo and thermal transmission (U-value) for walls and roofs are the same for all buildings

The protocol for analysis uses a Microsoft Excel platform to generate the required relationships.

Results and Discussion

The data generated by the ENVI-met simulations are analysed in the following stages;

- Within canyon variation to MRT and PMV in relation to changing morphology
- Overall relationship between H/W to MRT and PMV
- Overall relationship between SVF to MRT and PMV

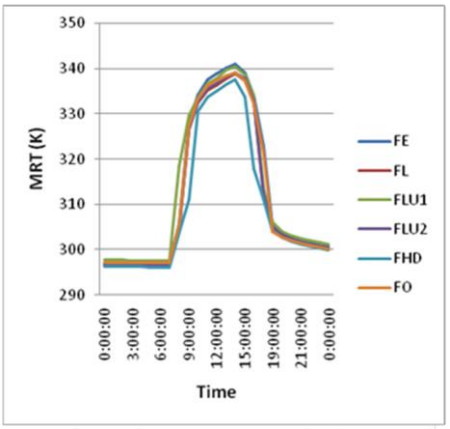


Fig 3: Site 01 - MRT variation (Source: Author)

Within canyon variation to MRT and PMV in relation to changing morphology

Site 01 - Fonseka Road, (off Dickman's Road) – North/South (LCZ3-LCZ3)

Fig 3 shows the MRT variation throughout particular day. Comparison shows a distinct change in case 05 - HD, where the canyon warms later in the morning and cools earlier in the afternoon. This is due to the high aspect ratio and North/South orientation of the canyon. The orientation allows maximum shading of the street by the buildings that define it. The difference is evident in case 06 where the street orientation is changes to East/West.

The maximum MRT and PMV intensity is shown in case 03, which has the lowest aspect ratio of 0.1 and highest SVF of 0.957. As the variables indicate, the street receives the maximum solar radiation among cases. Nighttime hours of the day show little or no variation in terms of MRT variation between cases.

Table 3: Site 01 - Data Summary

Case	01	02	03	04	05	06
H/W	0.21	0.32	0.1	0.32	0.6	0.21
SVF	0.855	0.741	0.957	0.756	0.676	0.855
MRT (max)	340.91	338.82	340.33	339.19	337.57	339.18
PMV (min)	4.95	4.93	5.01	4.92	4.67	4.72
PMV(max)	5.23	5.21	5.29	5.2	4.94	5.00

Site 02 - Boyd Place - East/West (LCZ3-LCZ8)

As in Site 01, case 03 shows the highest MRT and PMV intensity. However, the difference is significant in comparison to the other cases. Similarly, case 06 shows a distinct difference for the afternoon hours. With the street canyon orientation of East/West and therefore limited possibility of shade by the adjacent buildings, the differences are understandable. An orientation change in case 06, allows for shade, therefore is reflected in the reduced MRT and PMV values.

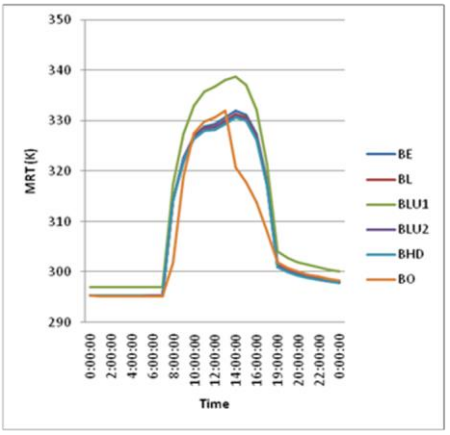


Fig 4: Site 02 - MRT variation

(Source: Author)

The aspect ratio is uniform for the canyon, therefore, case 06 MRT intensity reduction in the afternoon hours is attributed to the larger building footprint of the LCZ8 classified urban block to the west.

Table 4: Site 02 - Data Summary

Case	01	02	03	04	05	06
H/W	0.55	0.64	0.21	0.64	0.75	0.55
SVF	0.531	0.528	0.833	0.537	0.525	0.531
MRT	331.93	331.38	338.81	331.04	330.67	320.78
PMV (min)	4.03	3.97	4.65	3.97	3.97	3.45
PMV (max)	4.35	4.3	4.98	4.3	4.3	3.78

The High density, case 05 morphology has little or no effect on the MRT intensity in an East/West oriented street canyon. Similarly, as seen in Table 4, the orientation of the street has a bigger impact on the PMV values than a change in the aspect ratio.

Site 03 - 19th Lane, Colombo 03 – East/West (LCZ2-LCZ2)

The analysis compares morphology cases that classify as LCZ2, therefore increased building height of maximum 27m (9 floors as per LCZ classification). The previous sites were LCZ3 and LCZ8.

As with the previous sites and cases, it is clear that high aspect ratio cases show a lower intensity of MRT and PMV. However, unlike the previous East/West oriented Site 02, a change in orientation has a warming effect rather than a cooling effect. The MRT intensity difference is minimal between case 01 and case 06 where orientation was changed with morphological characteristics remaining the same.

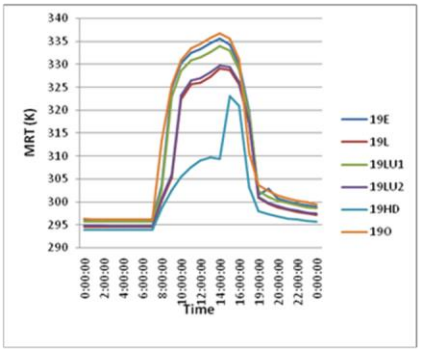


Fig 5: Site 03 - MRT variation
(Source: Author)

Case 05 shows a skewed form in comparison to the trends of the other cases. The large aspect ratio variation is attributed for such an effect.

With PMV values ranging from 5.06 for the existing, case 01 to 3.49 for the High density, case 05, the street canyon environment remains uncomfortable throughout the day. Street orientation has no or minimal effect in a canyon defined by LCZ2 blocks.

Table 5: Site 03 - Data Summary

Case	01	02	03	04	05	06
H/W	0.56	1.68	0.93	1.68	2.21	0.56
SVF	0.679	0.392	0.596	0.426	0.259	0.679
MRT	335.59	329.03	333.92	329.81	309.43	336.82
PMV (min)	4.77	3.78	4.09	3.78	3.49	4.84
PMV (max)	5.06	4.06	4.37	4.07	3.78	5.17

Site 04 - Dharmapala Mawatha – East/West (LCZ2-LCZ3)

The behaviour of the variables show similar characteristics to site 03. Where, higher aspect ratios show lower MRT and PMV intensity, a change of orientation has a negative effect on thermal comfort.

Here case 02 has a higher aspect ratio than that of case 05, therefore the trend lines shown in Fig 6 demonstrate this factor.

The combination of LCZ2 and LCZ3 exhibit a slower rate of warming in the morning hours.

Table 6: Site 04 - Data Summary

Case	01	02	03	04	05	06
H/W	0.45	0.9	0.375	0.75	0.75	0.45
SVF	0.827	0.731	0.867	0.741	0.688	0.827
MRT	334.58	332.89	339.69	336.31	334.92	340.29
PMV (min)	4.35	4.3	4.65	4.3	4.3	4.77
PMV (max)	4.67	4.63	4.98	4.63	4.63	5.1

Discussion

The effects of morphology change are clear in the differing patterns seen in canyons flanked by LCZ3 and LCZ8 urban blocks to that of the higher density LCZ2.

For LCZ3 and LCZ8;

Street canyon orientation has a distinct effect. The canyons with a higher potential for shade creation from adjacent buildings are better. The enhanced shading potential of the North/South oriented streets over that of the East/West oriented streets has a positive effect in reducing the thermal stress.

A morphology change to high density has an effect. Yet, in comparison to the LCZ2 patterns, this difference is minimal. This is due to the limited building height of maximum 9m defined by the LCZ3 zoning characteristics.

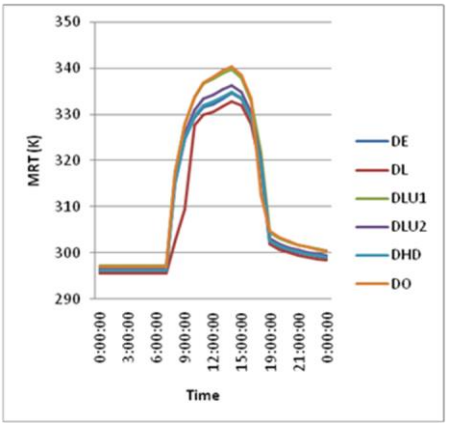


Fig 6: Site 04 - MRT variation
(Source: Author)

This leads to the following design implications and strategies;

- Orient street canyons for shade enhancement.
- Maximise shading potential of buildings by heightened aspect ratios.
- For canyons oriented East/West adopt strategies other than buildings to shade. East/west oriented streets need to be broader to accommodate such measures
  - Modify street edges and building form to create arcades, cantilevered blocks /terraces.
  - Use overhead planes and retractable awnings to create horizontal shading in streets.
  - Use vegetation along street edges and at the centre island of streets to shade.

For LCZ2

The orientations of the streets have little no effect on the thermal comfort indices. Where a change was seen, it was a negative effect, albeit of a minimal value. The greatest difference is seen in the change in the aspect ratio, driven by the height of buildings abutting the street.

Strategies for amelioration take similar form to what was discussed in the preceding section.

Overall, all combinations explored, fail to create thermal comfort in the streets. Given the current microclimatic context strategies that transcend H/W and SVF needs to explored. These strategies can fall into the broad categories of enhanced shade, provision for ventilation, vegetation and water bodies as tempering agents, and the use of High Albedo materials in the urban environment.

Overall relationship between H/W to MRT and PMV

The analysis encompasses data generated by all sites and cases. Here, the primary objective is the investigation of the effect of the aspect ratio on MRT and PMV, within Colombo's urban canyons.

Fig 7 displays a scatter plot of all values generated for the different sites to explore the relationship between the aspect ratio (H/W) and maximum MRT. While a linear relationship yields a R^2 value of 0.6, an exploration of polynomial relationship yields an enhanced value of 0.613. This is seen for the other comparisons as well. As clearly seen in preceding analyses, the aspect ratio has a negative relationship with that of MRT. At the lower aspect ratios, the effect on MRT is less effective rather than in the higher ranges.

Similarly, Fig 8 demonstrates the H/W to PMV relationship. As in MRT, PMV has a negative relationship with the aspect ratio. Yet, unlike for MRT, the cooling effect on PMV has almost no effect when the aspect ratio increases.

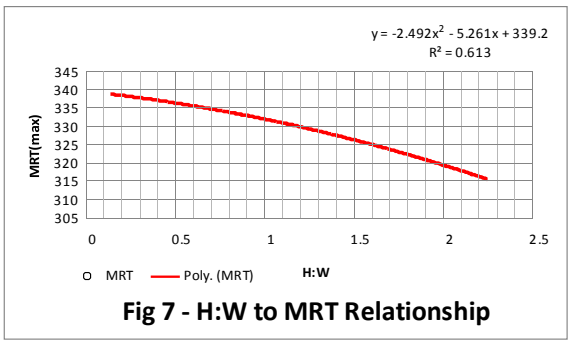


Fig 7 - H:W to MRT Relationship

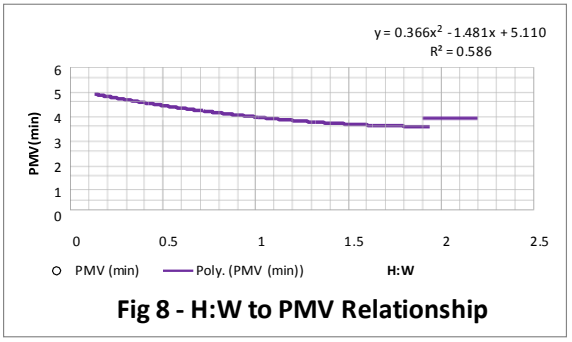


Fig 8 - H:W to PMV Relationship

Overall relationship between SVF to MRT and PMV

The relationship of the two thermal comfort indices shows a positive relationship to SVF. The maximum MRT was shown to be experienced at daytime. Therefore, it is evident that where more of the canyon surfaces are exposed to the sky dome and incoming solar radiation, the greater the negative effects.

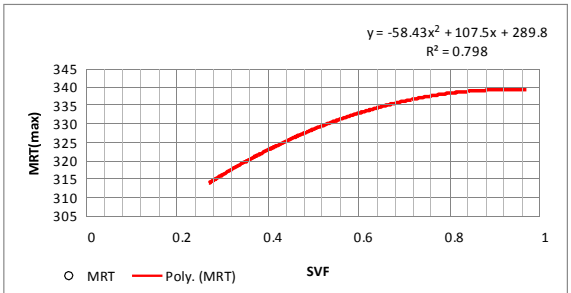


Fig 9 - SVF to MRT Relationship

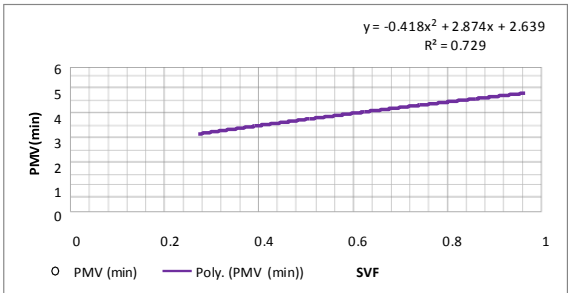


Fig 10 - SVF to PMV Relationship

Polynomial relationships yield better R^2 values for MRT, while for PMV the effect is almost linear. Fig 9 shows, the lower the SVF, the better the effect on reducing maximum MRT in the urban environment.

The analyses demonstrate that the environment cannot be made thermally comfortable by the manipulation of SVF alone, in the warmest time of the day.

Conclusion

This study explored the thermal behaviour of the urban canyons in Colombo that are created by different LCZ morphology combinations.

An in-depth survey of street canyons defined by LCZs and the orientation of the street, shows that the predominant patterns in Colombo are;

- LCZ3 - LCZ3 (Compact Low-rise- Compact Low-rise) (North-South)
- LCZ3 - LCZ8 (Compact Low-rise- Large Low-rise) (East-West)
- LCZ2 - LCZ2(Compact Mid-rise- Compact Mid-rise) (East-West)
- LCZ2 - LCZ3 (Compact Mid-rise- Compact Low-rise) (East-West)

Existing and projected morphology patterns simulated using ENVI-met and results analysed using MRT and PMV as the primary thermal comfort indices.

Analyses show that an increased H/W ratio has a positive effect in increasing outdoor thermal comfort. Yet, the maximum intensity cannot be controlled to bring it within the comfortable range. The challenge of future research is to explore the effect on the indices, for the total time of day and for an expanded array of street canyon typologies.

An increase in SVF has a negative effect on the outdoor thermal comfort, especially in the daytime hours of the day.

Research shows that street orientation as a strategy and therefore shade enhancement by buildings are negated in the streets with higher aspect ratios. It is deemed that the quantum of shade differs minimally; therefore, there is little effect on the thermal comfort.

For the urban street canyons in Colombo, to be made comfortable during the peak time of the day, strategies transcending urban fabric morphology and street orientation need to be explored. Strategies must incorporate shade, ventilation, vegetation and materiality in a holistic urban design scenario.

Reference

Ahmed, K. S. (2003). Comfort in urban spaces: defining the boundaries of outdoor thermal comfort for the tropical urban environments. *Energy and Buildings*, *35*(1), 103–110. doi:10.1016/S0378-7788(02)00085-3

Ali Toudert, F. (2005). Dependence of Outdoor Thermal Comfort on Street Design in Hot and Dry Climate, (15).

Ali-Toudert, F., & Mayer, H. (2006). Numerical study on the effects of aspect ratio and orientation of an urban street canyon on outdoor thermal comfort in hot and dry climate. *Building and Environment*, *41*(2), 94–108. doi:10.1016/j.buildenv.2005.01.013

Emmanuel, R. (1993). A HYPOTHETICAL "SHADOW UMBRELLA" FOR THERMAL COMFORT ENHANCEMENT IN THE EQUATORIAL URBAN OUTDOORS. *Architectural Science Review*.

Emmanuel, R. (2004). Historic thermal comfort trends induced by urbanization in Colombo , Sri Lanka, (September), 19–22.

Emmanuel, R. (2011). Urban Heat Islands and sustainable urbanity: An application agenda for tropical mega-cities. In *CITY WEATHERS: METEOROLOGY AND URBAN DESIGN 1950-2010 Manchester* (pp. 23–24).

Emmanuel, R., & Fernando, H. (2007). Urban heat islands in humid and arid climates: role of urban form and thermal properties in Colombo, Sri Lanka and Phoenix, USA. *Climate Research*, *34*(3), 241–251. doi:10.3354/cr00694

Emmanuel, R., Rosenlund, H., & Johansson, E. (2007). Urban shading - a design option for the tropics? A study in Colombo, Sri Lanka. *International Journal of Climatology*, *27*(14), 1995–2004. doi:10.1002/joc.1609

Johansson, E., Emmanuel, R., & Rosenlund, H. (2004). Microclimate and thermal comfort in the warm humid city of Colombo , Sri Lanka. In *Plea2004 - The 21th Conference on Passive and Low Energy Architecture.* (pp. 19–22). Eindhoven, The Netherlands.

Mills, G. (2007). Cities as agents of global change. *International Journal of Climatology*, *1857*(August), 1849–1857. doi:10.1002/joc

Oke, T. R., Kalanda, B. D., & Steyn, D. G. (1981). Parameterization of heat storage in urban areas. *Urban Ecology*, *5*(1), 45–54. doi:10.1016/0304-4009(81)90020-6

Perera, N. G. R., Emmanuel, M. P. R., & Mahanama, P. K. S. (2012). 576 Mapping " Local Climate Zones " and relative Warming Effects in Colombo , Sri Lanka.pdf, (Fig 1), 2010–2013.

Stewart, I. D. (2011). *Redefining the urban heat island - (printable)*.

Stewart, I. D., & Oke, T. R. (2012). "Local Climate Zones" for Urban Temperature Studies. *Bulletin of the American Meteorological Society*, (Table 1), 120525055949004. doi:10.1175/BAMS-D-11-00019.1

Relationships between community as an eco-museum and sustainable community development: Lessons from Tainan, Taiwan

Heng Zhang [*]**,Chu-Yao Peng, Ru-Hui Zhang**
National Cheng Kung University, Tainan, Taiwan

Abstract

Increasingly serious environmental degradation has given new emphasis to the need for sustainable development. Such development take the community acts as the basic unit for holistic implementation. One emerging development approach is referred to as the "eco-museum" strategy which seeks to strengthen a community based on its unique resources, create economic benefits, and protect local heritage. This study describes the application of the eco-museum strategy to 36 communities in Tainan, Taiwan, in an attempt to identify elements of best practice and to develop a model for other the development of eco-museums in other communities.

In a multidimensional scaling analysis, the study uses landscape, culture, lifestyle, and human resources as items to build the research framework. A questionnaire was applied to survey 36 communities in Tainan to identify community characteristics which lend themselves to the successful implementation of the eco-museum approach.

The results suggested that the Chi-Chih community could serve as a model for eco-museum development. Through cognitive map analysis, the distribution points of each community type are found to impact development feasibility and controls. It is expected that the eco-museum strategy will increase local residents' interaction with their distinct cultural and environmental resources, and facilitate the development a "think globally, act locally" Mindset.

Keywords: Eco-museum, sustainable community, MDS, perceptual map, ideal point

Introduction

Since the United Nations Conference on Environment and Development (UNCED) in 1992, the concept of "sustainable development" has attracted increasing attention worldwide. The concept centers around community-based action and has been a focus of government community development efforts in Taiwan since the early 1990s. "Eco-museums" are a relatively new, holistic approach to sustainable development that integrates local economic resources, environmental education, and sustainability.

Eco-museum development can provide a community with environmental education resources while attracting tourism and economic benefits to local residents. This approach also promotes ecological protection, cultural preservation, and the promotion of regional features. To create a comprehensive community development strategy and to balance the environmental impact with

[*] Corresponding Author: Heng Zhang; E-mail- changlin@mail.ncku.edu.tw

the interests of local residents, this study examines the implementation of the eco-museum concept as a potentially beneficial approach for communities in Taiwan.

The scope of this study covers selected communities in Tainan, in southern Taiwan. Tainan is a municipality rich in culture and history, endowing its communities with a solid base and high potential for sustainable development. To put the eco-museum concept into practice, it is essential to find a community with suitable characteristics, and eco-museum development in such a community can provide a useful example from which other communities can learn. The development is also expected to improve the life quality of local residents and to promote local environmental protection.

Purpose

Different resources are used in different ways in the community development process. This study examines the relationship between the construction and operation of an eco-museum and sustainable community development, focusing on 36 communities in Tainan. Classifying community resources and examining the impact of such resources on the development of eco-museum resources is expected produce a model for eco-museum development which can be applied to other communities.

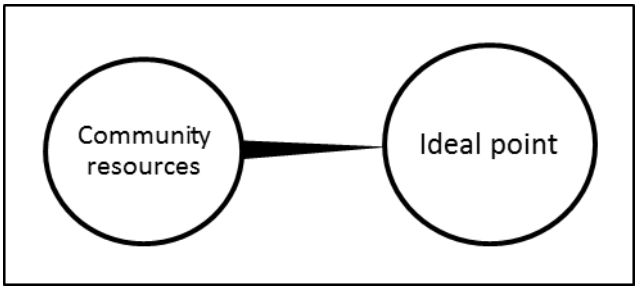


Fig. 1: Research framework

Literature Review

Eco-museum

The eco-museum concept involves comprehensive regional development. In 1972 the International Council of Museums (ICOM) defined an eco-museum as an 'environment-related' or 'community-serving' museum. Kenji (1993) suggested that an eco-museum preserves local lifestyles and documents changes to natural and social settings in a particular culture-formed region, thus promoting the preservation of ecological and cultural assets. Stokrocki (1996) suggested an eco-museum should have a strong and intimate relationship with local residents and exist in harmony with its surroundings. The term “eco-museum” has also been widely used to imply the protection of tangible or intangible assets (Corsane et al., 2007).

Thus, building an eco-museum differs from traditional community development activities in terms of its economic, ecological, cultural, and social impact. The starting point of any such development should be “the collective memories of a region.” This ensures that the development not only deals with the relationship between people and their environment, but also relates to a bottom-up and inside-out approach to community development, ensuring that

the end result benefits the community in terms of economic profit, environmental protection, cultural preservation, and local attendance.

Community resources

Community resources are defined as all assets which can be used to help a community accomplish its communal aims and ensure the continued autonomy of the community and its residents (Musick et al., 1987). Eco-museums are intended to take advantage of existing community resources, and to help local residents collaboratively create a community which meets their needs and ideals. This not only helps the community preserve its intrinsic values but also helps residents keep up with current social trends.

This study adjusts Corsane's four key eco-museum elements (2006) to correspond to items related to community resources and classifies them into four dimensions: landscape, culture, lifestyle, and human resources.

1. Landscape resources
   Landscape resources can be both natural or artificial, and are defined as an open system consisting of local natural and animal resources, along with the activity of local residents. Here, we focus on not only individual landscape elements, but also the interaction between them.
2. Cultural resources
   Cultural resources can be categorized as either tangible or intangible, both of which are represent the accumulation of the local culture over time. Human communities feature tangible cultural resources such as structures and objects, and intangible resources such as skills and art. This dimension has three indicators, including buildings, humans, and costumes.
3. Lifestyle resources
   Lifestyle resources include spaces and facilities used in residents' daily life, daily routines and community industry. These resources not only satisfy daily needs for foods, education, health care, safety, transport and leisure activities, but also enhance convenience, quality of life and safety. This dimension has three indicators, including community facilities, daily life, and community industry.
4. Human resources
   Community development is always a long-term endeavor and takes many forms. Every single resident constitutes a human resource in the community. Community works require the participation of every resident, and every resident can achieve fulfillment through such work. This dimension has three indicators, including human quantity, human quality, and group behavior.

This background on eco-museums and community resources indicates that local ecology, cultural development, and human/environment interaction are important considerations for the development of eco-museums, and that eco-museum can promote local development. The present study sought to assess community resources in terms of the four major dimensions listed above (i.e., landscape, cultural, lifestyle and human resources) available for use in the development of eco-museums and community resources. More detailed indicators were then expanded from these dimensions to design a survey questionnaire and gather resource information for 36 communities in Tainan.

Research Design

Research area and targets

Sustainable development is most efficiently realized at the community level. The study selected 36 communities which have show potentially good conditions for community development for assessment through interviews and surveys.

Research methods

1. Multidimensional scaling
   The study uses Multidimensional scaling to determine differences between the resources available to each community.
2. Variables
   As previously noted, community resources can be classified as landscape resources (including natural and artificial landscapes), cultural resources (including buildings, humans, and costumes), lifestyle resources (including community facilities, daily life, and community industry), and human resources (including human quantity, human quality, and group behavior). Differences between community resources can thus be understood in terms of these categories.
3. Samples
   The study gathers data for each community's environmental resources from sources including graduate and doctoral dissertations, and local and national government information including from the Directorate General of Budget, Accounting and Statistics of the Executive Yuan, the Tainan City Government website, and the Taiwan Community Platform website. Of Tainan's 50-plus communities, 36 were selected for surveying on the basis of exhibiting conditions conducive to community development.

Results and Discussions

By evaluating the different types of resources available to the 36 studied communities, we sought to identify quantifiable and significant indicators which can be used to model a community's suitability for the development of an eco-museum.

Analysis of community perceptual space and ideal point

The study results directly demonstrate the advantages of various types of community resources as well as the relative advantages enjoyed by various communities by analysis of perceptual space. This provides a useful reference for community development planning. Setting an ideal point can help communities better understand and improve their development direction and practices. Moreover, doing so allows us to select an example community closest to the ideal point as a future eco-museum site.

By applying ALSCAL in multidimensional scaling, dissimilarities between pairs of values are used to establish a 37 x 37 symmetric data matrix (see Fig. 2 below). In this figure we can see the distribution of the communities separated by the distribution and availability of community resources. Closer points represent communities with similar development potential and direction, and thus could benefit from shared learning.

Figure 2 shows the location of communities sharing similar resources, suggesting that communities in Tainan possess multivariate resource potentiality, which provides certain advantages. In addition, some communities (e.g., Chi-ting and Chang-an) share resources in terms of community operation, culture and history, while and Fo-tan and Cheng-chueh share lifestyle and environmental landscape resources. This suggests that these paired communities have greater potential such shared resources in the development process.

The ideal point is derived by applying the resource scores according to an ideal community standard as determined by experts and researchers. Analysis of the ideal point and the community locations in Fig. 2 show that experts consider the environmental landscape as playing an important role in community development in Tainan, and the preservation of such landscapes is also an important development goal. Communities which are closer to the ideal point are considered to be ideal communities with development potential. On the other hand, the communities which are far from the ideal point are disadvantaged communities which require more assistance. Based on the distance between the ideal point and the other communities, Chi-chih is selected as a model community to serve as the site for a future eco-museum.

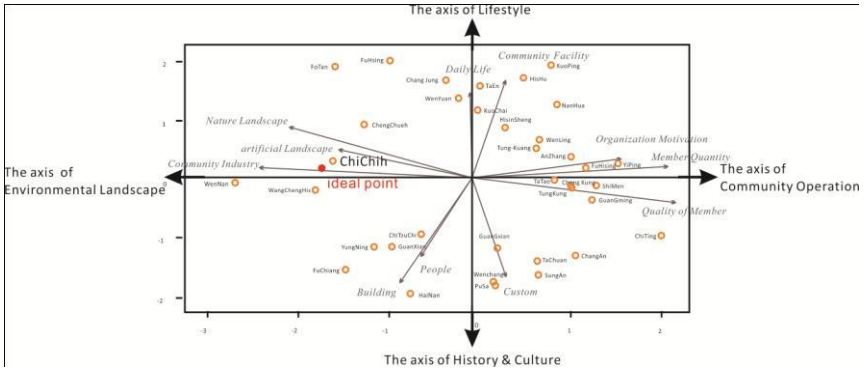


Fig. 2: Community perceptual space

Research limitations

Due to government policies for community-based subsidies not all communities exhibit conditions conducive to community development, thus some communities were excluded from the study. In addition, because community development efforts in Tainan are not yet mature, and certain aspects of community development cannot be identified. Recommendations for future work include examining the development status and process of other communities in Tainan to potentially provide a better understanding for community development in the region.

Conclusion and Suggestions

Conclusion

Analysis results indicate that suitability for establishment of an eco-museum is dependent on the particular distribution of resources within a community, and finds that Chi-chih is the community closest to the ideal.

Suggestion

We recommend that the nature and distribution of community resources be considered in selecting a potential eco-museum site. Extrapolating the model used to select Chi-chih as a potential site could allow other communities to assess their own status and improve local place attachment, thus improving local suitability for the development of eco-museums.

Cohort Study

This research marks the first step in a series of community development research in Tainan, and future findings could have important implications for policy making and funding. The results presented here are still preliminary, and many significant factors of local resident awareness present opportunities for further long-term study of patterns of community development. Therefore, follow up research could expand the present study to promote the development of place cognition in other communities.

References

Books:

Swanwick, C. (2002) *Landscape Character Assessment: Guidance for England and Scotland: Prepared for the Countryside Agency and Scottish Natural Heritage*, UK: Countryside Agency.

Davis,P. (1999) *Eco-museums : A Sense of Place,* 2th edn, London: Leicester University Press.

De Chiara, J., Panero, J., & Zelnik, M. (1995) *Time-saver standards for housing and residential development*, McGraw-Hill Companies.

Rivard, R.(1984) *Opening up the Museum, or, Towards a New Museology : Eco-museums and 'Open' Museums*, Quebec: Rivard.

Rivard,R.(1988) *Museums and eco-museums: questions and answers, in: J.A.Gjestrum& R. Maure(Eds) Ø komuseums boka—Identitet, kologi, Deltakelse,* Troms:Norsk ICOM pp.123–128.

Journal articles:

Boylan,P. (1992) 'Eco-museum sand the new museology: definitions', Museums Journal, Vol. 92, No.4, pp. 29.

Gerard Corsane (2006) 'Using ecomuseum indicators to evaluate the Robben Island Museum and World Heritage Site', Landscape Research, Vol.31, No4, pp.399-418.

Corsane, G., Davis, P., Elliott, S., Maggi, M., Murtas, D., & Rogers, S. (2007) 'Eco-museum evaluation: experiences in Piemonte and Liguria, Italy.International', Journal of Heritage Studies, Vol.13, No2, pp.101-116.

Perella, G., Galli, A., & Marcheggiani, E. (2010) 'The Potential of Eco-museums in Strategies for Local Sustainable Development in Rural Areas', Landscape Research, Vol.35, No4, pp.431-447.

Peterson, N. A., Speer, P. W., & McMillan, D. W. (2008) 'Validation of a brief sense of community scale: Confirmation of the principal theory of sense of community', Journal of community psychology, Vol.36, No.1, pp.61-73.

Singh, P. (2011) 'Contemporary indigeneity and the contours of its modernity' Sage journal, Vol.105, no.1, pp. 53-66.

Stokrocki, M. (1996) 'The eco-museum preserves an artful way of life', Art Education, Vol.49, No.4, pp.35-43.

Musick, J.S., Bernstein, V., Percansky, C., & Stott, F.M. (1987) 'A chain of enablement: Using community-based programs to strengthen relationships between teen parents and their infants', Zero to Three, Vol.8, No.2, pp.1-6.

Wakabayashi Akiko, Kim KiBum , Park Chanil &Miyazaki Kiyoshi (1997) 'Exhibition Techniques in Museums with Considerations on Regional Culture', Proceedings of the Annual Conference of JSSD, Vol.44, pp.171.

Hwang ShyhHuei, Goibuchi Noriko, Miyazaki Kiyoshi, & Cheng WenPiao. (1997) 'New Homeland Movement in Pu-Li, Taiwan: Methodology of Regional Development Participated by Local Inhabitants, Vol.43, No.5, pp.73-82.

Relevance of Threshold Spaces in Low-income Communities of Colombo for Sustaining Social Ties

Dilini, Gunathillaka,[*] Shaleeni B A Coorey
Department of Architecture, University of Moratuwa, Sri Lanka.

Abstract

Low income communities in Colombo represent life styles that are established through interdependency and strong social ties. Inadequate resources, land and services are some reasons for interdependence and strong social bonds act as mechanism for facing day to day challenges. Threshold spaces are observed within these settlements where social activity, exchange and interaction take place. They play an important role as spaces where social ties are reinforced. Hence the existence and function of such spaces are critical in sustaining these communities.

However during resettlement such socio spatial relationships and the threshold spaces are ignored and the opportunity for social ties is lost. Hence this paper aims to identify and acknowledge the threshold spaces existing in low income settlements. Further the architectural elements that shape such spaces are explored and understood for shaping future settlements.
Data is collected in three selected cases in the Kotahena area. A variety of threshold spaces were observed in these cases. The spatial formations and architectural elements in threshold spaces were explored using maps, sketches and photographic studies. The social activity and interactions were explored using systematic observations, activity maps and interviews. Ten residents were interviewed from each case.

This research will be beneficial to identify how different qualities such as, separation, connection, communication, differentiation, transition, interruption, continuity, boundary and crossing in threshold spaces have been gained without interfering with social relationships and by composing architectural elements in various ways to the satisfaction of the commune.

Keywords: Threshold Space, Social ties, Low Income Community, Colombo

[*]Corresponding Author: Dilini Gunathillaka; E-mail- dilinigunathillake@yahoo.com

Introduction

Threshold space is an architectural element between public and private space that act as a zone of transition (Bhonsle, 2010). Meiss identifies threshold space as an in-between space; a space between two different spaces that establishes a separation and connection between space. Namara (2008) states that there cannot be architecture without the idea of threshold space, that differentiate two phenomenon; inside and outside. Madnipour (2003) states that, in-between space of public and private realms, balances the characteristics of two extremes and protect the interrelationships between them. Such space is therefore an essential spatial configuration which connects and separates two dissimilar spaces, public and private spaces. It acts as a starting point to a different spatial experience such as differentiation, transition, interruption, continuity, boundary and crossing (Meiss, 1991). It is a platform to play certain essential roles and activities that differ from place to place due to different physical and social characteristics related to its surrounding (Meiss, 1991). As it is said above, in between spaces such as threshold spaces mainly provide three functions, such as a separation, a connection, and communication. As a separator, thresholds may act as differentiation of transition, an Interruption or as a boundary. As a connector, thresholds may act as continuity and/or as a crossing. As a communicator, it acts as an Identity and/or a landmark.

Types of threshold spaces differ due to many characteristics and activities such as, historical and cultural values, commercial activities, recreational activities, religious activities, residential activities etc. (Bhonsle, 2010). Thresholds can be identified as a zone demarcating a boundary such as an entrance which is used to enter and leave a building. Entrance foyers, corridors, buffer zones, lobbies and other transitory areas used within buildings but not permanently occupied are transition spaces (Bhonsle, 2010). Buffer zones such as lobbies, courtyards, setbacks, platforms that are observed in front of the buildings also act as a transitional space in-between extremely private and extremely public space while performing as a separation and as a connection between spaces.

Roles of threshold space: Meiss (1991) identifies three special roles of a threshold space such as a utilitarian role; a protective role and a semantic role. Utilitarian Role of Threshold Spaces is when a threshold space acts as a transitional space. According to Meiss (1991) one of the main roles of threshold spaces is acting as a transitional space between two phenomena allowing one to enter or leave either public or private spaces while providing access for light and ventilation through the openings of the outer skin of the building. Protective Role of Threshold Spaces is when threshold subdivides spaces and acts a definition of territory or demarcation of boundary. Threshold spaces act as a territory since the spatial configuration of the threshold controls the activities and behaviours of people to a certain degree. Subsequently, it is important to understand how the thresholds are designed with various architectural elements in order to gain required degree of privacy and territory. Altman (1975) has introduced mainly three forms of territory such as, primary territory, secondary territory and public territory according the duration of occupancy, the degree of ownership and the amount of personalization. Threshold space as a in-between space, performs the role of territory which controls the privacy and territoriality of the building. But, according to the degree of social interactions and interdependencies of a social neighbourhood within the thresholds, architectural characteristics and the limitations of thresholds to withstand levels of territory, differ from building to building. (Meiss, 1991). Rapoport (1977) have introduced the same concept of territoriality with three types of territory categories, such as public territory, group territory and private territory by considering the spatial hierarchy and level of interactions. According to the socio- spatial relationships, the type of territoriality vary from threshold to threshold. Hence, threshold spaces play a major role in sustaining communities by controlling and providing opportunities to

perform various essential activities and functions which differ according to the type of building. Semantic Role of Threshold Space is when a threshold space acts as a symbolic of identity of the building. Meiss (1991) and Bhonsle (2010) state that, threshold spaces not only act as a transitional space, and territory demarcation, but also as a symbolic identity of the building and notion of how the journey throughout the building is going to be since it is the first spatial experience of the spatial progression. The space acting as a meaningful passage for the door, eye for the window the character and values of the world which are to be found behind are indicated by architectural elements or by the presence of objects. The signs of a place underlie, according to the prevailing social conventions, specific behavior on either side of the limit. (Meiss, 1991).

As a public space Gehl (1971) has introduced three functions of a good public space such as, A meeting place, A market place and A thoroughfare. According to Gehl (1971) Functions such as, seating areas, benches, shady areas etc. which encourage people to hang around and interact with other, should be provided in a proper meeting place. A market place is a space with shops and stalls, where people can buy their wants and needs for day today survival can be identified as a market place. As a thoroughfare, it should encourage people to walk through or ride by a bike. Hence there should be destinations in the beginning and end of the journey. Moreover, Gehl reveals that people's behavior patterns and activities such as necessary activities, optional activities and social activities generate the character and identity of a good public space.

Architectural Physical Elements in Threshold Spaces

"As an architectural element, a threshold marks a passage from one space into another. In the context of this exhibition, a threshold promises both a physical movement forward and a figurative transition into an incorporeal world." (Dompierre, 1998). The physical formation and architectural elements of the threshold space controls the activities and people's behavioural patterns and movements."Steps, eves, gates, doors, and balconies windows are all regulators of this inversion. They control the permeability of a limit, confirming spatial discontinuity whilst at the same time allowing one to cross it physically or visually" (Meiss, 1991). Threshold spaces can be articulated with architectural physical elements, such as steps, walls, half walls, gates, setbacks, canopies, platforms, level differences, landscaping, porches, colonnades, arcades, ramps, handrails, paving, etc. in order to control the socio spatial relationships. Further, the position, proposition and material of these architectural elements and their various combinations create different types of essential architectural languages which are needed to perform the roles of threshold spaces as a transitional space, as a territory that demarcate certain limits while allowing certain activities to be performed and as a visual symbolic route that depict the identity of the building (Bhonsle, 2010). Such architectural elements define the roles of the threshold spaces as utilitarian, protective or semantic. It further defines its functions as a separator, a connector, or a communicator.

Hence, it is essential to study the formation and Spatial characteristics such as architectural elements of threshold spaces within neighbourhoods in order to understand the role of the threshold spaces, since the social interactions that tie the communities together differ from neighbourhood to neighbourhood.

Threshold spaces and their formation in housing

When the threshold spaces of houses are considered, Ramswamy (2010) identifies two types of threshold spaces such as, House and its courtyard and In-between two houses. Threshold spaces in housing can be extremely private or semi private due to the social and architectural characteristics and socio-spatial relationships with its surrounding such as high interactions and less interactions with neighbours. The space between two houses, where there is a constant merging of private and public spaces is elastic in terms of its outlines. It has multiple dimensions where the borderline between public and private is shifted and sometimes even erased (Ramswamy, 2010). In the case of low income settlements threshold spaces are identified "in-between two houses".



Fig. 1: Thresholds in Between Houses in Low-income Settlements
Source: author

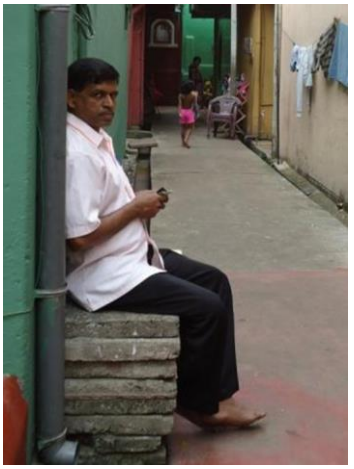


Fig. 2: Thresholds in Between Houses in Low-income Settlements
Source: author

The distance between the houses and their composition within a neighbourhood articulate the threshold spaces around them. Ching (1979) have introduced five types of spatial organizations that vary with their physical characteristics, spatial relationships and response to the context around it such as 1. Centralized organizations; 2. Linear organizations; 3. Radial organizations; 4. Clustered organizations and 5. Grid organizations.

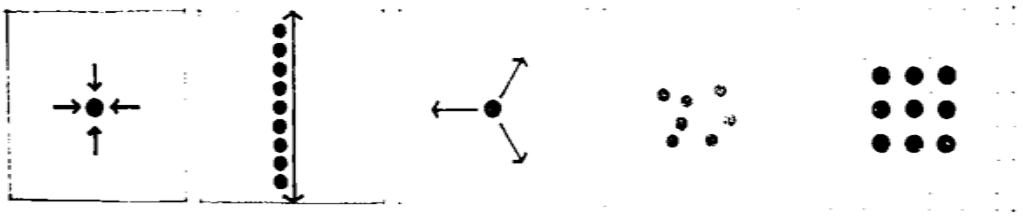


Fig. 3: Centralized, linear, Radial, Clustered and grid spatial organizations
Source: Architecture space form and order

Threshold space in low income settlements

From medieval times to modern, urban outdoor and in-between spaces have undergone immense changes with time in terms of the scale of urban space and the activities which have

taken place within such spaces. Threshold spaces are an important and significant space found in low income settlements. Since transitional spaces are part of human settlement, these planned and unplanned outdoor open spaces have been continuously adjusted and adapted in order to balance the relationships between its physical environment and the functions of the city (Ramaswamy, 2005). In low income settlements such threshold spaces in between the public and private realm are being used for many purposes such as, street vending, social interactions, recreational activities, religious activities etc. Moreover, threshold spaces such as alleyways, pathways, streets, courtyards, steps and passages in front of houses, act not only as transitional spaces and components to link indoor and outdoor spaces, but also as the heart of the settlement, where people relating to different societies get together and interact with each other. The alleyways can be identified as a collection of various communal territories bounded by physical and non-physical boundaries, which act as means of subdividing space, communication and shapes spatial organizations (Madanipour, 2003).It is essential to understand how the physical spaces enhance the social interactions for the reason that, socio-spatial interconnections and quality of such spaces contribute to social relationships within communities. The architectural and social relationships, distribution and spatial configuration of threshold spaces will affect the flow of life styles and activities of communities (Hiller and Hanson, 1984).

Research issue

It is observed that when underserved settlements are re-settled the socio-spatial relationships of threshold spaces are ignored. Hence street vending opportunities that are detrimental for their livelihoods, spaces for communal exchange and social interactions, spaces for recreational activities are lost. They need to be undisputedly focused on because such communities struggle to survive with mutual support, in day today life. Consequently, it is important to investigate the existing socio spatial relationships and how the threshold spaces have been successfully organized to suite the human needs.

Research aim

This study aims to classify the threshold spaces found in low income settlements and explore the architectural elements that contribute to socio-spatial relationships in order to make such spaces successful.

Method of study

Case selection: In order to examine how the threshold spaces have been formed and shaped by the communities to suite their lifestyles, it was essential to select unplanned low income settlements. Therefore three unplanned low income settlements namely Sinniya watta , Appu thotta watta, Parana watta were selected in Jinthupitiya GN division. The three cases were situated in close proximity.

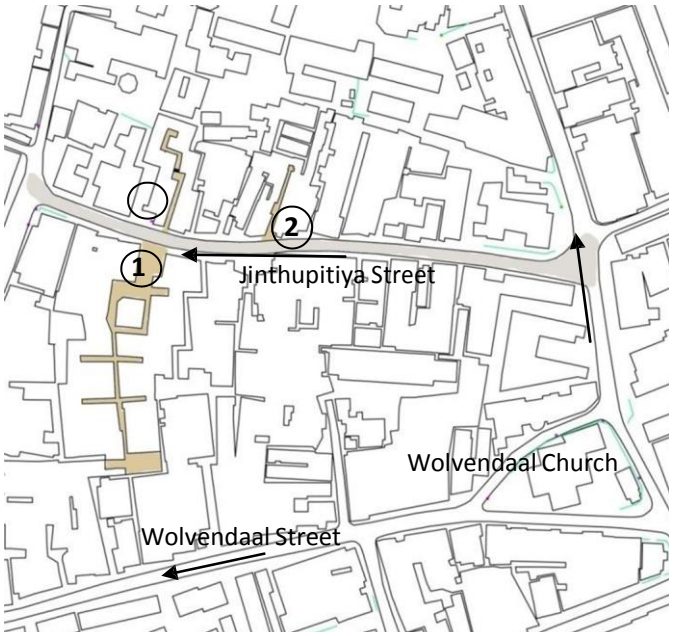
Data collection: The spatial formations and architectural elements in threshold spaces were explored using maps, sketches and photographic studies. The social activity and interactions were explored using systematic observations, activity maps and interviews. Ten residents each from the three selected low income settlement were interviewed. Resident's personal background, functions and their social and spatial relationships in their threshold spaces were the focus of the interview.

Limitations: This research is focused on low income settlements in Colombo area. Following the pilot survey, low income settlement in Wanathamulla was rejected since the people in Wanathamulla were resettled by the government during the research period and Kotahena area was selected for the case study instead. Due to time constraint, scale, and access to information, the number of case studies were limited to three.

The study data consist of both social attributes and physical attributes. The social attributes were quantified as user types, social groups, variety and times of activities, interactions and safety. The physical attributes were quantified in terms of physical form, architectural elements and variety of the functions within the threshold, formation of space, socio -spatial relationships and territory levels. Data collection tools such as systematic observations, checklists, activity maps, photographic study and semi structured interviews were used to collect data.

Interviews were carried out in a very informal manner by making the residents comfortable with the questions and hence avoiding misleading answers. Due to the residents' poor literacy skills, the necessary data and information were gathered by interpreting data that were generated from interviews instead of questionnaire surveys.

Background of case studies



1 - Case study 1: Sinniya watta, 128
2 - Case study 2: Appu thotta watta - 125
3 - Case study 3: Parana watta - 117

Fig. 4: Map of Jinthupitiya Division
Source: Author

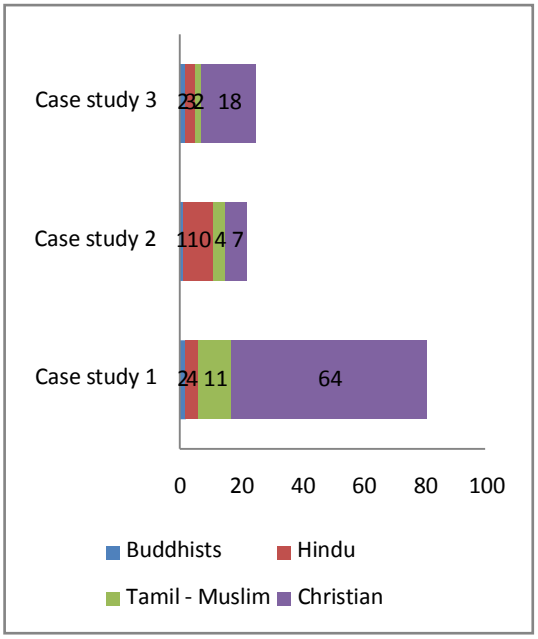


Fig. 5: Number of Housing Units According To Ethnicity
Source: Mr. J. Primlas Costa (member of Western Provincial Council and also acting J.P in Jinthupitiya GN division)

Due to rapidly migrated low income population, Jinthupitiya GN division can be identified as a low income settlement in Colombo district. There is a high ethnic variation due to migrated population from foreign countries for business purposes in Colombo Harbour area.

Nevertheless, most of the low income settlements in Jinthupitiya GN division are situated along the Jinthupitya Street. Consequently, three unplanned, mix ethnic, low income settlements

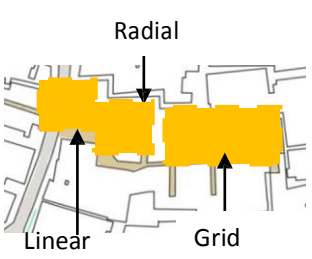
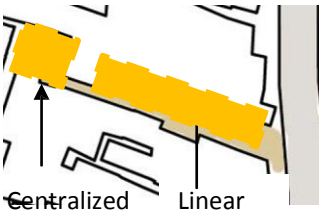
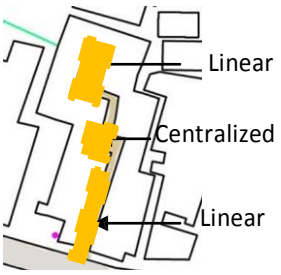
which are situated close to each other in Jinthupitiya Gramaseva Division were selected for the research.

Findings and Discussion

Classification of Threshold spaces in low income settlements

In order to identity, the utilitarian role of threshold spaces in sustaining low income communities, types of threshold spaces around the housing units were identified through observations and maps. Further, It was recognized that, in low income settlements thresholds fall into the "In between houses" category, as the housing units are situated very closely to each other due to inadequate land resources. The findings revealed that, linear and centralized forms are the most common types of spatial arrangements and both shapes encourage people to interact with others as their thresholds are facing each other and linked with the adjoining.

Table 1:Spatial organization of the Threshold Spaces

Case study	Case study 1	Case study 2	Case study 3
Line drawing of settlement			
Spatial organizations	Radial, Grid, Linear	Centralized , Linear	Centralized , Linear

Threshold spaces in low income settlements can be classified under the following characteristics.

1. **Boundary of Threshold:** in low income communities, there are two different boundary types that separate the private space and threshold spaces. Due to the differentiations of physical elements that shape up the form of threshold, these adjoining boundary types have a major impact on activity types, identity, privacy and territoriality in the threshold. It was identified that there are mainly two types of boundaries that defines threshold spaces.

    i. **Built – Open Boundaries:** A physical element such as a high walls can be identified as a built – open boundary which separates private spaces and transitional space very clearly, visibly and physically. It can be a permanent or a temporary boundary. Further, since there is no separation between the transitional space and the public space, privacy and security levels are lower and, there is no territory demarcation between the public space and the transitional space. Most of the time with this type of Built- Open boundaries, the space that is shaded with the eve is used as the threshold space by low income communities.

    ii. **Built - Semi Built Boundaries:** Apart from the high wall element that separates private and transitional space, there are other elements such as half walls, steps, columns, gates that separate public and transitional

space. This semi built space increases the degree of privacy, territory and identity of the house more than Built- Open boundary type, since the threshold is not fully opened up to public space. And also, these enclosed threshold spaces are being used for various activities such as interacting with neighbours, resting, playing etc. Most of the people in low income settlement had kept benches and flower pots in the semi built thresholds.

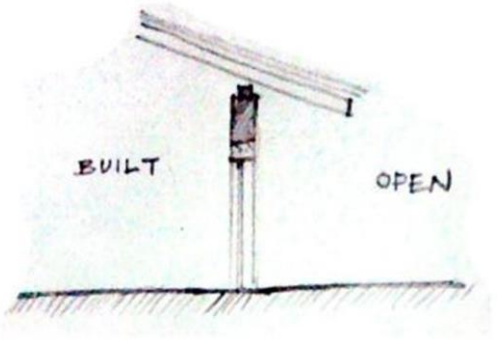


Fig. 6: Built- Open Boundaries
Source: Author

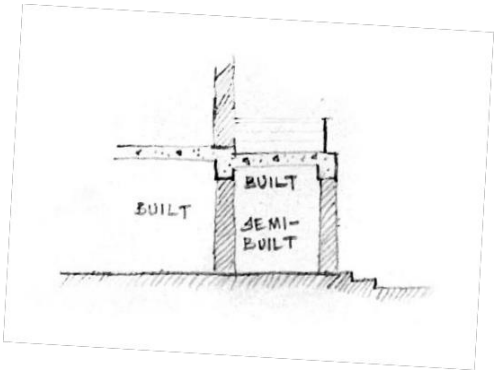


Fig. 7: Built- Semi built Boundaries
Source: Author

2. **Public-Private Zoning of a Threshold:** Thresholds in low income settlements can be classified by zoning it according to a hierarchy of private - public levels. As seen in Fig(8)
    a. **Zone 1** demarcates the post private layer of a threshold space. It is defined by architectural elements such as walls, doors, windows, projections and canopies.

    b. **Zone 2** is a semi private threshold space that is defined by level changes, projections, canopies and paving (floor finishes).

    c. **Zone 3** is also a semi private transitional layer demarcated by steps, half walls, gates, handrails and foot paths.

    d. **Zone 4** is the public layer defined by roadway, paving.



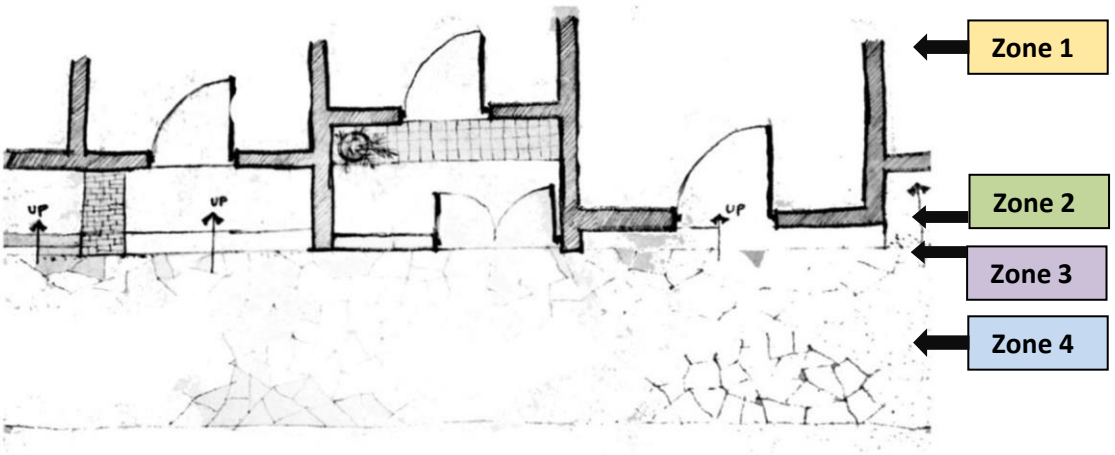
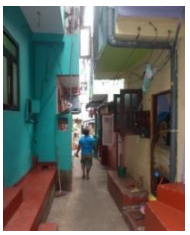
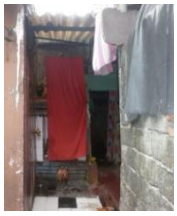


Fig.8: Public-Private Zoning of a Threshold
Source: Author

3. **Functions of a threshold:** Since most of the low income communities are significantly interdependent and have strong communal relationships, it is observed that their social interactions have shaped up the spatial organization of the settlement. According to the collected data, it is observed that, all the residents use the threshold spaces as a thoroughfare since the type of threshold spaces in these settlement are, 'in-between houses' type. Therefore, the threshold spaces seemed to be merged due to the closeness of the threshold spaces. In order to do identify highly active spatial organizations, activities and behavior patterns of peoples in selected low income settlements, were observed on a weekday and a weekend from, 8am to 10 am, 12 pm to 2pm and 4pm to 6pm and marked in maps as it is shown in the table 1.

Moreover, In order to investigate the protective role of thresholds in sustaining communities, two main aspects in terms of physical and social, were studied. When it comes to the social aspect, the functions that are taking place within the immediate surrounding outside the private space were observed since social interactions and interdependencies within communities are the main attributes that enhance the quality of low income people's life. As the transitional space in low income settlements act as the main space within the community where high communal interactions are happening, the functions and behavior patterns of people that makes a space a good interactive space, were checked through activity maps, interviews photographic observations.

Table 2:Functions of Thresholds

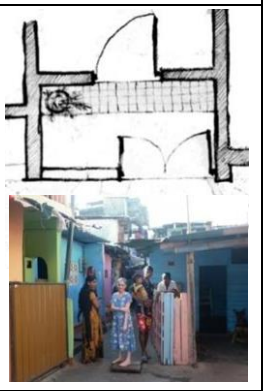
Case study	**1. Sinniyawatta**	**2. Apputhottawatta**	**3. Paranawatta**	**Discussion**
Meeting place				Threshold spaces play a major role in sustaining community by acting as meeting places especially within these interdependent communities.
Market Place		No market place in case study 2		Few thresholds were converted into market places which ties the community together.
Thoroughfare				As a thoroughfare, threshold acts as the heart of the community which is the most used space by the community.
Necessary activities				Threshold space help community to cope up with day today activities such as, religious activities, washing, eating, playing etc.
Activity Maps	In Sinniya watta, A, B, C, D, and E areas can be identified as the hot spots and threshold spaces at A, B, C and D areas have been used as small boutiques and E can be identified as the public toilet and bathing area.	In apputhotta watta, only A and B areas; the entrance and the end of the settlement can be identified as the hot spots of this settlement.	The hots spots in parana watta had been formed in the main public spacs which were the public toilte, entrance foryer and the market place.	One dot Two People The activity maps and discussions reveal that Communities in low income settlements have significantly high social interactions in their threshold spaces.

Classifications can be done as per –

- Boundary
- Levels of public-private
- Function

Following which it was identified that the most commonly found type of threshold spaces in the selected low income settlements had the following characteristics.

Table 3: Classifications of Thresholds

Threshold type	Boundary	Public-private zoning	Function	Plan and Image
1	Built- semi built boundary	Semi private zone with medium privacy and high identity characteristics	Mainly used for necessary activities such as, eating, playing, seating, storing, cooking and religious activities.	
2	Built- semi built boundary	Semi private zone with low privacy and medium identity characteristics	This type is mainly used as a meeting place due to the architectural elements such as steps and seating with half walls. Apart from the thresholds which were converted into commercial activities can be identified as threshold type 2.	
3	Built- open boundary	Semi private zone with low privacy and low identity as it is directly opened up to public zone	Threshold type 3 is mainly used as thoroughfare.	

Identifying the physical elements for socio-spatial relationships

In order to investigate, the importance of understanding threshold spaces and their roles in reinforcing community bonds and sustaining the quality of low income people's life, a check list was designed by using parameters that were derived from the theoretical basis of threshold spaces which have been discussed in the introduction.

Table 4: Identifying physical elements of threshold spaces as a means of connection

Quality	**Connection**				**Discussions**
Socio- sp. Re.	Continuity	Crossing	Differentiation of transition		Architectural elements of threshold spaces can shape up the threshold spaces as a means of connection in terms of continuity, crossing and transition.
Physical elements	Pavement/ steps	Gates/ Doors & Windows	Level differences/ platforms	Projections	
Photograph					
Role	Utilitarian role	Protective role	Utilitarian role/ Protective role	Utilitarian role/ Protective role	

As seen in table 3 above architectural elements such as pavement, steps, gates, doors and windows, level changes, platforms and projections enhance the connection between private and public spaces and also connections between houses –private spaces enabling continuity, crossing and differentiation of transition. Further the utilitarian role and a protective role is displayed through the composition of above elements.

Table 5: Identifying physical elements of threshold spaces as a means of separation

Quality	**Separation**			**Discussions**
Socio- sp. re.	Boundaries	Interruption		Architectural elements such as, walls, fences, and half walls can separate public and private realms while creating different privacy and private levels.
Physical el.	walls	Fences	Half walls	
Photograph				
Role	Protective role	Protective role	Protective role	

Table 4 above shows how elements such as walls, half walls, and fences create boundaries and interruptions between spaces, where the threshold play a protective role for its users.

Table 6: Identifying physical elements of threshold spaces as a means of communication

Quality	**Communication**				**Discussions**
Socio- sp. re.	Identity		Landmarks		In order to gain their own identities and to communicate the cultural backgrounds, architectural elements are used in thresholds.
Physical el.	Colour	Texture	Statues	Decorative el.	
Photograph					
Role	Semantic role	Semantic r.	Semantic role	Semantic r.	

As seen in table 5 above elements such as colour, texture, ornamentations or decorative elements creates an identity to its users and landmarks in space, performing a semantic role of threshold spaces.

Conclusion

As the first spatial experience during one's transit into an indoor space from outdoor space, within a collection of various spatial progressions, threshold space is found to be one of the main architectural elements, because it consists of every architectural creation in an inseparably blended manner, enhancing the uniqueness of the building. Moreover, threshold is the starting point that speaks the architectural language of a building and it presents an introduction as to how the journey through the inside is going to be. At the same time, threshold separates private and public realms while striking the balance of inter-relationships between the two extremes.
Threshold spaces play an important role in low income settlements acting as spaces that enables social exchange, interactions and bonding among its community. Interdependence and strong social ties being a significant characteristic among this community, the space that allows for such social engagement becomes equally important for them, in their day to day life. Hence it is important that architects and urban designers acknowledge this fact and also identify and reveal the threshold spaces that exist in Colombo's low income community.

The study identified the common types of threshold spaces in low income settlements taking three cases for in-depth study. Thresholds are located as "In between houses" since the housing units are situated very closely to each other due to inadequate land resources. Therefore the study directs future designs to take into consideration the importance of in-between spaces – which is difficult to achieve in the case of high-rise living. Most high rise housing has not considered the spaces in-between the dwellings which are shown, as important as the individual private dwelling spaces. Such inhabitants use space in common and this needs to be represented well in future developments. Unlike the mid-high income groups where the area of private space plays an important role in their quality of life, in the case of low income groups the common spaces play a significant role in their quality of life. Hence need more serious attention.

The findings revealed that, linear and centralized forms are the most common types of spatial arrangements and both shapes encourage people to interact with others as their thresholds are facing each other and linked with the adjoining thresholds. When considering the layouts of high rise or low rise resettlement projects having linear and centralized forms for housing layouts may serve as fruitful neighbourhoods that encourage successful threshold spaces, thereby better social ties.

Study further revealed that the threshold spaces can be classified based on Boundary, Levels of public-private and Function. Three types of threshold spaces were identified. The types of boundary was built – semi built and open boundaries, semi private zones with low to mid levels of privacy and mid to high levels of identity. The functions being necessary activity, as meeting spaces, thoroughfare and commercial activity. When allowing space for threshold it may be important to consider the type of boundary that is used to establish or define these spaces and also the type of activity that the space may encourage. The levels of privacy being a mid to low levels of privacy is also worth consideration as important in this type of settlement unlike in high income dwellings where high privacy levels are sought after. But as seen the levels of identity range from mid to high indicating the necessity to achieve identify in space which may be an important criterion for the low income dweller.

The study shows that subtle architectural elements such as steps, corridors, paving (finishes), level changes, boundaries with variation in its visual and physical penetrations, porches, hoods, canopies, colour, texture and ornamentation all act as elements in architecture that forms cues for separation, connection and communication and plays the utilitarian, protective or semantic roles of threshold spaces.

Study reveals that, communities in low income settlements have significantly high social interactions in their threshold spaces which have been woven around various day to day activities relating to recreation, commerce, religion etc. which assist them to sustain themselves in their life styles. Moreover, the formation, composition and orientation of various architectural elements within different spatial organizations in threshold space, have a major impact not only on integration and segregation of public and private space, but also on controlling various human behavioural and activities.

Thus, this study sheds lights on the importance and roles of threshold spaces as means of transitional space, territory, subdividing space and identity. Since public spaces and private spaces are considered as the main spaces that ought to be well designed by articulating architectural elements to promote necessary activities, this study would draw the attention of architects towards the need of considering and detailing threshold as one of the main aspects in building design.

Reference

Alexander, C. (1969) A Pattern Language: Towns, Buildings, Constructions, New York: Oxford university press.

Bhonsle, K. D., (2010) Thresholds in Architecture. Architecture- time, space & people, 30-36. Retrieved from http://www.coa.gov.in/mag/June%202010-Lowres/30-36_Archi-June%202010.pdf.

Carr, S., Francis, M., Rivlin, L. G., Stone, A. M. (1992) Public spaces. United States of America: Cambridge University Press.

Ching, F.D. K. (1979). Architecture: Form, space and order. New York: Van Nostr and Reinhold.

Dompierre, L., (1998) Threshold: an exhibition where physical, mental, and emotional spaces intersect. *An Introduction to Threshold*, 9-13. Toronto: Power Plant-Contemporary Art Gallery.
Gehl, J. (1996) *Life between buildings*: Using public space. Copenhagen: Arkitens Forlag.
Luz, A. (2004) Places *In-between: The transitional locations of Nomadic Narratives*, Retrieved fromhttp://www.eki.ee/km/place/pdf/kp5_11_luz.pdf.
Madanipour, A. (2003). *Public and private space of the city*, Canada: Routledge.
Meiss, P. V. (1991). *Elements of architecture*: from form to place. London: E & Fn Spon.
Namara, B. M. (2008). *Exploring the Threshold*. (Bachelor's thesis). Retrieved from http://www.arch.mcgill.ca/prof/davies/arch679/fall2008/project_desc/benoit_provost-mcnamara.pdf.
Neufert, E., Neufert, P., Baiche, B., Walliman, N. (2002). *Architects' data* (3rd ed.).United Kingdom: Wiley-Blackwell.
Ramaswamy, D. (2005). *Thresholds and transitions*: In between the public and private realm. (Master's thesis). Retrieved from http://scholar.lib.vt.edu/theses/available/etd-11282005-213225/unrestricted/01part1.pdf.

Sustainable Housing Design Through Local Community Participation: Case Study of Soi Wat Lung Ban Community, Samut Songkhram Municipality, Thailand

Kundoldibya Panitchpakdi*
Department of Housing, Faculty of Architecture, Chulalongkorn University, Bangkok, Thailand

Abstract

This article describes a three-year process of local participation in the sustainable housing design in Soi Wat Lung Ban Community, which was selected through a participatory process. Adapting Hamdi's (1996) Participatory Action Planning (PAP) concepts, the research team collaborated with members of 14 communities and government agencies. This article is an evaluation of the process to implement a model of architectural design for vernacular housing and factors, which were obstacles to successful outcomes.

Keywords: community, participation, Eco-housing, local wisdom, sustainable housing design.

Introduction

In 2007, a group of faculty members from the Faculty of Architecture of Chulalongkorn University were of the opinion that the modern Thai architecture was overly influenced by Western, while eschewing the uniqueness and well-adapted traditional Thai styles. This faculty group was determined to develop an alternative design, which retained traditional Thai attributes while integrating globally modern aspects of architecture to create a balanced result. The outcome of this initiative was the "Ban Reuan Withi Thai" Project with the objectives to develop a prototype design for Thai housing which integrates global trends with Traditional Thai aspects. The Project was a collaborative effort, among multiple sectors, to pursue the goal of balanced architecture with traditional Thai wisdom, integrated with modern living styles through a participatory process. The Project was implemented in 14 communities of Samut Songkhram Province over a three-year period. (Technical Resource Center of Chulalongkorn University, 2010) Soi Wat Lung Ban Community, a small neighborhood along the Mae Klong Canal, was chosen as the pilot project site.

* Kundoldibya Panitchpakdi; E-mail – kpanitchpakdi@gmail.com

2. Literature Review

2.1 Action Planning

Action planning is a new method of planning that differs from comprehensive planning, and is implemented under a planning framework. Action planning is not complex and allows flexibility for modification based on lessons learned from on-going implementation. Action planning is based on the principle that community residents themselves possess the creativity and capacity to effectively analyze local problems and plan solutions on their own. Outside resource persons, experts, donors, and various officials should only play a supportive role, and give the local community enough opportunity to explore new approaches to development. (Hamdi, 1999)

Action planning is: (1) Problem-based and opportunity-driven; (2) Based on achievable action; (3) Participatory, encouraging rapport and partnerships; (4) Reliant on local knowledge, skills and traditional wisdom; (5) Non-reliant on complete information; (6) Small in scale, community-based; (7) Incremental rather than comprehensive; (8) A starting point rather than end state; (9) Fast but not rushed; and (10) Visible with tangible outputs. (Hamdi, 1996)

2.2 Participation

Participation is a core feature of PAP and includes acceptance by the stakeholders of the conditions for consensus building, with an emphasis on collaborative processes from the initial stages of project development. There is a joint role played by the local community members, with the "outsiders" (professional planners, government officers etc.) remaining tangential to the process. The feasibility of the plan correlates with the level of participation of the local community and can be classified as follows: (1) None and Indirect: Outside experts act as surrogates for community members when participation is low or non-existent; (2) Consultative :Outside experts are advocates when the local community begins to emerge as an interest group in the project, but decision-making is still concentrated among the outside experts (3) Shared Control: The outside experts and the local community members play a joint role as stakeholders in the process; and (4) Full Control: The outside experts serve as resource persons while the local community are the principal drivers of the process. (Hamdi, 1996)

2.3 Eco-housing

An eco-housing integrates economic efficiency, resource conservation, waste minimization, renewable energy, ease of operation and maintenance, and access to community facilities. It thus enables a healthy and cost-effective lifestyle. To achieve these objectives, an integrated design needs to be carried out, involving a variety of disciplines. Rather than studying the individual building component, system, or function in isolation, a multidisciplinary approach studies the interrelated impacts of design, systems, and materials. In Asia, eco-housing is yet to be mainstreamed into current plans and policies. (United Nation Environment Programme, 2005)

3. Methodology

This PAP used the following participatory processes: (1) Review of related literature; (2) Interviews with experts; (3) Community-based meetings; (5) Workshop with Project partners; (5) Community survey and assessment; (6) Interviews and group meetings with key informants; (7)

Master's thesis projects conducted by students in the Housing Development Sciences curriculum in collaboration with the Soi Wat Lung Ban Community Board and residents, representatives from 14 communities in the Samut Songkhram Municipality, representatives from the Community Organizations Development Institute (CODI), representatives from the Network Academic Institute, and specialists from the Provincial Public Works Office.

During December 2010 – November 2011, the meaning of "Keha Chumchon Withi Tai" ("vernacular Thai housing community") was defined and a Project pilot site was selected. Next, a community survey was conducted to assess the capacity and challenges of housing in the Soi Wat Lung Ban Community (June – October 2011). A series of implementation activities informed the creation of the prototype Ban Reuan Withi Tai model project, leading to its introduction during December 2011 – 2012. A set of activities for children in the community was implemented including picture-drawing contests, beautiful house identification, and establishment of a children's savings fund (which was later expanded to include the entire community). A workshop among all partners was convened on creative Thai housing communities, including brainstorming solutions to housing problems. The participatory process instilled a sense of pride among the community's children and adults, gradually increasing their sense of ownership of the Project's goals and outcomes.

On January 8, 2012, a "House-building Children's Day" was conducted. Then followed the establishment of a network of partners to create a prototype house as a model of Reuan Withi Tai in collaboration with the following allies: (1) Samut Songkhram Municipality; (2) CODI; (3) National Housing Authority; (4) Habitat for Humanity – Thailand; and (5) the Premier Product Company to implement the restoration projects.

4. Results

The Soi Wat Lung Ban Community is situated along the banks of the Khlong Mae Klong Canal in the Samut Songkhram Municipal area. The community contains 190 households which can be classified into four architectural styles: (1) Traditional Thai (15 houses); (2) Local, wood (53); (3) Mixed (94); and (4) Modern (28). About half of the houses are a mixture of local, traditional, and modern (see Figure 1). One-third of the dwellings are over 50 years old and half are in a dilapidated state. Most of the households have four occupants of whom about one-third are between 40 and 60 years of age, two-fifths have primary education, one-fourth are employed in wage labor and about one-third have mean income between 5,001 – 15,000 baht (US$152-457) per month. One-fourth of households can just barely meet their basic needs, while another one-fourth cannot and are in debt. Just under half of the household owners valued their dwelling and wished to see it preserved. (Kaengtonglang, 2011)



Traditional Thai (8%)	Local, wood (28%)	Mixed style (49%)	Modern (15%)

Fig. 1: Types of houses in the Soi Wat Lung Ban Community
Source: Kaengtonglang, 2011

Over three-fourths (78%) of the households in the Community have problems with their houses which, can be classified as follows: (1) Erosion from the canal water (28%) (Raisaeng, 2011); (2) Unhygienic latrine and waste water disposal (25%) (Khamparat, 2011); (3) Dilapidation of culturally significant houses and which are in need of repair (23%); and (4) Dilapidation requiring professional repair workers (52%). Some households had multiple types of these problems.

The participatory community assessment process produced the consensus that the prototype housing for regeneration should reflect the local and Thai traditional styles. Two houses were selected to be restoration model.

This article is a case study of Ms. N's dwelling, located at the banks of the Mae Klong Canal, and which is a typical local one-story dwelling that is slightly raised on stilts. Three people live in the household and have unstable incomes. The house is threatened by erosion and is becoming dilapidated. Ms. N does not have sufficient funds to pay for restoration. She has built a new latrine but the waste water disposal is sub-standard. Ms. N does not have a deed for the land since the original owner died long ago without transferring ownership.

The main threats to this dwelling include erosion from the canal water and unhygienic latrines and waste water disposal. The Project partners conducted research in how to address these challenges by interviewing experts including the provincial public works specialists, experts on traditional Thai vernacular housing, brainstorming with eco-house resource persons, observing model eco-houses, and consulting with specialists on waste water management and disposal. The Project that resulted from this collaboration is not only the design of the prototype housing but also the creation of a network of allies, joint selection of the household to be restored, development of a prototype model of a regenerated community of restored dwellings, mobilization of the required resources for restoration, and planned implementation of the Ban Reuan Withi Tai Model Project.

Design of the "Ban Reuan Withi Tai"

The design for the Project is based on an eco-house model, integrating modern technology with traditional norms, and affordable for families with limited income. The design includes traditional local features of a hallway and patio, a Thai-style kitchen, one bedroom/bathroom/lavatory, ability to easily construct extensions as needed in the future, being in balance with the local environment and climate, and drawing upon traditional wisdom, i.e., the use of stilts to raise the dwelling, no land fill, elevated roof, long eaves, ample natural ventilation and cooling features to minimize exposure to the sun and maximize air circulation.
In designing the structure of the prototype, the Project drew upon the knowledge and experience of local builders, and ensured that the engineering specifications would produce a safe and stable structure. A modular system was used in the design to minimize waste of construction material. The emphasis was on a light and simple structure, which could be assembled by shared community labor in a limited period of time. The piles were designed to be "Mai Kon Saw" (bamboo). The green roof (a recycled material) sheets were to be part of a complete network of gutters to feed rainwater collection into containers. Whenever possible, recycle resources were to be used such as using the wood from the original dwelling as much as possible. The wooden windows, and doorframes, and flooring were to be transplanted from the original dwelling to the new site. Tiles would only be used for the wet area of the bathroom and latrine area.

Landscaping architecture consisted of plans to plant mangrove trees to fortify the banks of the canal. Three rows of “Mai Kon Saw” (bamboo) were to be impaled into the ground in a zigzag pattern to combat erosion, along with the mangrove trees to act as a lattice to keep the canal-side ground intact. In addition, the original dwelling site was to be moved away from the banks of the canal. Fruit trees were to be planted as a source of nutrition and shade. A kitchen garden was planned, emphasizing traditional herbs and vegetables.

The latrines were to be reconstructed with a separation of dry and wet areas, ample ventilation, raised latrine, new-style septic tank (Eco-tank) not requiring electricity, and be economical to maintain.

Many new ideas from the Zero Waste Concept (Zero Waste, 2012), the model Zero waste-house observation and interview (Suwannarat, 2012) were applied in the design of the Project prototype. These lessons include the decision not to raise the level of the land through land-fill, management of rainwater and waste through use of a compost tank, use of biofuel from the compost tank for cooking and boiling water, use of treated bio-fluids to clean the house and bathroom, and use of compost tank products to fertilize the kitchen garden to produce organic vegetables for local consumption or sale.

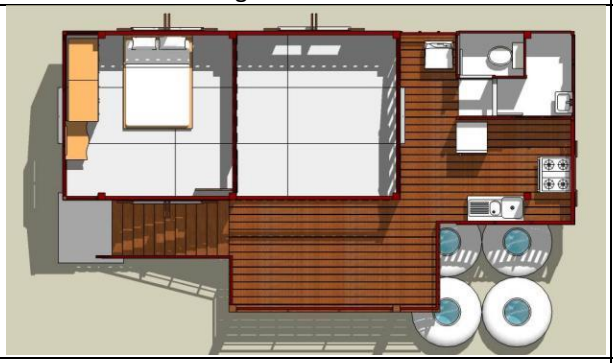
The total cost of construction of this for the prototype dwelling was calculated to be 150,000 baht (exclusive of labor costs (US$ 4,660) at 2011 prices. Project partners pledged to contribute to the cost of construction and the Community would contribute labor through “Long Khak” (assembled by shared community labor as traditional Thai house construction method).



Original condition

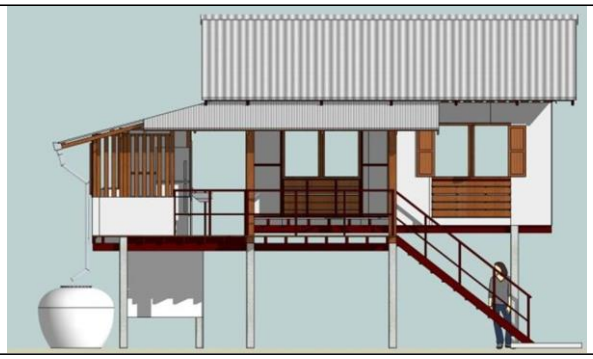


New Lay out



New Plan

New Section



New Elevation



New Perspective

Fig. 2: Prototype housing model
Source: Panitchpakdi, K. & Kaengtonglang, T. (2011) Withi Thai Housing Communities.

After completion of the design of the prototype for home restoration, the Project team tried to contact the head of household (Ms. N) but she refused to meet with the team. Based on consultation with local leaders it was determined that Ms. N had become reluctant to participate in the Project since she lacked a deed for the land and may have feared challenges to her right to live there. In addition, Ms. N was concerned about increased cost of maintaining a regenerated home, and impeded access to pathways by relocation. Finally, Ms. N was concerned that she might incur the envy or ill-will of neighbors by being singled out for home regeneration. Given the lack of household willingness to proceed, the construction of the prototype has been put on hold.

5. Discussion

5.1. Level of local participation in the development of the Ban Reuan Withi Tai prototype

Even though the Project employed participatory methods in each stage of implementation, when assessed against the criteria of Nabeel Hamdi, the actual level of participation should be rated as minimal. In other words, the community was only indirectly involved in the process and the outsider academic Project team was the primary planners instead of local residents.

5.2. Process and characteristics of action planning

The data in Table 1 show that Project compliance with the characteristics of action planning was deficient in the following three areas: (1) Even though a participatory process was used, the challenge of the housing development approach came from outsiders, and was not a felt need of the community itself. (2) Based on achievable actions: Building a house takes time and entails a complex array of activities, with associated technical and financial challenges. Achievable action will not result if the local community does not perceive the benefit, and this shortcoming eroded local participation. (3) Visible, tangible outputs: The result for this indicator is failure since the prototype dwelling was not able to be constructed as planned due to lack of readiness of the community and target dwelling. The Project partners had stipulated that the prototype household occupants need to be willing to take on responsibility for some of the costs of developing the prototype design as evidence of a sense of local ownership of the Project and potential for sustainability of the end result. Instead, the household occupants had other financial priorities in dealing with the dilapidation of their dwelling and this resulted in their refusal to participate in the Project.

Table 1: Characteristics of and Compliance with Action Planning

Characteristics of Action Planning	Level of Compliance		
	High	Medium	Low
1. Problem-based and opportunity-driven			√
2. Based on achievable actions			√
3. Participatory, encouraging rapport and partnership		√	
4. Reliant on local knowledge and skills and traditional wisdom		√	
5. Non-reliant on complete information	√		
6. Small in scale	√		
7. Incremental rather than comprehensive plans	√		
8. Starting points rather than end states	√		
9. Fast but not rushed		√	
10. Visible, tangible outputs			√

6. Conclusion

Lessons from the development of the Ban Reuan Withi Tai prototype are as follows. This PAP only produced a design for a prototype model of a small vernacular house, but the knowledge gained was profound and should be of value for future activities. At present, members of the Rong Kung Community (one of the participants in the process) are applying the project concepts toward planning their new community.

Appropriate housing for the 21st Century needs to be based on a holistic view. The Project designers and partners realize that, in order to produce a sustainable model of a traditional Thai dwelling and community, they need to have a more profound understanding of the lifestyle of the local residents. In addition, they need to study the underlying socio-economic and cultural status of the residents. There needs to be application of eco-friendly environmental principles that are tailored to the prevailing cultural ecology, carefully incorporating modern technology to achieve a balance with the traditional, while providing full opportunity for local participation, joint learning and decision-making. Finally, there needs to be appropriate application of traditional wisdom to promote harmony and sustainability going forward.

Factors behind the inability of the Project to construct the prototype dwelling

This Project has been on-going for several years but has not yet produced the intended tangible results due to the following limitations:

1. The Project was making progress with a good level of community participation when the disastrous floods struck central Thailand in the second half of 2011. As a result, the Project had to suspend activities for three months and this resulted in a loss of interest and motivation by the local residents;
2. There were personnel changes in the local mayor's office resulting in a lack of continuity of knowledge and support for the Project by the Municipality;
3. New elections of the Community Committee members interrupted the flow of community participation in the Project;
4. Community resident factors:

(a) Most of the local residents felt a sense of dependency on aid from the government instead of pursuing self-reliance. This is partially the result of many years of populist policies of the then-governing political party;
(b) There is a lack of solidarity in the community and lack of trust of the populist system of channeling funds to the locality through various development funds. This has created competition for financing among local residents and suspicion that the Community Board will allocate funds unfairly. The Community Committee does not operate enough transparently and withholds information from the community on available resources and allocation decisions;
(c) Local residents assigned lower priority to housing than the Project expected. The community was more concerned about having enough to eat, income, and finances;

5. The various independent streams of funds for the community through populist policies were not integrated as part of a comprehensive development plan based on principles of self-reliance. The competition and lack of mutual trust among community residents made it difficult to implement the Project with full community participation;
6. The local administrative organizations lacked an appreciation of the importance of housing for the wellbeing of the population. This inhibited decentralization of authority as envisioned through the creation of the local administrative organizations;
7. The Research team was not able to arrange enough time to create an optimal level of local participation and buy-in to the Project. In part, this was due to the many demands on the time of the Project staff, and the fact that they lived outside Samut Songkhram Province. This meant that the Project team members were viewed as "outsiders" and this limited their ability to advocate the Project objectives. Thus, for future PAP projects, it would be important to assign responsibility to local institutes.

7. Recommendations

7.1 For the community: The target community needs to sustain activities to create a model for the benefit of local residents and to encourage the 14 other communities in the Municipality to replicate the activity through locally-driven processes. Outside experts and agencies should not drive the process but, instead, can play a supportive role. The outside groups are ready to assist, but the target community is not yet ready to proceed.
7.2 For the local administrative organizations in the Municipality and the province: These agencies need to place higher priority on new methods of housing development since, under the decentralization policy, these agencies are now responsible for ensuring adequate housing for local residents. This model regeneration Project is only a small part of the overall challenge of housing. Nevertheless, the relevant local and provincial agencies should study the experience of this Project in order to apply the lessons learned.
7.3 For housing development agencies: This Project concept of constructing vernacular Thai housing should receive more support from housing developing agencies since the Project activities are in line with the new direction of these housing agencies in which housing development is more community-driven than in the past. The National Housing Authority can play an advisory role, while the community and local administrative organizations are the key implementers.
7.4 For the technical and academic sectors: Management of the knowledge gained from actual implementation in this project is highly beneficial for the participating students. Thus, academic institutions should modify their approaches to learning to include more practical, field-based activities as described here. Further, targeted neighborhoods should be those in the vicinity of the academic institution to maintain and improve relations with the host community.

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References

Hamdi, N. (1999) 'Action Planning Theory: Characteristics, Techniques and Process'*, Open House International,* Vol. 24, no.3, pp. 5-15.

Hamdi, N. & Goethert, R. (1996) *Action Planning for Cities: A guide to Community Practice.* UK: John Wiley & Sons.

Kaengtonglang, T. (2011) *Community capacity for housing regeneration: Case study of the Soi Wat Lang Ban Community in Samut Songkhram Municipality.* Master's degree thesis (Housing), Department of Housing, Faculty of Architecture, Chulalongkorn University.

Khamparat, C. (2011) Guidelines *for improving home-based latrines to meet hygiene standards: Case study of the Soi Wat Lang Ban Community in Samut Songkhram Municipality.* Master's degree thesis (Housing), Department of Housing, Faculty of Architecture, Chulalongkorn University.

Panitchpakdi, K. (2011) 'Adaptation of Ban Reuan Withi Tai: Case study of the Wat Khao Yisan Community inSamut Songkhram Province' in *the 3rd annual conference on Ban Reuan Withi Tai. Bangkok: Faculty of Agriculture, Chulalongkorn University*.

Panitchpakdi, K. & Kaengtonglang, T. (2011) *Withi Thai Housing Communities*. Report of 4th phase of implementation of the Housing Environment Innovations Project. Bangkok: Chulalongkorn University.

Pansaeng, W. (2011) *Techniques of constructing waterside housing: Case study of the Soi Wat Lang Ban Community in Samut Songkhram Municipality.* Master's degree thesis (Architecture Technology), Department of Housing, Faculty of Architecture, Chulalongkorn University.

Raisaeng, M. (2011) *Guidelines for combatting erosion affecting waterside housing: Case study of the Soi Wat Lang Ban Community in Samut Songkhram Municipality.* Master's degree thesis (Property Development), Department of Housing, Faculty of Architecture, Chulalongkorn University.

Suwannarat, K. (2012) Interviewed on September 9, 2012.

Technical Resource Center of Chulalongkorn University. (2010) *Urban housing development planning to meet local challenges. Part of the process of capacity building for housing development by the Upper Central Region Provinces Group #2 (Samut Songkhram and Samut Sakorn Provinces).* Project to conduct housing development plans and addressing problems of slum communities (2009). Final reported presented to the National Housing Authority.

United Nations Environment Programme, (2005) Eco-housing Guidelines for Tropical Regions of Asia, United Nation Environment Programme, viewed 17 September 2014, http://www.chs.ubc.ca/archives/files/EcoHousing%20Guidelines%20for%20the%20Tropical%20Regions%20of%20Asia.pdf

Zero Waste. (2012) Zero Waste, Wikipedia, viewed 21 May 2014, http://en.wikipedia.org/wiki/Zero_waste.

Creation of Appealing Roadside Landscapes Using Elements of Prospect and Refuge Value

Samarasekara G.N. [*] **,**
Department of Civil Engineering, Faculty of Engineering, Sri Lanka Institute of Technology
Imali, N.B.G.
Department of Civil and Environmental Engineering, Faculty of Engineering, University of Ruhuna

Abstract

Aesthetic improvements to roadside landscapes presents many challenges to the road professionals. Lack of documented knowledge of local landscape preferences force them to import design treatments that may not evoke any preference feeling within the locals. Landscapes *with high prospect/ refuge values show high preference levels. Prospect can be defined as being able to see/understand more information while Refuge is defined being able to have a refuge. This study is aimed to identify preferable roadside design elements due to the high prospect/ refuge value associated. In an experiment participants viewed a set of 15 streetscape videos and identified prospect and refuge landscapes giving reasons for selection. Using, a standard qualitative content analysis two, three-step hierarchical conceptual models were developed to describe prospect and refuge landscapes.*

The prospect symbols were evoked from natural and artificial landscape elements At a more detailed level many Sri Lankan specific symbols were identified for the designers to work on. These included presence of coconut/ mango trees or painted structures, bus stand, fruit stalls, fish stalls. The refuge symbols resulted from natural &artificial landscape elements, space demarcation, road safety items, well designed & constructed roads, well maintained roads, place to stay, activities, road boundary demarcation, road structures, separated walking spaces. The outcomes of this work can be extended to design preferable roadside landscapes that are meaningful to road users.

Keywords: Prospect, Refuge, Roadside Landscape Symbolism, Design Elements

1 Introduction

1.1 Road side landscape

Roads are public property shared by thousands of travelers every day. Landscape is an important element in the planning, design, construction and maintenance of a road project. Appropriate planning, design, implementation and management of landscape treatments are vital for the safety of users, longevity of the assets and protection of the environment (Engineering & Technology Branch Queensland Government, 2013).

Corresponding Author: [*]; Ganga Samarasekara , E-mail- ganganlk@yahoo.com

People around the world on average spend 40 minutes for travelling one way for commuting each day (The SASI Group, 2006). In terms of leisure travel, the global travel market also continues to grow solidly to a level where, leisure travelling is outgrowing business travel(IPK International, 2013).In considering the number of hours people spend on the road, creation of visually attractive roads is vital to ensure a pleasurable and safe ride.

Being different from many other landscapes, roadsides create a unique and dynamic landscapes which vary due to variable road geomery, land use, geographical regions, cultural boundaries or climatic zones. This variations present many challenges for the designing of landscapes. Fortunately, the researchers like Appleyard (1964) and Lynch (1960) have proposed roadside landscape design treatments based on symbolic meanings associated with roadside landscapes. As an example in his book "View from the Road", Appleyard has discussed how to use rhytms in music to create a pattern in urban roads (Appleyard, 1964). Designing roadside landscapes based on symbolic meanings have been attempted by the road officials since then. Prospect and refuge theory presented by Appleton (Appleton, 1975)is one such theory, widely used in landscape design (Annemarie & Michael, 2012)

This research attempts to investigate on the potential usage of prospect and refuge theory for the aesthetic design of roadside landscapes in Sri Lankan context.

Improving the scenic qualities along transportation corridors is becoming important (FHWA, 2006). Movements like America's Scenic Byways are encouraging people to travel along scenic routes simply to enjoy the landscape along the route (FHWA, 2006). Creation of such routes begins with aesthetic design on the roadside landscapes.

The highway landscapes in developed countries like the USA, Japan or England have extensively been studied by many researchers including pioneers like Apple yard and Sheppard (Sheppard, 1989).The landscape experience is influenced by the natural and human forces existing in the landscape as well as by the associated landscape meaning held by the users. Thus neither the outcomes of studies done in foreign countries nor the parameters used in such studies can directly be applied to the Sri Lankan context. This results due to differences in physical landscape dictated by tropical weather as well as the differences of road users inheriting eastern cultural values.

Thus a separate study should be conducted, to understand applicability of prospect and refuge theory for the aesthetic design of highway landscapes in tropical climates.

1.2 Prospect and Refuge symbolism in landscapes

The theory of prospect and refuge by Appleton (Appleton, 1975)is one theory widely applied by landscape professional in the design of general landscapes. The theory which describes the landscape preference as an evolutionary response inherent to human beings, proposes that the landscapes with prospect and refuge symbols to have higher preferences. The Prospect is defined as being able to see/understand more information while Refuge is defined being able to have a refuge. In his theory Appleton had proposed some potential prospect landscapes such as direct panoramas, direct vistas, interrupted panoramas, secondary panoramas and deflected vistas. Similarly he has proposed higher refuge values to be present in places that afford hiding, shelters and penetrability.

1.3 Prospect and refuge theory in landscape research and design

Matsuzaki (2010) has attempted to apply the above concepts to the design of pedestrian friendly streets in Japan. Ruddell and Hammitt (1987) used prospect-refuge related phenomena to examine visual preference for edge environments. Loewen, et al. (1993) used prospect-refuge theory as a foundation to analyze the relationship between urban environments and the degree to which people feel safe from crime. Stamps (2008a, b), researched environmental preference based on a series of large scale studies of the following four factors: "prospect (depth of view), refuge (presence of protective regions in front of the observer or possibilities of escape), direction of light (either front or back lighting), and venue (natural or built environment)".
Since the evolutionary response to landscape may be common to all human beings, the above theory may equally be applicable to the Sri Lankan landscapes. Yet differences can be observed due to the differences of physical landscape and culturally associated landscape meanings.

1.4 Research Aims

This research is thus intended to propose suitable landscape design elements to create appealing roadside landscapes by applying the concepts of prospect and refuge to the tropical landscape context.

2 Methodology

2.1 Experimental method

Researchers attempting to understand the human perception independent of previous theories, often use approach of Grounded Theory in which the results would be grounded on the real observations and not on the previous theories (Patton, 1980). This qualitative research method attempts to generate theories based on close and detailed inspection and analysis of qualitative data so that the generated theories are clearly grounded on real world observations instead of existing conceptions (Breakwell, Hammnond, Fife-Schaw, & Smith, 2006). This study follows the method adopted by(Ohta, 2001), who used a grounded theory research design to understand the meaning of the landscape. A set of 15 video clips representing urban, suburban and rural landscapes were used as stimuli for the experiment. Semi structured interviews were conducted to evaluate and identify the prospect and refuge landscapes and to evaluate the related meanings. Each participant was shown a selected set of videos and instructed to identify either prospect or refuge landscapes as they watched the video. Upon identification of such a landscape, the video was paused and they were asked to give the reasons for identification. 62 voluntary participants spelled out a total of 96 prospect comments and 112 refuge comments. The answers were transcribed and a standard content analysis was done following a methodology similar to Ohta (2001). Two separate analysis were done to prospect and refuge landscapes.

3 Data Analysis

3.1 Content analysis

Taking a similar approach to Ohta (Ohta, 2001), the data analysis was done by using standard qualitative investigation approach based on grounded theory as detailed by Patton (Patton,

1980).The data was analyzed to identify key themes which described the landscapes with prospect and refuge value.

The comments describing prospect/ refuge landscapes were examined carefully to identify remarkable segments. Key themes within such remarkable segments were identified and a list of key themes was made. For this purpose the descriptions were re-examined to identify the important remarks and each such remark was coded using the most suitable theme or themes. Two lists of key themes (one each for prospect and refuge) were made thereby. These key themes composed the level 1 key themes as shown in Table 1 and Table 2. Based on similarity of meaning among level 1 themes, these were then grouped in to several groups. By studying the meaning within the themes of a group, new themes which reflected the level II themes were obtained. A similar procedure was adopted to obtain a set of level III themes from level II themes as depicted in Table 3 and Table 4.

3.2 Synthesis of landscape design elements

The level III themes described different dimensions of landscape preference arising due to prospect/ refuge. Each of these was represented by themes at level I and II, usable to identify potential design elements. Also potential design elements were synthesized based on the experience of authors and referring to literature. From such potentially identified elements, a set of landscape design elements that could be applicable to Sri Lankan road context were synthesized for each of the level III themes. However some of the level III themes were more conceptual. According to the theories of sociology, the meaning of something could be communicated through denotation (based on real object) or through connotations (via some other method which may indicate same meaning due to socio-cultural and personal associations) (Daniel, 2002). Thus in addition to indicating the landscape design elements which would be through denotation, several other design concepts which may indicate the same meaning through connotation were also synthesized. These are shown in Tables 3 and 4.

4 Results and Discussion

4.1 Landscape cues for prospect and refuge in Sri Lankan context

The prospect symbols consisted of 77, 35 and 13 level I, level II and level III themes respectively. The level III themes were Natural and artificial landscape elements, Landscape configuration, spaces, utility places, Land cover/land use, Activities, Architectural appearance, Proper Maintenance, Proper construction, Space demarcation, religious places, Evaluation and Potency. Except for proper construction and maintenance, the other level III themes showed similarities to observations about prospect symbols in other countries. In terms of level I themes, the trees, green, flowers are some of the frequently mentioned. In two instances mango and coconut were mentioned reflecting the culturally held prospect values. At the level III these were summed up to get natural and artificial landscape elements. Afterwards by considering the themes highlighted by the participants and based on authors understanding about culturally valued landscape elements, a set of landscape design elements were synthesized. As an example, Mango, Coconut, Na, Palmairah, aricunut were synthesized as they represent strong prospect values culturally. These denotative landscape elements synthesized reveals, many physical design elements. But in some cases, the actual road context may not permit the placement of aforementioned features, such as planting trees. The connotative concepts shown in Table 3 could be usedto elicit some degree of preference through prospect/ refuge value. In such a context the connotation of green could be reflected by painting a wall in green or painting

images of trees on walls. Previous research work(Samarasekara, 2010) have shown the potential of connotative meaning to elicit preference.

As shown in Table 3 Utility places, space demarcation, and religious places also have many design elements to create prospect values. Traditionally highway engineers discourage the presence of sellers on roadside due to safety concerns. But in places where safety is not compromised, allowing a king coconut seller, corn seller creates a prospect value for a passer-by. Those who stop by atsuch shops would really experience the prospects of buying something and connecting with locality, while even the passers-by will enjoy the journey through the prospect value created by seeing such sellers. Presence of destinations providing utility has been identified as a key feature in livable streets in which people prefer to walk(Walkscore, 2007) and socialize(Vikas, 2007),(Whyte, 1980). Further at the connotative end, the road engineers can create prospect value of sellers by merely showing such boards or creating some streets arts of such places.

Both prospect and refuge themes include two factors, evaluation and potency which reflect some of the main factors of Osgood scales(Osgood, 1957). By nature, these do not form physical design elements. But based on the context, connotation possibilities could be brought forward.
The refuge symbols consisted of 90, 54 and 18 level I, level II and level III themes respectively. The level III themes were Evaluation, potency, utility places, Natural & Artificial landscape elements, Space Demarcation, Road safety Items, Well designed & constructed roads, populated areas, Well maintained roads, place to stay, Activities , space provision ,Land cover/land use, Road boundary demarcation, road structures, separated walking spaces, Architectural Items and road side used for other purpose. Similarity with foreign roadside landscapes at level III was observed. In a country where pedestrians are associated with high vehicle accident risk, most of the refuge symbols were based on pedestrian space definition and demarcation. These included the desire to exclude have some road side elements.

Presence of coconut/ mango trees or painted structures, bus stand, fruit stalls, fish stalls are some of local prospect symbols. Participants have often mentioned that “coconut tree” gave prospect feeling for them. In a Sri Lankan context coconut refers to prosperous place. Therefore this study has been able to elicit some Sri Lankan symbols for prospect and refuge. Thus, an understanding about preferable local landscape elements is more important to do the best landscape design suitable for Sri Lanka.

This research proposed some road side design elements based on a set of road user opinions and professional conceptualization. Future research work should confirm whether these each of these can create significant preference among road users. Observations of Tables 3 and 4 reveals some level III themes and respective design elements are common for both prospect and refuge especially due to synthesizing. The repeating elements were kept, since these elements would ultimately create reveal preference, either through prospect or through refuge. A separate study would be required to distinguish such preference.

5 Conclusion

The success of transport infrastructure depends not only on their function but also how they are perceived and preferred. A negatively perceived roadside is often underutilised even if they have a Level of Service A. In an attempt to identify characteristics/ qualities meaningful roadside landscapes that evoke preference, this study identified 13 and 18 prospect and refuge themes for the landscape designers to work on. The inclusion of these in designing landscapes can create

landscapes that would be preferred in a local context. Also the themes at levels II and III can further be developed by introducing them based on their connotative meanings as well.

Most of the level I prospect and refuge themes were landscape elements. The other prospect symbols included local places of utility provisions as well as spaces. The level I refuge symbols included spaces for pedestrians and means of pedestrian separation.

This study proposed some symbols that may evoke prospect and refuge feelings. Future work should further investigate on techniques of applying these identified and the degree of preference for the identified.

6 References

Annemarie, D. S., & Michael, O. J. (2012). Propspect and refuge theory: A comparative methodological review. *46th Annual Conference of the Architectural Science Association (ANZAScA).* Griffith University.

Appleton, J. (1975). *Experience of Landscape.* Wiley.

Appleyard, D. (1964). *The View from the Road.* Cambridge, MA: MIT Press.

Breakwell, G. M., Hammnond, S., Fife-Schaw, C., & Smith, J. A. (2006). *Research Methods in Psychology.* London: Sage Publications.

Daniel, C. (2002). *Semiotics: The Basics.* NY: Routledge.

Engineering & Technology Branch Queensland Government. (2013). *Roadside landscape mannual.* Queensland : Engineering & Technology Branch Queensland Government.

FHWA. (2006). *Americas Scenic Byways*. Retrieved 10 11, 2011, from Fedral HIghway Administration: http://www.fhwa.dot.gov/byways/

IPK International. (2013). *ITB WORLD TRAVEL TRENDS REPORT December 2013.* Berlin: Messe Berlin GmbH.

Loewen, L. J. (1993). Perceived safety from crime in the urban environment. . *Journal of Environmental Psychology, 13*(4), 323-331.

Lynch, K. (1960). *The Image of the City.* Cambridge MA: MIT Press.

Matsuzaki, S. (2010). A Study on the influence of vegetation on the desired to walk . *Unpublished Undergraduate Dissertation* . Department of Environmental Science and Human Engineering, Saitama University, Japan.

Ohta, H. (2001). A phenomenological approach to natural Landscape cognition. *Journal of Environmental Psychology, 21*, 387- 403.

Osgood, C. E. (1957). *The measurement of meaning.* Urbana: University of Illinois Press.

Patton, M. Q. (1980). *Qualitative Evaluation Methods.* Beverly Hills, U.S.A.: : SAGE Publications.

Ruddell, E. J., & Hammitt, W. E. (1987). Prospect Refuge Theory: A Psychological Orientation for Edge Effect in Recreation Environments. *Journal of Leisure Research, 19*(4), 249-260.

Samarasekara, G. F. (2010). Environmental correlates that provide cues for tourists: An analysis based on Walking decision narrations. *Environment & Behavior 43(4)*, 501-524.

Sheppard, S. R. (1989). *Visual Simulation.* New York: Van Nostrand Reinhold.

Stamps III, A. E. (2008a). Some findings on prospect and refuge theory: I. *Perceptual and Motor Skills, 106* (4), 147-162.

Stamps III, A. E. (2008b). Some findings on prospect and refuge theory: II. . *Perceptual and Motor Skills,, 107* (1), 141-158.

The SASI Group. (2006). *Commuting Time Map 141*. Retrieved 03 16, 2014, from World Mapper: http://www.worldmapper.org/display.php?selected=141

Vikas, M. (2007). Livable streets: determining environmnetal characterisitcs to support social behavior. *Journal of planning and Education and Research, 27*, 165-187.

Walkscore. (2007,). *WalkSore How it works?* Retrieved 12 2, 2009, from http://www.walkscore.com/how-it-wprks.shtml

Whyte, W. H. (1980). *The Social life of small urban spaces.* Washington DC: Conservation Foundation.

Table 1: Level I Prospect Themes

Prospect (1)	Good (1)	Rest (2)	Walk (3)
Absence of fish stalls (1)	Plant (1)	Sea (2)	Flyover (4)
Benches (1)	Pedestrian spaces (1)	Traveling (2)	Sky (4)
Boundary (1)	Plantation (1)	Waiting (2)	Safe (4)
Clear image (1)	Pretty (1)	Watch (2)	Absence of cables (4)
Clock tower (1)	Relax (1)	Foot walk (3)	Temple (4)
Coconut (1)	Riding (1)	Block paving (3)	Visit (4)
Crossing line (1)	River (1)	Bus stand (3)	Calmness (5)
Flower bed (1)	Road marks (1)	Buy (3)	Clean (5)
Look around (1)	Rural (1)	Clear road (3)	Pleasure (5)
Free of debris (1)	Separated space (1)	Environment (3)	Cool (6)
Freedom (1)	Nicely park Fish boats (1)	Absence of Poster (3)	Flower (6)
Mango trees (1)	Tired less (1)	Green environment (3)	Comfortable (7)
Street lamps (1)	Way of road constructed(1)	Lake (3)	Space (8)
Huge trees (1)	Wire cut brick wall (1)	Place to stay (3)	Pleasant (9)
Large (1)	Neatness (2)	Scenery (3)	Attractive (10)
Like (1)	Natural (2)	Sea beach (3)	Nice (13)
Flower pots (1)	Park (2)	Shops (3)	Beautiful (20)
Fruit stalls (1)	Parking (2)	Silent (3)	Trees (20)
( ) - Values within brackets indicated the number of instances a particular theme was mentioned within prospect descriptions			

Table 2: Level I Refuge Themes

Fence(1)	Road lane(1)	Water edge(1)	Sign boards(2)
Happiness(1)	Surrounding(1)	Jogging(1)	Well maintained (2)
No tiredness(1)	Tired(1)	Good(1)	Restaurant (2)
Clearly seen road(1)	Travelled by foot(1)	Easy to buy things(2)	House(3)
Rural look(1)	Railway crossing with gate(1)	Green environment(2)	Busy area(3)
Calmness(1)	Large crowd(1)	Plant(2)	Benches(3)
Place to stay(1)	Brick work(1)	Road alignment(2)	Separated spaces(4)
Look around(1)	Open area(1)	Highly populated (2)	Huge trees(4)
Lake(1)	Parapet walk(1)	Straight road(2)	Shops near by(4)
Like(1)	Building(1)	Lane(2)	Spaces beside the road(4)
Freedom(1)	Attractive(1)	Road marking(2)	Beautiful(5)
Not highly populated(1)	Crossing line(1)	Easily(2)	Walking spaces(6)
Minimized the accidents (1)	Traffic light (1)	Widening & level (2)	Nice(6)
Road shoulders (1)	Flower(1)	Drive(2)	Trees(7)
Edge lines(1)	Clean road(1)	Painted structures(2)	Clear(7)
Side drains(1)	Street lamp(1)	Guard rails(2)	Foot walk(8)
Properly designed(1)	Boats(1)	Sheltered(2)	Comfortable(9)
Properly (1)	Culvert(1)	Rest(2)	Space(15)
Foot path(1)	Crossing mark(1)	Enough space (2)	Vehicles Park(17)
Secured place(1)	Dangerous(1)	Boundary wall(2)	Safety(45)
Temple (1)	Careful (1)	Cool (2)	
Religious(1)	Absence of unauthorized posters (1)	Planting flowers(2)	
Peaceful(1)	Barriers (1)	Shop(2)	
( ) - Values within brackets indicated the number of instances a particular theme was mentioned within refuge descriptions			

Table 3: Level III themes and proposed design elements (denotation) and design concepts (Connotation) for Prospect

Level III theme	Proposed design elements- Denotations	Design concepts - Connotations
Natural and artificial landscape elements	Trees (Mango, Coconut, King coconut, Aricunut, Kithul, Palmairah, Na), Flower beds, Flower pots, bushes (Wathusudu, Andara, Daas etc.), Grass, Street Lamps, Benches, Fountains, Stones	Natural, Green
Landscape configuration		Imagable, Clear
Spaces	Pedestrian Spaces, Side walk, Parking Places, Fly-over, Play areas	Separation of Space
Utility places	Fruit stalls, shops, bus halt, park, Vegetable stalls, Fish stalls, Green Leaf stalls, King Coconut Stalls, Home accessory shops, markets	Utility
Land cover/land use		Plantations, River, Sea, Lake, Beach, Sky
Activities	Places to stay	Look around, Ride, Watch, Walk, Visit
Architectural appearance	Benches, Flower pots, Clock tower, Interlocking blocks, Bus halts	
Proper Maintenance		Painted structures, Utility posts
Proper construction	Interlocking blocks	
Space demarcation	Road markings (White lines), Crossing Lines, Bollards, Raised sidewalk	Crossing sign
Religious places	Temples, Pagodas, Church, Mosque	
Evaluation		Neat, Clean, Natural
Potency		Pretty, Relax, Rest, Calm, Pleasant, Attractive, Comfortable

Table 4: Level III themes and proposed design elements (denotation) and design concepts (connotation) for Refuge

Level III theme	Proposed design elements- Denotations	Design concepts - Connotations
Evaluation		Proper, Clear, Safe
Potency		Happy, Calm, Free, Peaceful, Careful, Comfortable, Easy
Utility places	Restaurants, Fruit stalls, shops, bus halt, park, Vegetable stalls, Fish stalls, Green Leaf stalls, King Coconut Stalls, Home accessory shops, markets, Bus halts	
Natural & Artificial landscape elements	Trees, Flower beds, Flower pots, bushes, Street Lamps, Benches, Fountains	Natural, green
Space demarcation	Road markings (White lines), Crossing Lines, Bollards, Raised sidewalk	Crossing sign
Road safety Items	Fence, Traffic Lights, Railway crossings, Street lamp, guard rail, Sign Board	
Well designed & constructed roads	Shoulders, Road alignments	Wide road, Level road
Populated areas		Highly populated, Busy area
Well maintained roads		Painted structures, Well maintained, Absence of posters
Place to stay	Temple, Shelters, Space beside road	Separated space
Activities		Walk, look around, jog, rest, drive
Provide spaces	Surrounding places	Spacious
Land cover/land use	Lake, Water edge, Open area	Rural look
Road boundary demarcation	Road markings (White lines), Crossing Lines, Bollards	
Road structures	Side drains, Culvert	
Separated walking spaces	Side walk	
Architectural items	Brick work, Interlocking blocks, Bus halts	
Road side used for other purpose		Boats on road side

The Institutional Fix of Historic Revitalization behind Property-led Urban Regeneration: the Comparison between Taipei and Hong Kong

Lan, Cassidy I-Chih[*]
Department of Real Estate and Built Environment, National Taipei University, Taipei, Taiwan
Xian, Shi
Department of Public Policy, City University of Hong Kong, Hong Kong

Abstract

Since the 1990s, the content of urban redevelopment has been sharply transformed and including vibrant elements from economic to cultural, historic, social, and environmental considerations, which is termed as the transformation from bulldozed reconstruction to sustainable regeneration. In addition, the agencies involving in the process of redevelopment have been broadened and blurred the boundary between public and private sectors. With the rise of intercity competition, the public-private-partnership (PPP) has taken as the modus operandi to implement the governing capacity of entrepreneurial city and the foundation to achieve successful redevelopment appealing to private actors – not only businessmen, developers and, financiers but also NGOs, tourists, and talents. The paper argues that the logic of urban regeneration is often property-led and requires non-economic elements (e.g. culture, creativity, history, green, and water) enlarging the niche of property market in that they can help upgrade the added values of property-led regeneration. Meanwhile, non-economic elements are functioned as a new institutional fix to alleviate the internal contradictions of entrepreneurial governance in general and property-led regeneration in particular to legitimize the pro-business agenda behind the mechanism. We take Taipei and Hong Kong as the cases to illuminate the argument. Both cities have undergone the heavy burden of living due to the fancy property speculation since 1990s and face the contestations from grassroots level for community livability. We particularly focus on two policies – the Urban Regeneration Station (URS) in West Taipei and Revitalization of Industrial Buildings (RIB) in East Hong Kong to explore how the property-led ideology has embedded in the experiments of historical revitalization and what are the problems these policies have encountered.

Keywords: historical revitalization, urban regeneration, property development, public-private-partnership

[*] Corresponding Author: Cassidy I-Chih Lan E-mail- yichilan@gmail.com

Introduction

The death and life of cities contribute to the dynamics of urban growth and landscape restructuring. For capitalist cities, creative destruction of built environment is a prevalent phenomenon because the surplus capital relies on a place for profitable circulation (Harvey, 1978). The old, dilapidated downtown area is usually the place of capital inflow for revalorization (Smith, 1996). Herewith, property sector matters to place-remaking because it can provide finance, technique, and expertise required for negotiation with stakeholders, market analysis, physical development, and sales for buildings. Urban regeneration can work more efficiently only when private agencies have involved in the complicated process and made profits from the involvement.

When the globalization has become the pre-eminent ideology to function contemporary world capitalism, the regime of flexible accumulation is forcing major cities to engage in the place war for strengthening the status of global city. Undoubtedly, urban entrepreneurialism, a privatized governing coalition between public and private agencies to promote the pro-business landscape, has dominated the governing agenda of cities to respond to intercity competition (Harvey, 1989; Hall and Hubbard, 1996). Hence, the content of urban redevelopment has been sharply transformed to include extra-economic elements such as culture, history, society, and environment, termed as the transformation from bulldozed reconstruction to sustainable regeneration. Meanwhile, the broadened agencies involving in redevelopment have blurred the boundary between the state and market. The public-private-partnership (PPP) has taken as the modus operandi under entrepreneurialism and platform to achieve successful regeneration appealing to diversified actors – not only investors, developers and, financiers but also NGOs, tourists, creative workers, and talents. The paper argues that urban regeneration often favors property capital and transfers non-economic elements (e.g. culture, creativity, history, green, and water) to enlarge the niche of property market in that they can help upgrade the added values of regeneration projects. That is, non-economic elements are functioned as a new institutional fix to alleviate the internal contestations of entrepreneurialism in general and property-led regeneration in particular to legitimize the pro-business agenda behind the seemingly sustainable idea. It is especially the case in the context of neoliberal city formation today.

When it comes to the variegated landscapes of neoliberalism, critical geographers, Neil Brenner, Jamie Peck, Adam Tickell, and Nik Theodore, have argued that the institutional restructuring might not be a one-way transformation from state intervention to market rejuvenation, but a complicated mix tangled with specific spatio-temporal circumstances a place inherits (Brenner and Theodore, 2002; Peck and Tickell, 2002). From the perspective of Asian urban studies, several works have also indicated that the East Asian cities have encountered the challenge of neoliberalism and exhibited alternative neoliberalization due to the context of developmentalism (Hills et al., 2012). The paper argues that East Asian cities also endow different individual pathways even if they have similar cultural, geopolitical, and historical contexts. The paper takes Taipei and Hong Kong as examples for comparison because they are Chinese cities and the members of Asian Four Tigers. Both are also labeling property-led regeneration as the core experiment to enforce entrepreneurial governance and facing the speculative fever from property sector after 2000s. However, they still have respective PPP frameworks on urban renewal due to the heterogeneous institutional landscapes and specific socio-economic contexts. Dramatically, they have undergone the heavy burden of living due to fancy property speculation since 1990s and face the resistance from grassroots level for livability. The paper address the idea that these new policy experiments covered by historical

revitalization might be a search of new institutional fix help the property capital to establish new investing niche that pure market mechanism cannot achieve in depressed areas. We focus on two policies – the Urban Regeneration Station (URS) in Taipei and Revitalization of Industrial Buildings (RIB) in Hong Kong to explore how the property-led ideology embeds in the experiments of historical revitalization and what are the problems these policies have encountered.

Revitalization as the institutional fix to strengthen the property-led regeneration

In the section, the paper gives a brief review for several concepts of revitalization under property-led regeneration to illustrate why revitalization with non-economic elements functions as the institutional fix to reconcile the accumulative barrier for property capital. Here we illuminate the interrelated ideas about property-led regeneration – revitalization with economic implication, public-private-partnership under neoliberalism, and institutional fix for property capital – as well as in the next section address the main arguments as the reference for the following comparison between Taipei and Hong Kong.

Revitalization with economic implication

With the rise of global economy and accompanied intercity competition, property-led urban regeneration emerges to support urban reimaging process even if its orthodox operative definition is 'comprehensive and integrated vision and action which leads to … a lasting improvement in the economic, physical, social and environmental condition of an area' (Roberts, 2005: 17). Indeed, central or city government has acknowledged its key function as a 'global urban strategy' (Smith, 2006). Except catering for ground rent from reinvestment, property-led regeneration helps release urban space from dilapidated areas and transforms old downtown into spectacular landscape with global visibility. Hence, it is hard to throw off the 'growth first' logic (Cochrane, 2007) – place marketing, vibrant labour and property markets, and global inward capital. In addition to market incentives, the practice requires for complicated institutional, legal, political, and social coordination by which the state can alleviate the internal contradictions such as development vs. preservation, social mix vs. global highlight, local community vs. global elites, and economy vs. environment, all of which can be conciliated through 'sustainability' (Imrie et al., 2009).

Revitalization has been taken as a major concept to enforce urban regeneration for a long while. Its form has evolved for several decades with urban socio-economic transformation. The earliest version emerged in the US cities in 1930s, focusing on the supply-side policy for industrial investment in specific areas. Hereafter, the approach has been adjusted towards political assessment and entrepreneurial strategies since 1960s to fairly redistribute resource and efficiently promote local economy. Even though broad ideas (e.g. equity and sustainability) have been included in practice since 1980s, the basic principle still emphasizes 'development' with the rise of privatization in the post-1990s policy experiment (Fitzgerald and Leigh, 2002). The practice of revitalization is to promote local economic development through public-private-partnership (PPP). From the orthodox perspective of new public management, PPP 'can be defined as arrangements whereby private parties participate in, or provide support for, the provision of infrastructure, and …results in a contract for a private entity to deliver public infrastructure-based services' (Grimsey and Lewis, 2004: 2). PPP is contemporary governing paradigm because it helps the state release fiscal burden and gets rid of the executive impasse of bureaucracy system through infusing enterprise features – innovation, efficiency, and performance. It has been positioned not only as the centerpiece of urban entrepreneurialism

(Harvey, 1989), but also as the experiment for producing neoliberal urban space[1] (Brenner and Theodore, 2002: 21). It is often taken as a 'panacea – whether it is between the statutory agencies of one sort or another, between statutory and voluntary agencies, between community and state, or between public and private sectors' (Cochrane, 2007: 36). As a result, we have to pay attention to the form of PPP and its neoliberal implication.

Public-private-partnership under neoliberalism

When it comes to the public-private-partnership, the field of urban policy, especially urban regeneration, has often taken it as a new form of urban governance to remedy/fix the fault of bureaucratic inefficiency in the era of neoliberalism (Cochrane, 2007). From the eyes of liberal economists, neoliberalism is 'a theory of political economic practices which proposes that human well-being can best be advanced by the maximization of entrepreneurial freedoms within an institutional framework characterized by private property rights, individual liberty, free markets and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices' (Harvey, 2006: 145). That is, PPP from the perspective of critical geographers is the institutional fix for the capitalist state to protect the integrity of accumulative regime[2] (Peck and Tickell, 1994) and tends to speculation in nature because 'the public sector assumes the risk and the private sector takes the benefit' (Harvey, 1989: 7). It is the case in the context of neoliberal city. With the demise of state accountability for welfare redistribution and social reproduction, the property-led partnership has advanced the capitalization of extra-economic elements in built environment for extending the profit margin of property investment. A set of new initiatives (e.g. enterprise zone, empowerment zone, development trust, urban development corporation, and several special task forces) have been established since 1980s in western countries (Healey, 1992).

In addition, property sector includes several agencies with contesting interests. They compose of a complicated network of stakeholders – landowners, developers, financiers, investors, and planning consultants, which of them stand for different functions in the process of property development but all care about the profit bought about from development (MacLaran, 2003). Further, neoliberalization has forced the state, traditionally considered the regulator and planner of urban development, devote itself to creating entrepreneurial landscape meeting transnational symbols or prestige mega-projects (Acuto, 2010; Cartier, 1999; Olds, 2001). Neoliberal place-making relies on not only site-by-site reconstruction but also a city-wide and large-scale remaking/reimaging to shape international highlights.

The institutional fix for the accumulation of property capital

Therefore, the extra-economic dimension of revitalization functions as an institutional fix for PPP to create sufficient incentives for private investment. Also, the fix can make viable the

[1] These efforts include a set of regeneration projects focusing on property investment – 'place marketing, enterprise and empowerment zones,…,urban development corporation,…property redevelopment schemes, [and] business incubator projects…to mobilize city space as an arena both for market-oriented economic growth and for elite consumption practices' (Brenner and Theodore, 2002: 21).

[2] Accumulative regime, from the viewpoint of regulation theory, means particular coupling of accumulative systems from the economic communities (e.g. capitalists) and the mode of social regulation from the state institution. At the specific moments of capitalist history, the regime always encounters new socio-economic barrier (i.e. crisis) detrimental to the stable accumulation. Then the developmental path has to be revised and the accumulative systems and mode of social regulation follow in order to 'fix' the problems caused by crisis. The process of institutional restructuring can be termed as the search for a new institutional fix (Peck and Tickell, 1994).

regeneration project with extra-economic elements because it opens a channel for public engagement. Certainly, the new institutional fix might not assure that all demands among diversified stakeholders can be completely resolved because the property-led nature still takes the capitalist logic as the first priority and possibly intensifies the spatial contestation. In the context of neoliberal city formation, the situation may be more acute. Compared to the traditional socio-spatial displacement (i.e. gentrification) accompanied by the neighbor revitalization in 1950s, the impact of displacement today is far-reaching and scaling-up from single community to entire city. Instead of offering the incentive and loosing land use regulations, the state strengthens its own role to prettify the institution of regeneration for customized pro-business agenda (Hackworth and Smith, 2001; Hackworth, 2007). The mega-redevelopment, owing to the pressure of global intercity competition, has been not the patent of western advanced cities but the feverish property game prevalent among globalizing cities of developing world (Olds, 2001). In order to activate new urban imagineering and make pro-business initiatives publicly acceptable, our paper argues that, extra-economic elements – culture, creativity, history, lifestyle and environment would function as the institutional fix for increasing the added value of renewal projects, to appeal to transnational tourists, investors, consumers, business elites and, through the seemingly innovative, integrative, and comprehensive narratives, to reconcile the contesting interests the stakeholders face in the process of redevelopment. These ostensibly progressive narratives help reduce the potential resistance from the neighborhood and establish the 'false consciousnesses based on bourgeois ideology. The inclusion of non-economic conservation still stresses on economic benefit, which can be transferred to the extra-gain of property and intensify the tendency of property speculation.

The main arguments

From the abovementioned reviews, we can find several interesting aspects worthy of further examination through case studies. The paper here addresses three propositions for exploring the function of revitalization as the institutional fix under property-led regeneration. First, non-economic revitalization (e.g. historical preservation in the paper) is aimed at economic benefits, especially that of property capital. As long as non-economic elements can facilitate the increase of economic values, both dimensions might be not always opposite to each other. Second, pure market mechanism, espoused by the neoliberalists, might not always work well alone but usually requires the institutional support from the state. It is the case in the process of land/property (re)development because the location fixity, use monopoly, investment irreversibility, and exclusivity of land/property characterize the tendency that property capital always flows into the place with the best and highest market potential but hesitate to invest the area with higher risk and uncertainty. Third, non-economic elements can be repackaged through revitalization policy to help the downtown area create new niche for property market. It exemplifies the fact that urban policy often tends to favor capitalist logic based on creative destruction, which is especially significant in a city with feverish property investment. That's why historical revitalization may function as an institutional fix in a property society for the interest of property sector is strong and the state is deliberative to stabilize the market integrity.

In the next two sections, the paper will illustrate the context of property-led regeneration and the framework of PPP in Taipei and Hong Kong respectively. Following these propositions, we can realize why property sector plays a key role in their governing agenda even if both cities have respective developmental pathway toward neoliberalization. The tendency to favoring property capital has intensified the articulation of both urban renewal institutions with capital accumulation and property revalorization. Recently, the dilemmas over implementing renewal

projects have emerged. Whilst Taipei faces the problem of uneven development between the booming districts and depressed downtown, Hong Kong fights for the dispute of socio-spatial displacement. In the section, we go on taking the cases – the URS of Taipei and RIB of Hong Kong to explore how both governments, in the name of revitalization, transform non-economic elements (e.g. historical heritages) into economic icons to promote healthy images and attract capital reinvestment.

Taipei: the urban transformation from developmentalism to neoliberalism

The capital of Taiwan is Taipei whose western part along Tamsui River is the earliest developed area since the 18th century. Its first systematic urban renewal can be dated back to 1970s. Its major aims were to clear squatters, provide suitable infrastructure, and establish national housing because the postwar Taiwan faced severe questions about rapid urbanization and industrialization, peasant immigrants from the rural area of southern Taiwan, and refugee influx caused by the Chinese Civil War in mainland China (Jou, 1999). The factors forced the state to bear the accountability of urban renewal and bulldozed reconstruction was the main approach.

Under the mode of 'developmental state' as the governing mode to enforce national economic policies (Douglass, 1994), Taiwan's urban planning system functioned as an assistant tool to practice state-led economic plans. Deficient local financing, infrastructures, and social service were the common situation prevailing on cities because the major power to distribute resource was placed on the central state (Chou, 1998; 1999), which played the role of planner, financier, and promoters to determine industrial strategies and financial assistance (Wang, 2003). Therefore, the quality of life was often substandard and the supply of collective consumption was unqualified because the state took economic performance as the first priority. For example, national housing was not only undersupplied but, if any, focused on specific groups of citizens (e.g. military, educational, and public servants) (Chen, 2003). Urban renewal was managed to clear illegal buildings and squatters in order to increase land supply for economic development.

Taipei has entered the global economic system since late 1980s and exercised the transformation of urban renewal system in early 1990s. Resulting from the progress of export-oriented industrialization (EOI) driven by developmental state, new division of labor and the rise of cross-strait investment in China have propelled the central and city government to remake Taipei as a global city even if the intergovernmental political struggles erupted as the central and local states have often been ruled by oppositional parties since mid-1990s (Wang, 2003; 2004). Actually, Taipei City Government (TCG) has recognized the need to establish new urban image for international promotion and the pressure to fasten urban renewal. Conceiving the public fiscal limitation and the importance of property market, TCG has introduced the mechanism for inducing private capital to urban renewal. The policy turn can be seen as the first wave of privatization of urban renewal in Taiwan. Meanwhile, the central state also involved in promoting PPP of urban renewal. In 1998, the 'Urban Renewal Act' was enforced in Taiwan. According to the Act, renewal project was defined as a 'business' whilst private developer was encouraged as the major business implementer. Also, offering extra-floor area and reducing business tax for private implementer are the main incentives to attract developers. Hsu and Hsu (2013) indicate that the legislation is the institutional learning of the state toward neoliberalism, which can be represented in terms of the PPP initiative.

Table 1: The number of approved/completed renewal business and average housing level by the administrative district of Taipei

District	No. of approved renewal business	No. of completed renewal business	Average housing level (NTD$ 10,000/Ping)
Wanhua	4	1	52.6
Datong	11	1	60.2
Shilin	8	1	64.9
Beitou	6	2	55.4
Da'an	12	2	94.1
Zhongshan	21	3	75.4
Zhongzheng	13	2	83.7
Neihu	11	0	61.5
Wenshan	21	4	49.8
Songshan	12	3	79.8
Xinyi	10	0	83.9
Nangang	14	0	62
Taipei City	143	19	66.1

Notes: USD$1=NTD$30; 1 Ping=3.31m2
Source: 1.CPAMI Urban regeneration Website (http://twur.cpami.gov.tw/invest/i-index_en.aspx); 2.Yungching Property Website (http://www.yungching.com.tw/), viewed 8 August 2014.

These efforts have vibrated Taipei's property market. However, renewal incentives have made private implementers more easily to select the sites with market potential but not within the most physically dilapidated area. The spatial restructuring of Taipei had strengthened the tendency. From the central level, the Commission of Economic Planning and Development (CEPD) (1996) proposed the project of Asia-Pacific Regional Operation Center (APROC), which defined Taipei as a center with international media, telecommunication, and financial functions. TCG soon addressed the mega-project, 'Taipei Manhattan' in Xinyi Planning District at East Taipei as its globalizing campaign (Jou, 2005). Hereafter, Taipei's axis has moved eastward whilst the western district still kept on depressed. Its spatial structure has evolved from monocentric to polycentric as post-industrialization has intensified the emergence of several sub-city centers with the placement of several new industrial districts along the newly developed fringes (Chou, 2005). Facing the uneven development between east and west, TCG has proposed the campaign – 'reversing the axis; balancing the east-west' since late 1990s. New spatial pattern, however, has exerted feverish property speculation and heightened the housing price level in new areas. Therefore, developers tend to invest newer districts because the booming property sub-market might bring about higher profit margin. Within the framework of property-led regeneration, urban renewal in Taipei has become the speculative property game but deviated from the real

meaning of social reproduction, cultural revitalization, and historical preservation in downtown. Table 1 illustrates the uneven development in Taipei. The districts with booming price level usually attract more applications for renewal business. By contrast, Wanhua and Datong Districts, the old downtown in Western Taipei, have few projects and face the ever-depreciating housing price-level.

Urban regeneration stations in Taipei – a temporary utilization of idle space before redevelopment

Acknowledging the rise of post-industrial and consumer-based urban life in Taipei, TCG initiated the idea of 'urban regeneration station' (URS) to create the 'soft' urbanism in 2010. According to the saying of the chief head of TCG Urban Regeneration Office (URO), soft urbanism advocates a new mode of urban regeneration based on the visionary framework to establish consensus and direction; strategic planning to determine the focus and adaptation; practical action to learn from the trial-and-error process; dynamic deployment to achieve flexibility and practice; future solution to guide the tendency and action; and integrated synergy to create cross-boundary partnership and diversified interaction (Lin, 2013). In other words, the idea is that urban regeneration covers not only bulldoze reconstruction and physical improvement, but also a direction towards the integration and competitiveness in the future (URO, 2010). URS, the abbreviation of 'urban regeneration station', is a deliberative narrative to symbolize the word, 'yours'. That is, no matter the project is either a soft activity or a hard facility, 'yours/URS' represents to the place-remaking with diversified events, creativity, vitality, and local identity for all citizens. Its extended meaning includes 'your station', 'your society', 'your space', 'your studio', or 'your shelter' (Ibid.).

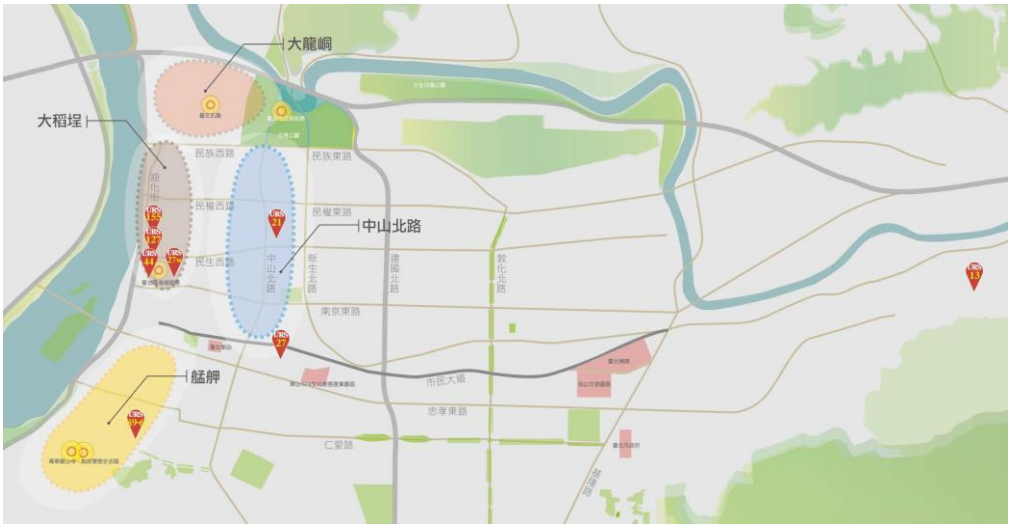


Fig. 1: The location of URSs in Taipei.
Source: URO (2014).

There are two types of revitalization to operate URS. One is the temporary revitalization for vacant government-owned property. The other is the revitalization for vacant private property before formal reconstruction. The spatial pattern of URS siting is interesting and schematic. Until now, there have ever been eight URSs in Taipei. Fig. 1 reveals most of the locations are situated in Western Taipei – 4 in Datong District, 2 in Zhongzhen District, and 1 in Wanhua. All agents applying for running the stations are NGOs, community micro-enterprise, or cultural organizations and positioned as the strategic partners to reimage Taipei as a creative city. These stations, regardless of public or private property, are the representative buildings recording the

diversified history of Chinese reclaiming, Japanese colonial, and postwar industrial era. Throughout the 5-years efforts, several public and private buildings have been successfully revitalized for exhibition centers, artist studios, creative shops, cultural and historical workshops, and community places (Fig.2 & 3). Before designated as the URSs, they have been in vacancy for a long while but worthwhile for preservation. In 2012, URO initiated the 'Action Plan for URS Partner' to address an innovative platform to seek for social partners without capitalist logic. The 'partner' covers broad social agents such as enthusiastic community studio, micro-enterprise, coffee shop, troupe, organization, club, school and every Taipei citizen (URO, 2012: 5). Through the involvement of social partners, URSs can organize creative, artist, and life-based events in old communities.



Fig. 2: The outcome of revitalization – URS 21: Zhongshan Creative Base
Source: author



Fig.3: The outcome of revitalization – URS 44: Dadaocheng Story Workshop
Source: author

The experiment of URS has capitalist implication for institutional fix. Superficially, URSs function as catalyzing urban regeneration in terms of non-economic elements. Actually, they stand for the icons of added value to exercise the potential of property values. The agglomeration of URS in the western district reveals the intent of TCG to promote the attractiveness for property reinvestment back to the built environment. It is the economic incentive of Urban Renewal Act (e.g. offering extra-floor area on the site of renewal business) that determines the uneven development between the east and west. The dilemma requires other extra-economic solutions to overcome the market disadvantage of the western district. Cultural, creative, and artist elements are the alternative for redevelopment because they are compatible to the local character embedded in the western district – history. URS is neither a pure experiment for historical preservation, nor a cultural project for heritage reuse. It is a facilitative item to stimulate the possibility of property-led regeneration hindered by the given investment barrier

under Urban Renewal Act. As long as the consumption and people can return to the downtown, the investment will follow the business and bring back the property boom. The institutional fix helps capital surpass the market threshold because the main intention of non-economic elements is for decoration.

We can further observe the property-led feature through the practice. We have mentioned that, according to the 'URS Promotion Plan', URS is a temporary use for vacant public/private property (URO, 2010). The aim of historical revitalization is not for preservation, but for utilization until the economic threshold is matured. If the timing for reconstruction approaches, the revitalization will be terminated. For example, URS 13, Nangang Capsule Factory, had ever been a Japanese private factory in the colonial era and taken over by a state-owned enterprise, Taiwan Tobacco and Liquor Corporation after 1945. Now it is owned by the National Property Administration, Ministry of Finance. Since 2010, it had ever been one of the eight URSs and introduced several activities such as parking lot, open space, creative studio, pop-music center, and recreation and exhibition places. In 2013, URS13 has been terminated and will be demolished in order to meet the development project of Nangang High-Speed Railway Station. Even if the local residents and several cultural groups resisted the decision, the National Property Administration still insisted on the redevelopment for large-scale railway station because the land resale to fulfill the state treasury is more appealing. It is not difficult to understand the mechanism of URS to support the property-led regeneration even if URS indeed help revitalize the dilapidated areas.

Hong Kong: the neoliberal city ruled by property state

As a quasi city-state, Hong Kong relies on the constrained land resources for its development. The natural condition forces Hong Kong Government to concern about land supply and property market. For operating the êntrepot, Hong Kong Government is the proponent of free market and behaves well in the manner of 'positive non-interventionism[3]'. However, the spirit of laissez faire is placed on most policy spheres but not land development. Because the land ownership of entire territory belongs to the government, land-leasing has been an important fiscal tool to earn government revenue while 'high land price' the mechanism to select the bidder willing to pay the highest price, the best revenue claimed from leasing (Schiffer, 1991). The condition contributes to the oligopolistic structure of property sector because only few large-sized developers can afford to the price for bidding. Haila (2000) names Hong Kong as a 'property state' to express the close connection between its economic foundation and property sector. Similarly some scholars call the phenomena the rise of property hegemony (Poon, 2011) or urban growth machine (Lee, 2007). In Hong Kong, these comments reveal that land stands for the power because these property tycoons possess the power to influence urban policy.

The pro-business ideology is further strengthened by the colonial legacy – executive-led government, which has the arbitrariness to dominate the agenda of urban governance. Running around the 'minimal intervention but maximal support' principle, urban planning in Hong Kong never contradicts to 'positive non-interventionism', but makes effort to create pro-business

[3] 'Positive non-interventionism' is the central philosophy of Hong Kong Government in the postwar period. In brief, the concept, by Sir Phillip Haddon-Cave, the Financial Secretary of Hong Kong Government in 1980, means that 'positive non-interventionism involves taking the view that it is normally futile and damaging to the growth rate of an economy, particularly an open economy, for the Government to attempt to plan the allocation of resources available to the private sector and to frustrate the operation of market forces, no matter how uncomfortable may be their short term consequences' (Yam, 1998). Yam, J. (1998) 'Intervention true to guiding policy', *South China Morning Post*, 28 August.

environment for capital accumulation (Ng and Cook, 1997). During the 1950s-70s, Hong Kong experienced rapid outward development from Victoria Harbor to New Territory. Like Taiwan, Hong Kong also encountered the population pressure owing to the huge amount of refugees from Mainland China. Many squatters mushroomed in downtown across Victoria Harbor and spread along the urban fringes. However, Hong Kong had entered its mode of export-oriented industrialization since 1950s. In order to meet the industrial and housing demands, new town planning was introduced from the Britain and New Territory has been orderly developed (Bristow, 1989).

Since 1970s, Hong Kong Government has started to enforce urban renewal projects as the downtown fell into decay but the financial burden was the constrain (Drakakis-Smith, 1981). Soon globalization and deindustrialization have affected Hong Kong's manufacturing economy since 1980s and forced the government focused the redevelopment of harbor area. In 1988, the government established the Land Development Corporation (LDC) responsible for the promotion of urban renewal, an imitation from the experience of Urban Development Corporation (UDC) in UK.

LDC had ever been labeled as an initiative based on the spirit of PPP and entrusted with accountability to realize comprehensive community improvement and effective renewal procedure (Yeh, 1990). However, it had not achieved expected performance before its abrogation in 1999. Although LDC was a government-funded agency, it did not have the legal right to active claim land resumption in the dilapidated area because lack of legal power to actively claim land and sufficient financial resources for agency operation hindered its policy effectiveness (Adams and Hastings, 2001). Besides, LDC faced the long time of negotiation for land assembly and high reliance on the cooperation with private developers for required funding. In 2001, Urban Renewal Authority (URA) was established to supersede LDC.

Like LDC, URA, is a government-funded agency designed to implement the business of urban renewal but it enjoys extended power to play role of (A) an 'implementer' to initiate a redevelopment project on its own or respond to a joint approach from building owners to initiate redevelopment of their lot(s)/building(s); or (B) a 'facilitator' to provide assistance to owners as consultant to help them assemble titles for owner-initiated redevelopment (URA, 2011: 7). Based on the PPP principle, the property-led attribute in the renewal process has actually been furthered. Ng (2002) has indicated that the most serious question is the connection between pro-business climate and the property-led renewal strategy. The involvement of private developers has been broadened because URA can choose to redevelop the resumed land by itself, redevelop through joint-venture with private developers, or sell the land to private developers. The economic viability of property market is the major consideration of URA although it has claimed the importance of public interest, sustainable development, cultural heritage, and community participation under the slogans such as 'people-first', 'district-based', and 'public participatory' (URA, 2011: 4).

Compared to the urban renewal of Taipei, that in Hong Kong appears to have more systematic institutions and agency to operate the partnering framework. However, the speculative atmosphere of property hegemony has also made renewal disputable. The most significant impact on the dilapidated community is the socio-spatial displacement of neighborhood or social activities (e.g. gentrification). As its operation principle is to 'exercise due care and diligence in handling its finances and to be self-financing in long run[4]', so URA must be run for profit-making

[4] URA, (2014) About URA, viewed 31 July, http://www.ura.org.hk/en/about-ura.aspx.

increased property price. Due to the expected increase of property price of completed project, original owners and tenants will be difficult to purchase the properties in the same area. The only way they can chose is to move out to the suburban because of the cheaper living cost. Even if URA has proposed the broader, more integrated, and more sustainable concept of urban regeneration in the name of '4Rs strategies' – including redevelopment, rehabilitation, heritage preservation, and revitalization, it is hardly to get rid of the property-led image.

Revitalization of industrial building in Hong Kong – the state project full of investment consideration, Hong Kong has been experiencing de-industrialization since 1980s with many of its manufacturing industries relocated to Mainland China and other areas. Since 1990s, the Hong Kong Government has gradually eased the institutional regulations for more flexibility in using industrial buildings, such as the "Industrial-Office (I/O) Redevelopments" since 1989, rezoning some industrial land and introducing Other Specified Use annotated "Business" *OU(B)+ since 2000. In 2009 Policy Address, a new package of revitalization measures was announced and was put into practice in 2010[5]. These new measures mainly include lowering the ownership threshold for redevelopment, allowing tailor-made lease modifications, giving owners the option to pay the land premium in installments for five years and waiving the land premiums for conversion upon satisfaction of certain conditions[6]. Basically, economic incentives are provided to encourage the private sector to revitalize old industrial buildings in Hong Kong, either through redevelopment or wholesale conversion.

Kowloon East in Hong Kong is consisted of Kwun Tong, Kowloon Bay Business Area and the former Kai Tak Airport. It is an old industrial area where a large amount of industrial buildings are located in. De-industrialization of Hong Kong urged revitalization of industrial space and economic activity in this area. Two years after the announcement of Hong Kong's new package of revitalization measures, "Energizing Kowloon East" scheme — a place-specific development concept plan is announced by the Chief Executive in 2011 Policy Address. The aim to facilitate and accelerate the transformation of this area into another premier CBD of Hong Kong—the "CBD2" vision to support Hong Kong's economic development and to strengthen Hong Kong's global competitiveness. According to the Government, the project includes land use review and revision, urban design, improved connectivity and associated infrastructure. Revitalization of industrial buildings in Kowloon East not only reflects on the 2010 new package of revitalization policy, but also the "Energizing Kowloon East" scheme by the Government since 2011. Thus, it may serve as an ideal candidate for case study to investigate recent progress of Hong Kong's urban regeneration, as well as the emerging institutional fix.

For the revitalization of industrial buildings in Kowloon East, vibrant non-economic elements are included, such as environmental, socio-cultural elements and more room for public participation. In the "Energizing Kowloon East" scheme, there are more such "green" elements. Stated by the Government, Kowloon East will be promoted as "a green community with low carbon building design". Most of the industrial buildings in this area are private-owned. Except Kai Tak, Government land for development is limited. The Government has developed several "Green Buildings", which form a few "Green Check Points" in Kowloon East. Among them, the Energizing Kowloon East Temporary Office built underneath the Kwun Tong Bypass by using recycled freight containers and other materials is a typical example (Figure 1). It is the first low carbon temporary office not only in Kowloon East but also in Hong Kong. Another example is the Zero Carbon Building (ZCB)— the first zero carbon building in Hong Kong to showcase the "state-

5. 'Optimising the Use of Industrial Buildings', Development Bureau HKSAR, accessed Aug 9, 2014, http://www.devb.gov.hk/industrialbuildings/eng/home/index.html
6. 'Optimising the Use of Industrial Buildings'

of-the-art eco-building design and technologies". Others include an Environmentally Friendly Linkage System—an elevated 9-kilometre, 12-station monorail system to enhance connectivity of the area, "Playful Thursday@Tsun Yip Street – Veggie | Arts Jamboree"—an organic products and home-made craft products market organized on Thursdays, and so on. What is more, the Government is considering specifying in the lease conditions new requirements of achieving Gold or above rating under BEAM Plus for private redevelopment. Based on all these, the concept of "environmental friendly" and "green" is mentioned repeatedly brand Energizing Kowloon East.



Fig.3: Energizing Kowloon East Office (EKEO) — the first low carbon temporary office in Hong Kong
Source: authors

Several endeavors as the institutional fix have been poured into the planning area. Social and cultural elements are included in revitalization of industrial buildings in Kowloon East. Every industrial building in Kowloon East is carrier of the history and regional culture. They have witnessed industrial fading in Hong Kong and currently they function as nurturing ground of Hong Kong's arts and cultural industrials. EKEO commissioned a study on "Industrial Heritage of Kowloon East and Its Potential for Public Art and Urban Design" to integrate industrial heritage of this area into design in its landscape improvement and place-making through urban design guidelines and public art. A "Kowloon East Cultural Map" is finished, and the Kwun Tong Promenade Stage 1— an important part of the EKEO scheme, is designed with imprints of recycled paper industry—the industry used part of the seafront as loading and unloading area. Today, there are many artists working and even living in these industrial buildings in Kowloon East. Taking this into account, as well as providing more public space, the Government initiated a "Fly the Flyover Operation" emphasizing on creativity, arts and culture to open up lands underneath the Kwun Tong Bypass and turn it into a venue for the public to organize arts and sports activities. However, this still has led to strong oppositions of local artists for aversion to discipline. Besides, to alleviate contestation of the community, more room is provided for public participation than before through regular place making workshops and public forums with certain groups, as well as "Kai Tak Fantasy"—an international idea competition on urban planning and design for a certain part of the Kowloon East.

Although there are various extra-economic elements, revitalization of industrial buildings in Kowloon East is still property-led regeneration following growth first's logic. Either for the 2010 new revitalization measures or the Energizing Kowloon East scheme, the Government is playing an inducing role, providing incentives to attract private capital in revitalization. The Government initiatives of the 2010 new revitalization measures are to achieve land value upgrade of industrial buildings. In the Energizing Kowloon East scheme, this point is stated more clearly—the target is to transform Kowloon East into "another premier CBD of Hong Kong", providing quality office to meet the demand of "regional headquarters and regional offices of multi-

national companies setting their foot in Hong Kong" 7. The Energizing Kowloon East scheme is also for land value upgrade but at a larger geographical scale. The logic behind is to achieve upgrade of both built environment and economic activity through property-led revitalization to attract more global inward capital for local employment and wealth creation. The capital accumulation logic behind is unchanged. Mainly relying on individual or developer's decision in the market, profit pursuing in revitalization is an evitable outcomes. By calculating application cases of industrial buildings' revitalization in Kowloon East, most of them are being revitalized into offices, shops and services, and hotels for more profits. The extra-economic elements introduced did help in enlarging the niche of property market through providing expectation of future prosperity and future price increases. Undeniable, these elements did also help to alleviate inner contestations. Yet, the inner conflicts remain unchanged. Short-term speculation of industrial buildings by individual and developers transpired in the market, driving up the price dramatically, bringing in an extremely high financial threshold as new hinder of revitalization. That reflects the structured conflicts between government intervention and market response. In addition, spatial displacement still transpires in Kowloon East, like that happens in many other areas. Local artists, small business and urban poor as original users of industrial buildings are gradually driven out from this area. Such gentrification makes grassroots' oppositions remain unsolved. In revitalization of industrial buildings in Hong Kong's Kowloon East, it is to revitalize the space, not the social-economic activity of the same community.

The revitalization policy in Kowloon East continues easing institutional constraints for allowing more flexibility in using industrial buildings. Moreover, it represents a more integrated regeneration approach by the Government. One is the introduction of more extra-economic elements including environmental and social-cultural concerns in regeneration policy to alleviate inner contestation as discussed above. Urban regeneration can also be seen in four major types including property-led, cultural-led, tourism-led and industry-led. Thus, reflected by Kowloon East, it is found that the Government is also adopting a more integrated urban regeneration approach integrating property-led, culture-led, tourism-led and industry-led. Yet essentially, revitalization of industrial buildings in Kowloon East reflects the Government's strategic speculative regeneration through property-led approach following growth first's logic. Although the introduction of extra-economic elements may help in enlarging the niche of property market for more added value of property-led regeneration, it is not able to solve the internal conflicts of urban entrepreneurial governance.

Conclusion

Cuthbert (1984) had ever argue that the non-economic values such as cultural, social, or historical element are always vulnerable in the context of capitalist cities because the logic of capital accumulation is based on the process of creative destruction of built environment. However, the paper, after exploring the experiences of historical revitalization in Taipei and Hong Kong, indicates that non-economic elements may be possibly transformed to improve the condition of property reinvestment. The case of both cities also reveals that even if Taiwan and Hong Kong experienced different developmental pathways toward neoliberalism, their approaches to implement property-led regeneration still show the similar phenomenon – establishing pro-business climate decorated by historical revitalization. Of course, there are still differences between both cases. URS in Taipei tries to create several revitalizing points

7. Background— Hong Kong's CBD2, accessed Aug 9, 2014, http://www.ekeo.gov.hk/en/about_ekeo/background.html

in order to strengthen its network synergy from the points through lines to the entire district. By contrast, RIB in Hong Kong intends to initiate a comprehensive, large-scale project for place-remaking to achieve the collective effectiveness of entire downtown regeneration. The comparison also indicates that neoliberalization is a complicated process and exhibits the similarity and difference. But we should keep in mind that these policy narratives about historical revitalization, combined with several non-economic elements such as environmental, social, cultural, or creative dimensions, are the institutional fix to alleviate the internal contestation of property-led regeneration. The projects may still be possible to exacerbate the situation of property speculation and cannot stop the tendency of creative destruction in the built environment even if the narratives are often non-economic.

Reference

Acuto, M. (2010) 'High-rise Dubai urban entrepreneurialism and the technology of symbolic power', Cities, Vol. 27, pp. 272-284.

Adams, D., and Hastings, E. M. (2001) 'Urban renewal in Hong Kong: transition from development corporation to renewal authority', *Land Use Policy*, Vol. 18, pp. 245-258.

Brenner, N. and Theodore, N. (2002) 'Cities and geographies of 'actually existing neoliberalism'', in *Spaces of Neoliberalism: Urban Restructuring in North America and Western Europe*, 1st edn, London: Blackwell, pp. 197-215.

Bristow, R. (1989) *Hong Kong's new town: a selective review*, 1st edn, Hong Kong: Oxford University Press.

CEDP (1996) *The Territorial Spatial Development Strategic Planning*, 1st edn, Taipei: CEDP. (in Chinese).

Chen, Y. L. (2005) 'Provision for collective consumption: housing production under neoliberalism', in *Globalizing Taipei: the political economy of spatial development*, 1st edn, NY: Routledge, pp. 99-119

Cochrane, A. (2007) *Understanding urban policy: a critical approach*, 1st edn, Malden: Blackwell.

Chou, T. L. (1998) 'Crisis and dysfunction of spatial development and management in Taiwan', *Environment and Planning C: Government and Policy*, Vol. 16, pp. 69-84.

Chou, T. L. (1999) 'Institutional crisis and restructuring in Taiwan's planning Paradigm', *Third World Planning Review*, Vol. 21, No. 2, pp. 177-191.

Chou, T. L. (2005) 'The transformation of spatial structure: from a monocentric to a polycentric city', in *Globalizing Taipei: the political economy of spatial development*, NY: Routledge, pp. 55-77.

Cuthbert, A. R. (1984) 'Conservation and Capital Accumulation in Hong Kong', *Third World Planning Review*, Vol. 6, No. 1, pp. 95-115.

Development Bureau HKSAR (2010) Optimising the Use of Industrial Buildings, viewed 9 August 2014, http://www.devb.gov.hk/industrialbuildings/eng/home/index.html

Development Bureau HKSAR (2012) Background— Hong Kong's CBD2, viewed 9 August 2014, http://www.ekeo.gov.hk/en/about_ekeo/background.html

Drakakis-Smith, D. (1981) *Urbanisation, housing and the development process*, London: Croom Helm Ltd.

Douglass, M. (1994) 'The 'developmental state' and the newly industrialized economies of Asia', *Environment and Planning A*, Vol. 6, pp. 543-566.

Fitzgerald, J. & Leigh, N. G. (2002) *Economic revitalization: cases and strategies for city and suburb*, 1st edn, London: Sage.

Grimsey, D. & Lewis, M. K. (2004) *Public private partnerships: the worldwide revolution in infrastructure provision and project finance*, 1st edn, Cheltenham: Edward Elgar.

Hackworth, J. (2007) *The neoliberal city: governance, ideology, and development in American urbanism*, 1st edn, Ithaca: Cornell University Press.

Hackworth, J. & Smith, N. (2001) The changing state of gentrification, *Tijdschrift voor Economische en Sociale Geographie*, Vol. 22, pp. 464-477.

Haila, A. (2000) 'Real estate in global cities: Singapore and Hong Kong as property states', *Urban Studies*, Vol. 37, No. 12, pp. 2241-2256.

Hall, T. & Hubbard, P. (1996) 'The entrepreneurial city: new urban politics, new urban geographies?', *Progress in Human Geography*, Vol. 20, No. 2, pp. 153-174.

Harvey, D. (1978) 'The urban process under capitalism: a framework for analysis', *International Journal of Urban and Regional Research*, Vol. 2, pp. 101-131.

Harvey, D. (1989) 'From managerialism to entrepreneurialism: the transformation in urban governance in late capitalism', *Geografiska Annaler*, Vol. 71B, No. 1, pp. 3-17.

Harvey, D. (2006) 'Neo-liberalism as creative destruction', *Geografiska Annaler*, Vol. 88B, No.2, pp. 145-158.

Healey, P. (1992) 'Urban regeneration and the development industry', in *Rebuilding the City: Property-led Urban Regeneration*, 1st edn, London: E & F N Spon, pp.14-35.

Hills, R. C., Park, B. G. & Saito, A. (2012) 'Introduction: locating neoliberalism in East Asia', in *Locating neoliberalism in East Asia: neoliberalizing spaces in developmental states*, 1st edn, Chichester: Wiley-Blackwell.

Hsu, J. Y. & Hsu, Y. H. (2013) 'State transformation, policy learning, and exclusive displacement in the process of urban redevelopment in Taiwan', *Urban Geography*, Vol. 34, No. 5, pp.677-698.

Jou, S. C. (1999) 'Rebuilding the old Taipei: an analysis of urban renewal policy', *Journal of Geographical Science*, Vol. 25, pp. 15-44. (in Chinese)

Jou, S. C. (2005) 'Domestic politics in urban image creation: Xinyi as the 'Manhattan of Taipei'', in Globalizing Taipei: the political economy of spatial development, 1st edn, New York: Routledge, pp. 120-140.

Lee, J. (2007) 'Urban Policy', in Contemporary Hong Kong politics: governance in the post-1997 era, 1st edn, Hong Kong: Hong Kong University Press, pp. 223-242.

MacLaran, A. (2003) 'Master of space: the property development sector', in *Making space: property development and urban planning*, 1st edn, London: Arnold, pp. 7-62.

Olds, K. (2001) *Globalization and urban change: capital, culture, and Pacific Rim mega-projects*, 1st edn, Oxford: Oxford University Press.

Ng., M., K. (2002) 'Property-led urban renewal in Hong Kong: any place for the community?', *Sustainable Development*, Vol. 10, pp. 140-146.

Ng, M. K. & Cook, A. (1999) 'Reclamation: an urban development strategy under fire', *Land Use Policy*, Vol. 14, No.1, pp. 5-23.

Peck, J. & Tickell, A. (1994) 'Searching for a new institutional fix: the after-Fordist crisis and the global-local disorder', in *Post-Fordism: A Reader*, 1st edn, Oxford: Blackwell, pp. 280-315.

Peck, J. & Tickell, A. (2002) Neoliberalizing space, *Antipode*, Vol. 34, pp. 380-404.

Poon, A. (2011) *Land and the ruling vlass in Hong Kong*, 2nd Edition, Singapore: Enrich Professional Publishing.

Roberts, P. (2000) 'The evolution, definition and purpose of urban regeneration', in *Urban regeneration: a handbook*, 1st edn, London: SAGE, pp. 9-36.

Schiffer, J. (1991) 'State policy and economic growth: a note on the Hong Kong model', *International Journal of Urban and Regional Research*, Vol. 15, No. 2, pp. 180-196.

Smith, N. (1996) *The new urban frontier: gentrification and the revanchist city*, 1st edn, London:

Routledge.Smith, N. (2006) 'Gentrification generalized: from local anomaly to 'urban regeneration as global urban strategy', in *Frontiers of capital: ethnographic reflections on the new economy*, 1st edn, Durham: Duke University Press, pp. 191-208.

Wang, C. H. (2003). 'Taipei as a global city: a theoretical and empirical examination', *Urban Studies*, Vol. 40, No. 2, pp. 309-334.

URA (2011) *Urban renewal strategy*, Hong Kong: URA.

URA, (2014) *About URA*, viewed 31 July 2014, http://www.ura.org.hk/en/about-ura.aspx.

URO (2010) *URS promotion plan*, Taipei: URO.

URO (2012) *Action plan for URS partners*, Taipei: URO.

URO (2014) *The index for promoting URS*, Taipei: URO.

Wang, J. H. (2004) 'World city formation, geopolitics and local political process: Taipei's ambiguous development', *International Journal of Urban and Regional Research*, Vol. 28, No. 2, pp. 384-400.

Yam, J. (1998) 'Intervention true to guiding policy', *South China Morning Post,* 28 August.

Yeh, A. G. O., (1990) 'Public and private partnership in urban redevelopment in Hong Kong', *Third World Planning Review*, Vol. 12, No. 4, pp. 361-383.

Collaborative Facilities Management in Urban Regeneration Projects: Problems and Potentials

Nilmini Weerasinghe[*], **Yasangika Sandanayake** Department of Building Economics, University of Moratuwa, Sri Lanka
Prathibhani Bandusena
Department of Town and Country Planning, University of Moratuwa, Sri Lanka

Abstract

Urban areas are now being regenerated in great extremes to match with the local and global demand in Sri Lanka. Upgrading infrastructures, land and buildings are highly pressurized in urban regeneration projects given that it is critical to the economic, social, environmental, and cultural well-being of a country. However, there is a question of the sustenance of urban regeneration projects due to limited public funds and other resources. Collaborations between authorities responsible for urban development & maintenance and the private/public sector organisations in facilities management could be a solution for the above issues in Sri Lankan context, which has not been articulated yet. This study therefore aims to investigate the applicability of collaborative approach as a solution to stimulate the participation of private and public sector organisations in terms of facilities management in the regeneration project. The aforementioned aim was achieved through the literature review and case study methodology. Beira Lake Urban Regeneration Project (Phase I & II) was selected as the case study to determine the applicability of collaborative Facilities Management concept to Sri Lankan context. Observation and semi-structured interviews were carried out with the executives who are in responsible for urban development & maintenance and public/private sector organisations in the regenerating area. Case study revealed that the collaboration between Public Authorities (Urban Development Authority & Municipal Council) and private organisations in urban regenerations would uplift the value of physical environment and infrastructures of inner city. Further, Public Authorities can allow private organisations to use car park, recreation facilities, open spaces, and other developments with the agreement of maintaining and developing above facilities. On the other hand, private organisations would fulfill organisational requirements while contributing to corporate social responsibilities. It can be concluded that both Public authorities and private organisations can mutually benefit from the collaborative FM in urban regeneration projects.

Key words: Urban, Collaboration, Facilities Management

[*]Corresponding Author: Nilmini Weerasinghe e-mail : nilminiweerasinghe@ymail.com

Introduction

Urban regeneration is a way of reorganizing and upgrading existing built environment to revitalize urban life in modern society. The Governments which are responsible for urban lives, place a strong emphasis on regenerating or modernizing cities by initiating innovative methods and approaches. The development of urban facilities including recreation, parks, infrastructure, and other physical environment has mainly focused in urban regeneration context to upgrade the living standard of the urban life. Although, cities get tremendous opportunities for economic and social development through urban regeneration, unprecedented challenges of growth and management have led to a rapid deterioration in a quality of life of their citizens. Dwindling public finance, inadequate top down conventional urban planning and development and lack of services, became apparent in deteriorating urban fabric (Ogu, 2000). Further, enormous challenges and the difficulties of urban life are magnified when the public sector is weak (Glaeser, & Joshi-Ghani, 2013). In addition, ever increasing management and maintenance costs have a great impact on public assets and facilities. This situation has led to public criticism for the services provided by the government (Sani, Mohammeda, Misnanb & Awanga, 2012).

Therefore, organisations, such as local authorities, who are responsible for a large number of public facilities, need solutions to manage built environment and to invest their limited resources in most beneficial improvements (Jones, Patterson & Lannon, 2007). Hammami, Ruhashyankiko, and Yehoue (2006) suggested the collaboration of private sector organisation with local authorities and government as a solution for management and development in urban facilities. Thus, Private Public Partnership (PPP) is used as a common strategy in countries where governments increasingly consider PPP as an alternative or complementary way to finance complex infrastructure projects (Hammami, Ruhashyankiko, & Yehoue, 2006). Although PPP supports at the initial stage of redevelopment or construction, maintenance and management of urban facilities for remaining life has become critical for the responsible authorities. Organisations' contribution towards management of urban facilities would be a realistic solution for the above criticism. In fact, in cities throughout the world, private firms have demonstrated their ability to improve the operation of infrastructure services (Kumar & Prasad, 2004). Even though, this concept would be viable for both parties, this phenomenon is not well established among researchers as well as practitioners.

Therefore, this paper aims to investigate the possibility of private sector Facilities Managers' participation for the management of urban facilities in Sri Lankan urban regeneration context. Further, this paper highlights the possible urban facilities and its Facilities Management (FM) functions that can be shared between private organisations and public authorities responsible for urban development & maintenance (Urban Development Authority (UDA) & Municipal Council). The paper structure begins with a review of literature on urban regeneration, urban facilities and collaborative Facilities Management in urban context. The next section presents the research methodology followed by case study findings in section 4. The paper finally presents discussions and conclusions of the study.

Literature Review

Urban Facilities in Urban Regeneration Projects

Cities are physical entities including governmental units and people (Glaeser, & Joshi-Ghani, 2013). The neighborhoods, communities, and in fact urban areas are sub-sets of the city. With

the rapid growth of cities, the number of facilities needed for urban life has increased, and the functions and structures of these facilities have become more complex (Lee, Jeong, Seuk Oh, Lee, Ahn, & Lee, Yoon, 2013). Hence, urban regeneration strategies are increasingly being applied in every city.

Urban regeneration is defined as the comprehensive and integrated vision and action, which leads to the resolution of urban problems and seeks to bring about a lasting improvement in the economic, physical, social, and environmental condition of an area that has been subject to change (Roberts & Sykes, 2000). Urban regeneration is not a single or individual aspect but it includes all the aspects and community. Urban regeneration involves the distressed urban areas revitalization through actions such as rehabilitation of historic areas, improvement of living conditions in residential districts, redevelopment of public spaces such as squares parks, urban furniture green areas creation, planting trees along the sidewalks and modernization of urban infrastructure such as water networks, gas, electricity, transport infrastructure (Alpopi & Manole, 2013).

Urban regeneration has become a means of transforming deteriorated areas but with a unique approach to be applied in every city and every location with the same rules and policies in Turkey (Guzey, 2008). According to Alpopi and Manole (2013), in countries such as Greece and Portugal, have created a new thinking and are approaching model in the urban development field. In Irish capital, Dublin, urban regeneration projects have been initiated, primarily due to inadequate design of buildings, poor management of buildings, poor noise insulation, heat and hydro. The UK Government has attempted to tackle the physical, social and economic consequences of these changes through a variety of mechanisms and policy initiatives in urban regeneration context (McDonald, Malys & Malienė, 2009). Therefore, modes of urban regeneration have varied from city to city and nation to nation, but the ultimate aim, which is to improve the quality of urban life and to enhance the urban image, has turn into common in every situation. In addition, it is witnessed that urban regeneration concerns a broad scale of activities. The concept propounds to social well being to physical development, public space, infrastructure, and all the aspects to regain cities with economical, social, physical and environmental wealth. Redevelopment and management of urban built facilities have given considerable interest in urban regeneration projects, given that it is essential to enrich urban lives and image. Therefore, this paper hereinafter discusses the urban facilities in urban regeneration context.

Urban facilities can be divided into public and private facilities in terms of the type and usage of a facility, but the personnel in charge of information generation and management can be further differentiated depending on the phase of the facility life cycle. For public facilities, central or local government agencies are in charge of management, however, private firms commonly execute the design and construction (Lee, Jeong, Seuk Oh, Lee, Ahn, & Lee, Yoon, 2013). According to the service/impact range, urban public facilities are subdivided into three levels: municipality, community and neighbourhood.

Local Government Authorities' main objective of building is to balance the requirements of maintaining and preserving public assets while providing appropriate and high quality services, which meet the needs of the community (Brackertz, 2006). Some municipalities are efficiently managing and maintaining the public facilities, despite their financial constraints (Yi & Komatsu, 2010). But, many public assets and government-owned facilities are not well maintained and are in poor condition. It is contended that the maintenance of community facilities is a critical issue

for Facilities Management, emphasized through the problems raised by many local councils in running facilities operations and their associated services due to the increase of ongoing costs each year (Alexander & Brown, 2006; Tobi, Amaratunga, & Noor, 2013). Therefore, local authorities and other responsible government authorities faced difficulties in managing urban facilities. Motivation of private firms in managing these facilities becomes key elements for local authorities to execute the functionality of such facilities with high standards. In this scenario, Facilities Managers in private firms would play a vital role performing FM functions in urban facilities through private public sharing agreements. The following section presents such agreement in urban regeneration contexts.

Collaborative Facilities Management in Urban Facilities

Facilities Management may find inspiration trends in urban planning, and consider the urban context as a part of its facilities in order to facilitate creative environments (Larsen, Elle, Hoffmann, & Munthe-Kaas, 2011). Barrett and Baldry (2003) defined Facilities Management as an integrated approach of maintaining, improving, and adapting the buildings of an organisation in order to create an environment that strongly supports the primary objectives of the organisation. In general, FM focuses on individual building scale rather than urban context (Krkljes, Kubet, & Hiel, 2009). However, Kasim and Hudson, (2006) highlighted that future direction of FM might explore the changing priorities, potential scope, future functions, and impact of FM in providing services to support the local community needs and economy. Therefore, understanding of FM leverage should be extended beyond the impact on individual organisations and buildings, to recognise the full contribution that facilities make to the local economy and community (Alexander & Brown, 2006).

Study found several concepts and practical scenarios relevant to the management of urban facilities through the collaboration of private and public Facilities Mangers in urban regeneration contexts. Following section addresses these scenarios. Urban FM, community based FM, community enterprise organisations and other collaborative urban projects demonstrated the private firm involvement in urban facilities.

The concept of urban FM is an emerging concept in finding new and innovative ways to manage urban facilities and community assets (Tobi, Amaratunga, & Noor, 2013). Robert (2004) defined urban FM as a logical extension of the need to reinvest in community facilities and systems, and provide a flexible platform, in which agencies and private sector can come together in a new and innovative setting for the benefit of the community. According to the author, urban FM provides following advantages:

- The introduction of the techniques of business management, in particular efficiency improvement to public services;
- The introduction of market mechanisms and competition into public life; and
- A greater service and customer orientation within public services

Tobi, Amaratunga, and Noor (2013) mentioned that social enterprise principles and their relationships could be achieved within an urban FM setting. A social enterprise is a business that trades primarily to achieve social aims, while making a profit. Social aims might include job creation, training, and provision of local services (Alexander, 2008). The concept of urban FM and social enterprise could be applied to better management of community facilities that integrate organisational support services and the community support services (Kasim & Hudson, 2006; Tobi, Amaratunga, & Noor, 2013). For example, the Disney Corporation following the

principles of new urban design developed town of Celebration in Florida. The management of community services used best practice approaches in cleaning, waste disposal and the management of public areas. Privately managed urban environment resulted delivering a better public service in terms of both quality and cost while adding more indirect benefits such as appreciation of asset value in these areas (Robert, 2004).

Moreover Alexander and Brown, (2006) mentioned that the community based FM (CBFM) that involves the management of facilities and the delivery of services to reflect the community and environment in which firms reside and operate. Author defined CBFM as the process by which all the stakeholders in a community work together, to plan, deliver and maintain an enabling environment, within which the local economy can prosper, quality services can be delivered, and natural resources protected, in order that citizens can enjoy a quality life. This involves major shift of direction as:

- Organisation to community;
- Workplace to neighbourhood;
- Business service to community resource; and
- Advocate of the user to advocate of the citizen.

Community enterprise organisation is also a similar concept which emerge from local communities at the neighbourhood level, work in partnership with the public and private sectors, and provide a range of services to meet social, economic and environmental needs (Bailey, 2012). These organisations acquire assets of land and buildings in order to develop their local communities in UK and USA. According to Alexander (2008), community organisations provide opportunity for community groups and local authorities to transform assets like community centers and other buildings into more vibrant and valuable resources for the whole community as longer-term benefits. Well-managed and well-maintained transfer of ownership or management of community assets can be a win-win situation for local councils and local communities. Thake (1995) presented that community enterprises could make a major contribution to community regeneration by forming partnerships between other organisations in the voluntary and community sectors and public sector bodies.

Ogu (2000) reported the sustainable Ibadan Project in Nigeria, which takes a systematic approach to mobilization of a cross section of public and private organisations in Ibadan to plan and manage the urban environment such as waste management and water distribution system. According to the author, government's capacity to invest in such a programme is limited. Hence, private public partnership in investing and managing environmental services ensure sufficient improvement of the urban environment and cognizance of local potentials, circumstances, and problems.

According to Krkljes, Kubet and Hiel (2009), buildings, which are situated directly next to public spaces, have clearly defined interrelationship with surrounding public spaces. Authors further mentioned that interaction between built environment and public space is required to uplift the employee and public life even though it is an isolated built environment. As a result, buildings have clearly improved the built structure of urban blocks and created quality environmental micro-spaces (Krkljes, Kubet, & Hiel, 2009). Therefore managing nearest public space or urban facilities would be a favorable solution to uplift their own building as well.

In private firms', Facilities Mangers have been involved in conducting FM in urban facilities while performing their own role. Although, different scenarios are executed, the ultimate aim, which is

to deliver better services to community while both public and private parties fulfilling their main prerequisites, is well achieved. According to Kumar and Prasad (2004), private sector participation could help to bring technical and managerial expertise, improve operating efficiency, large-scale injection of capital, greater efficiency in using the capital, better responsiveness to consumer needs and satisfaction. The provision of public goods or services through partnerships is based on two different motives. Private firms focus is to earning money through building public goods and delivering services, while governments are concerned with saving money through private participation (Hammami, Ruhashyankiko, & Yehoue, 2006). Accordingly, public sectors can transfer certain risks, and specific private sector and private developers will receive the rewards that are commensurate with the amount of risks to be born.

Concept of collaborative FM

According to the above scenarios, it is clear that individual firms have capacity to collaboratively perform FM role in urban facilities. This concept therefore would convey synergy for both private and public sector authorities. The private firms use various approaches and methods to accomplish FM functions in different urban facilities. However, these ad hoc practices clearly emphasize the need for detail investigation on this subject area. Further, lack of definition for the approach would also misjudge this concept. Having considered the above scenarios, the *collaborative Facilities Management can be defined as the public and private sector organisations collaboration for the Facilities Management of urban facilities in urban regeneration projects*. This study therefore aims to identify the potential urban facilities that can be collaboratively managed to perform Facilities Management in Sri Lankan urban regeneration contexts.

Urban Regeneration and Urban Facilities Management in Sri Lanka

The country is experiencing a speedy urban regeneration Projects particularly after the end of civil war. Various development projects have been implemented in urban regeneration in Sri Lanka aiming at sustainable urban development and minimizing growing congestion in cities and to improve accessibility for basic urban facilities. The present government is initiating various urban regeneration projects to enhance economic, social, environmental and physical developments in urban life. Mainly, road networks, pedestrian paths, recreational facilities, housing schemes and other social, and welfare facilities are under construction. The government is realizing its potential to embark on the project to restore and develop the area to facilitate public access.

The Urban Development Authority, one of the agencies under the Ministry of Defense and Urban Development, is responsible for the planning and development of urban areas throughout the country. The amendment made to the UDA Law 41 of 1978 made it mandatory for the UDA to prepare Development Plans for all areas declared under Section 3 of UDA law and authorized it to carryout physical development in such areas (UDA, 2009). Local authorities are responsible for providing comfort, convenience, and well being of the community. Presently in Sri Lanka, the local government is operating under three entities namely municipal councils, urban councils and pradeshiya sabha. The functions assigned to all three types of local authorities include:

- Public health and environmental sanitation
- Public thoroughfares
- Public utility service including the provision of civic amenities

Further, Local Authorities are vested with powers to provide;

- Welfare Services
- Educational Services
- Religious and Cultural Services
- Provision of Facilities for Leisure and Entertainment

The extent to which these functions are performed would vary in accordance with their financial and other capabilities (Leitan, 2010).

Beira Lake Restoration, Independence Arcade, and Diyatha Uyana are few of the projects implemented by the UDA. Further, Metro Colombo Urban Development Projects structured to upgrade public facilities within the Colombo. According to Wijewardena (2011), government has not sufficient resources to undertake the infrastructure facilities and therefore choose to get private entrepreneurs to finance those projects under a new economic development model in which the public and private sectors would team up in providing essential infrastructure facilities. Thereby, new models of both private and public sector getting together and initiating large development projects have now been established. One of the main criticisms is that, local authorities are incapable of maintaining above facilities with their limited resources. Hence, the above partnerships can extend to FM phase of the built environment as a mean to uplift the quality of the urban facilities.

Methodology

A comprehensive literature review was carried out using journals, conference proceedings, and books to investigate the private and public collaboration for Facilities Management in urban facilities. When considering the aim and the nature of the research study, it was obvious that this study needs holistic and in depth investigation into these collaborative FM approach for urban facilities in Sri Lankan urban regeneration context. Yin (2003) mentioned that case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident. Having considered the exploratory nature of the study, a single case study is selected to explore the research aim. Further case study involves the study of a phenomenon in its real-life context (Yin, 2003) and incorporates the views of participants in the case under study. Therefore, study selected one of the urban regeneration projects in Sri Lanka that involves private and public collaboration ad hoc manner for Facilities Management in urban facilities. The selected case study was “Beira Lake project” which is an urban regeneration project developed by the UDA. Project Coordinator, Firms’ Facilities Managers and responsible parties for urban facilities were interviewed to collect realistic information. Following section presents the findings, analysis of collected data and discussion.

Discussion

Introduction to the Beira Lake Urban Regeneration Project

After end of civil war, Sri Lankan government is initiating urban regeneration projects aiming to uplift society. The study selected one of the urban regeneration projects; “Beira Lake” in Colombo area which exist several informal collaborations as well as potentials for the above phenomena. The Beira Lake originally spreads around 165 hectares of land in the city was created by the Portuguese in 1521 to protect their Fort from the locals. Later the lake was used for economic purposes by the British and now the lake covers about 65 hectares. However, the

government is realizing that it has potential to restore the lake and develop the area to facilitate public access. The project was designed with two phases. Phase I (West Beira) had already been implemented. Phase II of the project has been started by the UDA under the Metro Colombo Urban Development Project. Figure 1 presents the regenerating area of phases I and II.

The Table 01 presents the objectives of Beira Lake Project.

Table 1: Objectives of Beira Lake Project

Plan	Objectives
Water Management	• Dredging of Sediment/Sediment treatment • Cleaning of Water • Disconnect the Waste Water Outlets • Monitoring Water Quality
Environment Improvement	• Dredging of the lakes • Development of linear parks and nodal parks • Development of a scenic drive
Business	• Relocation of existing inappropriate uses to suitable locations • Construction of a new road over the Lake • Redevelopment of lands for more productive uses, such as offices, apartments, banks, commercial establishments, etc

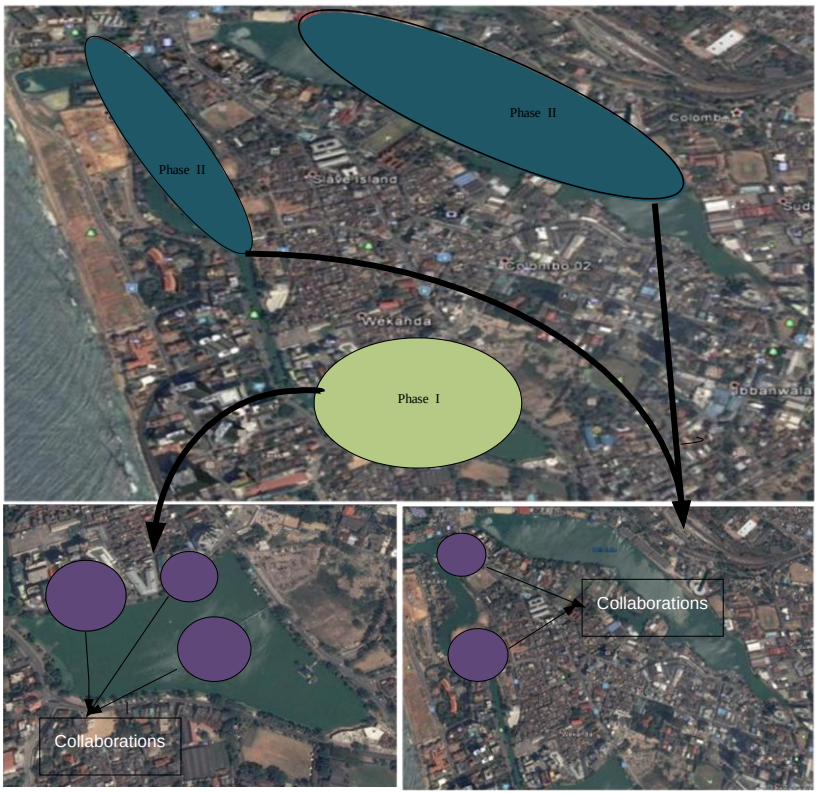


Fig. 01: Beira Lake Urban regeneration Project Phase I and II

Project is targeted to develop following areas;

- Redeveloping Beira lake,
- Linear parks along the Beira Lake with a width of six meters,
- Jogging track around the lake,
- Model parks in several places along the Beira Lake for public use,
- Housing units with more facilities in the condominium housing schemes, and
- Relocating warehouses and garages

Urban Facilities

The selected project area is inclined with office complexes, residential area, super markets, and road and railway networks. Government has provided various new and modernised urban facilities in this area through the urban regeneration project as means to enrich the urban environment. Car parks, recreation facilities, linear parks are some of the added urban facilities. As usual, responsible agencies are facilitating utilities such as electricity, water distribution, and other functions including sewerage distribution, waste collection in this area. UDA is responsible for planning and development of the urban assets. Management and maintenance of the urban facilities is also a responsibility of line agencies and municipal council. Private and public organisations are entitled in maintaining their own premises while adhering to the government rules and regulations. Figure 1 illustrates the area of Phase I, which has already completed and the area of Phase II, which is implementing presently.

Existing Facilities Management Functions in Urban Facilities

The research focused to investigate the collaborative approaches of individual firms and public authorities (UDA & Municipal Council) to perform FM functions in micro and macro built environments. The individual firm in this paper is considered as any private or public sector organization performs in various businesses. This study observed various interrelationships between entities such as public authority – individual firms, and individual-individual organisations to carry out FM functions. However, study focused on investigating the public authority-individual firm relationships in performing FM function. Interview discussions were held with urban regeneration project coordinators and the professionals who are responsible for managing buildings and premises. The study revealed several scenarios with reference to collaborative FM and these areas are highlighted with circles in Figure 1. In addition, discussion presents in followings sections.

Sharing Facilities/Equipments

One of the organisations is providing equipment and other physical resources to maintain public road located in front of their premises. Municipal Council is responsible for the maintenance of the road network in the particular area. It is discovered that as per the request of the responsible authority for the urban development, individual organisation is providing cleaning resources to the workers who involved in cleaning the roads. According to the respondent, this would support continuous maintenance of the outer perimeter of the building. Further, the organisation has considered this as their one of the corporate social responsibilities. Respondent stated that "*responsible public authority asked us to provide these equipments on monthly or semiannual basis. We decided to provide them, because we really need to keep our front space clean and clear." However, this is an* informal arrangement in sharing resources between organisation and public authority.

Sharing Car Park Facilities

Regeneration project has developed a number of car parking facilities in this area and hence the capacity of public car park facilities has increased. In some cases, it is found that public authorities responsible for urban development & maintenance have informally transferred parking spaces/slots for individual organisations. According to the informal agreements, public also allow to use these car park slots. The car park spaces are located near to the individual organisations and therefore the maintenance of these spaces is performed by those organisations. Space for the vehicle parking is one of the critical issues for any organisation. These informal agreements have minimized the car park issue of the organisations located in surrounding area. Further, some institutions have been paid small amount to the relevant public authority for maintaining purposes.

Shared Maintenance of Front Urban Spaces

Urban regeneration project is planned to implement various urban beautification sub projects to enhance the quality of the land. It is observed that various urban facilities are maintained by the Private organisations. Further to the discussion with the Project Coordinator, it was found that urban regeneration project planned to delegate the maintenance of certain urban facilities such as parks, ponds, and other landscaping areas to private firms. This is designed to implement in Phase II. In addition, some of the firms have agreed to perform both construction and maintenance of urban spaces, which locate close to their premises with formal agreements. This scenario is highlighted in Phase II. However, some of the private firms have already agreed for these arrangements whilst, some have rejected the concept. Delegating maintenance to the individual firms would be a cost effective method for the public authorities and the central government. Further this will benefit to the people who use this facility.

Further, study found that the authorized public institution also has rejected some sharing agreements proposed by the individual firms. Respondent of one private organisation stated that "*we have requested permission to maintain landscaping area located in the middle of the road and it was rejected*". According to the respondent, this area is a suitable place to advertise their organisational products and image. It is also observed that some urban facilities are maintained by the individual firms. Project Coordinator stated that "*we will give authority to maintain public assets to those who are not harming it's end user expectation".* Therefore, it is clear that sharing agreements needs to satisfy the end user expectations instead of individual purposes.

Almost all the Facilities Manager's intention is to provide clean and attractive environment for the organisations. Interview discussion revealed that most of the individual entities are willing to decorate urban spaces to add value to their premises. For example, one of the firms has constructed a public garbage collector bin in front of their building. Therefore, it is apparent that most of the individual firms are dedicated in supporting public authority at their own cost. However, lack of authorities and poor negotiation has acted as barriers for such scenarios.

Open Places for Private Gatherings

Through the observations, it was identified that the regeneration projects have constructed in eye-catching places, which are suitable for the public to spend their leisure time. Specially, wedding ceremonies and other special occasional functions can be arranged in most of these places. It is found that some of the employees who work close to this area are using these places

to celebrate their special occasions such as birthdays, annual get together and family get together. Human Resource Manager in one of the organizations stated that "*our annual get together was held in that place, at a lowest cost and it was convenient for all of us".* In contrast, Facilities Manager in another organisation mentioned that *"we don't use these places as we* have our own auditorium*." Therefore,* this scenario can be interpreted in different angles. Organisations, which do not have sufficient resources, are interested in using public facilities while others use their own facilities. However, it is revealed that using public facilities for private purpose would receive benefits for both parties. It would be an income and service for maintenance authorities, while individual firms fulfill their expectation in a cost effective way.
Similarly, it is found that with the regeneration project, sharing agreements between organisations and authority that is responsible for urban development have been increased. Municipal Council is also expecting to support and cooperate for individual firms to manage and maintain the attractive urban environment. Moreover, individual firms devoted on supporting authorities as to gain several indirect benefits and as a social enterprise. In additions, various reasons entails for organisations and public authorities to integrate different types of FM functions and Infrastructure. However, it is apparent that the current collaborative approaches are happening in ad hoc manner and most of the sharing/partnerships are informal. The systematic, formal, and structured partnerships would create more opportunities or both parties in urban regeneration context.

Potentials for the collaboration

One of the objectives of this study is to identify the potential FM functions and approaches that can be collaboratively performed by the public authorities and individual entities. It is apparent that various collaborative FM opportunities have arisen with the urban regeneration projects. In interview discussion, the expert expressed their thoughts on potential urban facilities and approaches that can be performed through cooperation. Accordingly, following approaches were identified as potential collaborations FM functions in Sri Lankan urban regeneration projects. The aforementioned approaches including

- **Sharing facilities/equipment**: In present Sri Lankan context, only few resources have been informally shared between parties. However, this can be extended to share other tools and equipment as well as labour force with formal agreements. In addition, this can be extended not only to cleaning and maintenance activities but also to, infrastructure renovation, repairs and other related functions.

- **Sharing car park facilities**: Public authorities can delegate maintenance and usage of car park to private organisations in order to eliminate the traffic congestion while allowing access to general public.

- **Open places for private gatherings**: Collaborative approach of public authorities and individual organisations can create gathering places such as auditoriums, parks, jogging tracks, walkways, pavements, playgrounds and other recreational areas. Municipal Council can hand over the maintenance of these places to individual firms, while allowing private organisations and general public to use them.

- **Shared maintenance of front urban spaces**: The study found that most of the organisations in this case study would prefer to maintain and moderate the public area, which is located in front of their premises. Hence, this motivation of the private sector should not be limited to landscaping, but also to construct and maintain bus stops, ponds, parks, roads and other infrastructure facilities.

- **Shared waste management system**: Sharing waste management with private sector organisations would be a favorable solution to uplift the beautification in urban areas. Private organisations could support this by implementing waste collection and recycling strategies. Further, private organisations could combine public wastewater system with their wastewater treatment plant. This similar collaboration has found in community enterprise organisation and sustainable Ibadan Project (refer 1literature).

- **Sharing utilities such as electricity, and water distribution systems**: Private firms could support responsible agencies by sharing utilities such as electricity and water. For example, additional electricity generated through solar power or other renewable sources can be transfered to the national grid.

Some of the above collaborative approaches discussed were implemented informal and voluntary basis agreements. Majority of the respondents highlighted the importance of formal agreements for the collaborative approach. Interview discussion highlighted that, private public partnerships (ppp), private financial initiatives (PFI) and other agreements as a suitable approaches for effective collaboration. Hence, respondents suggested to initiate more systematic collaborative approach for FM in urban regeneration project.

Enablers and Barriers for the Collaborative FM

Study highlighted the fact that few individual firms have initiated the informal public and private partnerships as a collaborative FM. One of the objectives of the study is to recognize the enablers and barriers of the above concept. Interview revealed that a relationship between parties is an important requirement for the integration. Public authorities maintain relationships with the government sector organisations than private sector organizations for the collaboration. Moreover, the top management commitment strengthens the collaboration. Hence, this informal, formal, and voluntary relationship can be considered as another enablers of the concept.

With the urban regeneration project, number of opportunities has been created to arrange public private partnerships for FM. However, these opportunities need to be negotiated or discussed within the parties. The study found that, without a proper need, firms are not interested for the collaborations. Most of the private firms ignore this concept, as there is no requirement or suggestions from either party. In addition, positive attitude towards the parties are essential for collaborations, as most of the firms prefer individuality in operating their business. Private firms are profit-oriented organisations while public authority intention is public welfare. Hence, both parties need to fall upon with their own benefits to initiate such concept. Therefore, it is revealed that public authorities and organisations accept sharing agreement only where there is a win-win situation. Moreover, it is also observed that most of the individual firms intend to share public facilities, which is closure to their premises. The geographical proximity has encouraged the collaborative FM functions. Therefore positive attitudes, close relationships, need, distance, and win-win situation reinforce the collaborative FM concept. The challenge for public authorities or organisations is to ensure that new partnerships are developed for the benefit of all.

Conclusions, recommendations and future directions

The speed and scale of cities expansion are unprecedented and nowadays, cities find their own solutions to upgrade the urban life and urban fabric. This paper explores one of the sustainable solutions to manage urban facilities by introducing the concept of collaborative FM. The paper

defined collaborative *FM as the public authorities and private sector organisations collaboration for the Facilities Management of urban facilities in urban regeneration projects*. Urban facilities such as car park, landscaped area, gathering places, recreation facilities, and sharing resources could be favorably handled through partnership agreements. Moreover, delegating functions of FM in urban facilities for individual organisations is optimistic opportunity for public authorities to manage urban property effectively. Private public partnership and private finance initiative are ways of creating collaborative FM approach more systematically. In addition, positive attitude, top management commitment, distance, win-win situation persuade worthy of collaborative FM approach. The next step of this project is to develop systematic collaborative FM approaches, which can be successfully implemented in urban regeneration context. In a society, individual firms no longer compete as a sole entity rather works in clusters to gain competitive advantage. It is apparent that collaborative approaches are rising among urban communities as sustainable solution for their issues. In fact, applying this concept would eventually construct world-class urban facilities to match the global demand in urban regeneration context.

References

Alexander, K. & Brown, M. (2006) 'Community-based facilities management', Facilities, Vol. 24, no. 7/8, pp. 250-268.

Alexander, K. (2008) 'Managing community assets for urban Sustainability', proceedings of international conference on urban sustainability, Hong Knog , January 14, pp. 11-18.

Alpopi, C. & Manole, C. (2013) 'Integrated Urban Regeneration - Solution for Cities Revitalize' Procedia Economics, and Finance, Vol. 6 pp. 178-185

Bailey, N. (2012) 'The role, organization and contribution of community enterprise to urban regeneration policy in the UK' Progress in Planning, Vol. 77, pp. 1-35.

Barrett, P.S. & Baldry, D. (2003) Facilities Management towards Best Practice, 2nd ed, London: Blackwell Scientific.

Brackertz, N. (2006) 'Relating physical and service performance in local government community facilities' Facilities, Vol. 24, no. 7/8, pp. 280-291.

Glaeser, E. & Joshi-Ghani, A. (2013) 'the Urban Imperative: Toward Shared Prosperity', World Bank's Sixth Urban Research and Knowledge Symposium, October

Güzey, O. (2008) 'Urban regeneration and increased competitive power: Ankara in an era of globalization' Cities, Vol. 26, pp. 27-37.

Hammami, M., Ruhashyankiko, J.-F., & Yehoue, E. B. (2006). Determinants of Public-Private Partnerships in Infrastructure. Roland Daumont.

Kasim R. & Hudson, J. (2006) 'FM as a social enterprise', Facilities, Vol. 24, no. 7/8, pp. 292-299.

Krklješ, M., Kubet, V., & Hiel, K. (2009). INTERRELATIONSHIP OF PUBLIC SPACES AND BUILT-IN CORNER BUILDINGS BASED ON THE EXAMPLES OF MODERNISM IN "MALI LIMAN" AREA IN NOVI SAD. Architecture and Civil Engineering , 7 (2), 145-153.

Kumar, S., & Prasad, C. J. (2004). Public-private partnerships in urban infrastructure. Kerala Calling, 36-37.

Larsen, J. L.Elle, M. Hoffmann, B. & Munthe-Kaas, P. (2011) 'Urbanising facilities management: the challenges in a creative age' Facilities, Vol. 29, no. 1/2, pp. 80-92

Lee,J. Jeong, Y. Seuk Oh, Lee, J. Ahn, N. Lee, J. & Yoon, S. (2013) 'An integrated approach to intelligent urban facilities management for real-time emergency response' Automation in Construction, Vol. 30, pp. 256–264.

leitan, G. R. T. (2010) overview Of Decentralization And Local governance in Sri lanka,

McDonald, S. Malys, N. & Malienė, V. (2009) 'Urban regeneration for sustainable communities: A case study', Technological and economic development of economy Baltic Journal on Sustainability, Vol. 15, no. 1, pp. 49–59.

Ogu, V. I. (2000) 'Stakeholders' partnership approach to infrastructure provision and management in developing world cities: lessons from the Sustainable Ibadan project' Habitat International , Vol. 24, pp. 517-533.

Robert, P. (2004) 'FM: new urban and community alignments', Facilities, Vol. 22, no. 13/14, pp.349-352.

Roberts, P. & Sykes, H. (2000). The evolution, definition and purpose of urban regeneration. Urban regeneration: A handbook, London: Sage Publication ltd.

Sani, S. I. A. Mohammeda A. H. Misnanb, M. S. & Awanga, M. (2012) 'Determinant factors in development of maintenance culture in managing public asset and facilities', Procedia - Social and Behavioral Sciences, Vol. 65, pp. 827 – 832.

Thake, S. (1995) Staying the course: The role and structures of community regeneration organisations, York: Joseph Rowntree Foundation

Tobi, S. U., Amaratunga, D., & Noor, N. M. (2013). Social enterprise applications in an urban facilities management setting. Facilities , 31 (5/6), 238-254.

Tsou, K. Hung, Y. & Chang, Y. (2005) 'An accessibility- based integrated measure of relative spatial equity in urban public facilities', Cities, Vol.22, no. 6, pp.424-435.

UDA, (2009) Urban Development, viewed 23 August 2014, http://www.urbanmin.gov.lk/web/index.php?option=com_content&view=article&id=83&Itemid=27&lang=e.

Wijewardena, W. A. (2011) How banks can facilitate public -Private partnerships in Development? 23rd Anniversary Convention 2011: Central Bank of Sri Lanka.

Yi, S., & Komatsu, Y. (2010). Investigation of the Maintenance Condition in Public Facilities Focus on

Comparison of the Municipalities in Tokyo. journal of Asian Architecture and Building Engineering , 9 (1), 125-130.

Yin, R. K. (2003) Case study research: design and methods, 3thed, New York: Sage Publications.

Impacts of the Crown Property Developments in the City of Bangkok: Two Case Studies

Montouch Maglumtong*
Housing Department, Faculty of Architecture, Chulalongkorn University, Bangkok, Thailand

Abstract

This paper is a report on part of a research project commissioned by the Crown Property Bureau, Thailand (CPB). CPB is a quasi-government agency responsible for managing the real property of the Crown of the Kingdom of Thailand. Its main duty is to manage this estate in an efficient, yet equitable way. In Bangkok, CPB lands amounts to nearly 20 per cent of the total municipal area. Therefore, the agency's land management policy not only affects socio-economic situation and living environments of CPB lands alone, but also broader planning and urban development of the city. Land development options can follow three options: 1) by the Crown Property Bureau itself, 2) in collaboration with private developers, and 3) in partnership with government projects. "The paper will illustrate and compare each of these land development options through case-studies that clarify the CPB strategic goals, achievements in socio-economic terms and impact on the wider neighborhood and urban development."

Keywords: Urban Redevelopment, Land Sharing, Regeneration Policy Bangkok, Low-income Communities, Community Participation, Housing Typologies

Introduction

During the 1980's, Thailand's economics had grown rapidly. Bangkok, which is the capital of Thailand, was grown both economics and urban area. This resulted to the emigration from rural areas to Bangkok. With the lack of housing policy, immigrants built their own houses on wastelands throughout Bangkok. Most of those lands are owned by State Railway of Thailand, Thailand Transport Portal, Department of Highway, Treasury, and Crown Property Bureau. As the number of immigrants had grown very fast like Thailand's economics, most of those wastelands had turn into slums and the insufficient of infrastructures had caused many security, safety, and environments problems.

Bangkok is situated in the central part of Thailand. As a water-based city, it has been divided into 2 riverbanks by Chaopraya River, but most of the developments have expanded on the east side only. Bangkok has seen rapidly urbanization since its population hit 2 million in the 1960s. Since the 1980s, Greater Bangkok's built-up areas have spilled beyond Bangkok Metropolis' borders to neighboring provinces, initially to the north and south. Due to lacking of strict zoning laws, the Metropolitan areas' growth looks rather random and everywhere. Central areas like Yaowarat, Siam, Sukhumvit and Sathorn have seen skyrocketing land speculation as foreign investors are allowed to own condominiums, giving rise to a Manhattanization. At the same time, fringe areas are being developed and the boundaries are no longer visible between each province the historic city centers. Due to the speed of this urban sprawl over the past twenty years, the Bangkok Metropolitan Administration has sought to tackle rising problems of commute times,

* Corresponding Author: Montouch Maglumtong; E-mail- curunior@hotmail.com

pollution and deteriorating air quality. Strong population growth always presents formidable challenges for governments. The Bangkok region's principal tasks will be to retain housing affordability by ensuring a competitive land market, and by providing a road system that reduces its exceedingly long travel times.

The Crown Property Bureau, which owns 20% of land in Bangkok Metropolitan Administration, is considered to be one of the major landowners in Bangkok. Its main duty is to manage and beneficial arrange their properties. Therefore, the agency's land management policy not only affects socio-economic situation and living environments of CPB lands alone, but also broader planning and urban development of the city. Land development options can follow three options: 1) by the Crown Property Bureau itself, 2) in collaboration with private developers, and 3) in partnership with government projects. (Panitchpakdi, K. & et al. 2014.)

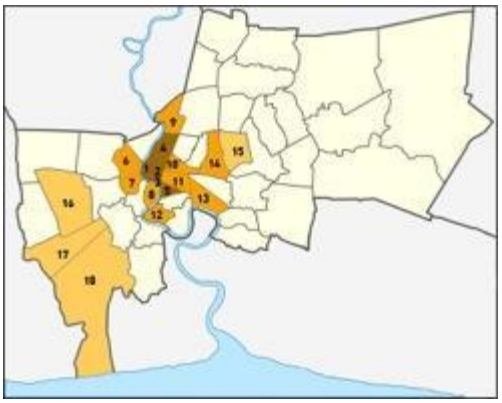


Fig. 1: Map of Bangkok Districts that have CPB's Projects
Source: author

Thus, it will lead to the objective of this research as follows.

Research Objectives and Methodologies

The research objective is to illustrate each of these land development options through case studies that clarify the CPB's strategic goals, achievements in socio-economic terms and impact on urban development, both inside and outside the case studies.

The key question is "What are differences between the two types of slum clearance that are investigated in the case studies?"

The methodologies that were used in this research are: 1) Interview, which is the main part of this research, is including experts who had planned and made the policy, CPB's staffs who have worked from the start of the case studies until now, and occupants who have lived in the community and surroundings. This methodology will gain data on what CPB thought on that time, how can staffs work on the case studies, what are the different between living in the old slums and new housing that built by CPB, and do the case studies effect to surroundings. 2) Observation is a part of methodology that shows physical development of case studies and concrete impacts on both inside the case studies and surroundings. And 3) Literature Review is for conceptualizing and drawing conclusion.

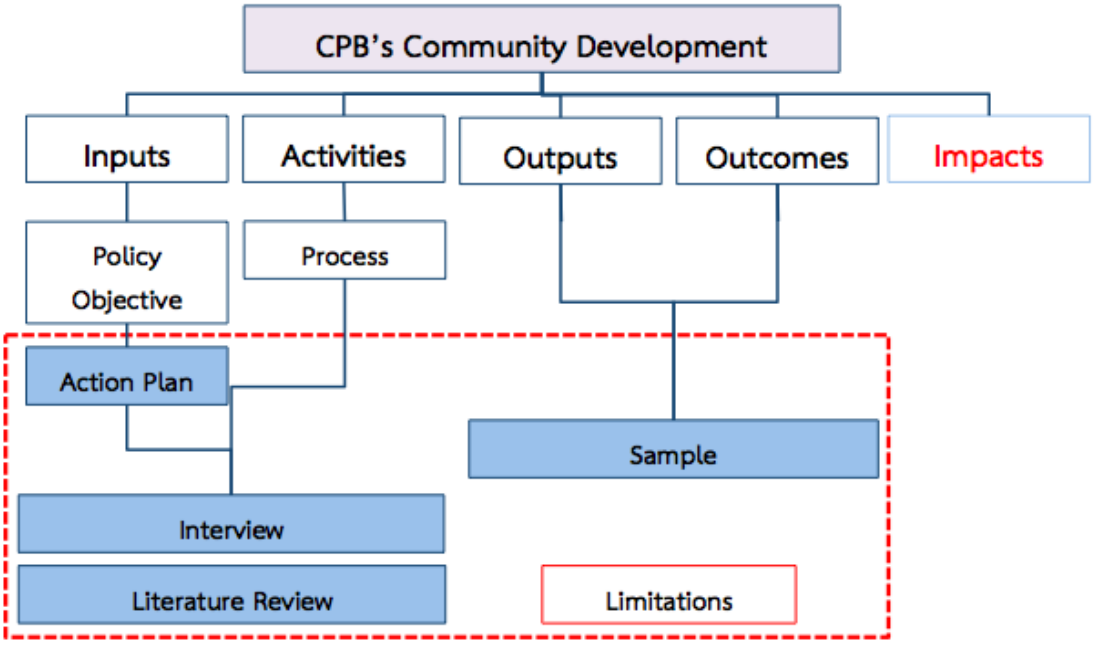


Fig. 2: Conceptual Framework
Source: author

This research had started from the objective that is to illustrate land sharing development options through case studies, which are Klong Phai Singh To and Plubpla. They clarify the CPB's strategic goals, achievements in socio-economic terms and impact on urban development, both inside and outside the case studies. First of all, data and information of these two projects were gathered from related researches and project's factsheets. Second, researcher observed on the project's locations, types and quality of building, infrastructure, living environments, and occupants' behavior. Third, tools for interview experts, CPB's staff, occupants, and surrounding's occupants were designed. Samples of interview are 2 experts, 5 CPB's staff, 20 occupants, and 20 surrounding's occupants. Questions are about project's problems and obstacles, resolving suggestions, and attitude towards development process. Then, analyzing all of those data and information to conclude outputs and impacts.

According to the Crown Property Bureau, CPB has operated for a long time. Some historical data is not being saved to a file. It makes the present information is not sufficient. So, researcher designed to use a personal interview of those who have passed and those who have attributed instead.

Literature Review

Monitoring and Assessment

> Monitoring and assessment are very important in term of working quality assessment. It is a continuing process from data collection and factor analysis. Then, comparing expecting outputs and real outputs with policy and project's action plan to reflect to developer for a better work.
>
> Linda G. Morra Imas and Ray C. Rist. 2004.

> Evaluation from monitoring and assessment will use “Theory of Change”. This theory can be a form for interview. It has five elements, which are 1) Inputs are policy or action plans. 2) Activities are project operations. 3) Outputs are products from project operations. And 4) Outcomes are results from products, and 5) Impacts are long-term effects from products and results.
>
> Kuset and Rist. 2004.

The process of managing an organization, which starting from the inputs, consisting of the needs or demands, and support that is the driving force or motivation organization to begin the process of management (Internal Process). Then, it will cause the output or outcome to meet the needs and sponsorship. The output or results from this are reflected back to the input again. The process control and evaluation is another factor to better reflect the performance of the resulting efficiency and productivity back into the management process. Improving strategies for better results development or expand the operation further.

Land Sharing Development

> During the 1970’s and 1980’s, slum dwellers in Bangkok had been waging their own “battle for living space” with developers, against a backdrop of rapid economic growth characterized b extremely dynamic urban land and real estate markets. Seven land sharing agreements, which five of them were held by CPB, were concluded that were universally praised as models for urban redevelopment, given that they managed to accommodate commercial development without displacing resident slum dwellers.
>
> Rabe, P. 2010.

Land Sharing Development is one of the methods that were used to develop Bangkok’s slums. It’s the sharing between landowners and low-income occupants, with the help from public organizations. (Thananta, N. 2014.) Landowners have to share some parts of their land for low-income occupants to rent in lower rates, and then, landowners can develop another part. After that, public organizations or occupants will do the land readjustment for long-term rental with infrastructures provide by the government, building their houses with support from financial institution.

Land sharing in Thailand (Boonnak, C., Boonyabancha, S. 1985.) had started from the basic concept of a coordinated effort between the residents, who live without prior permission and the development of the city by allowing the adjustment of land use. Meanwhile, the city was able to develop and the former residents still obtain housing. The land issue in Bangkok can caused by the following conditions: 1) Low-income eviction, 2) Slum upgrading, 3) Political influence, 4) People organization, and 5) Human Rights.

The starting point of land sharing in Thailand (Boonnak, C., Boonyabancha, S. 1985.) is from Rama IV community (Theppratan) was evicted, which is on the Crown Property Bureau’s land. Villagers have offered to share the land with Bangkok United Development Company. Villagers had been proposed that the land could be divided equally between the residents and the company, and villagers would build their own homes. However, it appears that the company did not accept this offer. He offered to build flats instead. Although, the other parties will not accept the proposed division of land mentioned above. But the idea of "Sharing" is generally recognized

by the public due to the strong locals. And the housing problems had been recognition in the society. It made an important effect to the government to study on solving this problem.

Principles of construction new slums have the key concepts and possibilities as follows: 1) Land Sharing, 2) Densification, 3) Rebuilding, 4) Community Participation, and 5) Cost Recovery.

Results of land sharing from related research (Mrauksirisuk, P. 2001.) are: 1) the community can continue living in the area with housing stability. The environment and infrastructure are improved. 2) Benefit to both landowners to develop their land and existing residents who have lived in the same area. 3) A residential development by locals themselves. 4) Related organizations turn their roles from planner to supporter. 5) The construction of new housing may be below the required standard, but it represents the size of the actual needs of the residents. Encourage agencies to focus more on housing standards. And 6) it shows that low-income housing development in the city and urban development.

From related researches, land sharing processes are as follows (Phungsutjarit, T. 2013.): 1) Community household survey and residents list, 2) Considering the rights of those who will be in the project after the development and the period of actual residence, as well as the needs of each family, 3) Make an agreement for the price and details of land or long term rentals, 4) Occupants have to form a cooperative dwelling to act as the agent. To collect rental fares from members to pay the landowners every month until expiration, (Thankul, M. 2014.) 5) Indicate the form of new housing with shared infrastructure, and 6) Occupants have to maintain public facilities and infrastructure in the project.

Community Participation

Because CPB's development projects have involved with local community members, CPB's staffs have used "Community Participation" as a technique to make occupants understand what they will do in the development's process. Community Participation means process that members are working together to demonstrate the need, achieve a common goal, and improve the economic, social, political and social status of the community. (Jariawittayanon, S. 1981). Participation of citizens is essential to national development. It can strengthen the community. Most of the conflicts from development projects are from the lack of participation of people with an interest in directly. (Chulalongkorn University. 2003). The opinions expressed are 2 types of Positive Attitude and Negative Attitude.

The public participation can be obtained from the lowest to the highest levels of the 7 levels (Burikul, T. 2005.) depending on the purpose and details. Number of people who take part in each level is proportional to the level of participation. If the level of participation is low, number of participants will be a lot. But in a higher level of participation, number of participants will be reduced. The involvement of the public in order from lowest to highest are as follows: 1) Informing Data, 2) Exposure to comments from the public, 3) Consultation, 4) Joint Planning, 5) Cooperation, 6) Joint Monitoring and Assessment, and 7) Controlled by the public.

> People who live in the community have expressed their opinion and the others were aware of the problems and the changes that have occurred. Because the one who have known their needs and conditions at their best is themselves, not from the outside that wants to determine the well-being of the people over there. So, community works that rely on community participation is a powerful combination and interact with community's people. Those events are set to

> sweep the streets or campaign activity, such as garbage collection, doing the walk, cleaning canals, etc. From small events, I can find a way to expand into the larger, such as the creation of housing or the creation of a community center. The most important part is the process. It usually begins with the data collection and analysis. Then, Learning of community management, problems and obstacles that can be occurred. All of this will lead to adequate housing design, which will meet the needs of the residents.
>
> Roonrakwit, P. 2001.

From a variety of public participation, the techniques that can use to achieve participation are variety too. These are examples of techniques that can be applied to the development of the community. (Pattanapongsa, N. 2004.) 1) Mind Map and Future Search Conference. 2) Appreciation Influence Control. 3) Community development involvement techniques.

Impacts of the development of Klong Phai Singh To

Klong Phai Singh To Community (KPST) is situated on Rama IV Road in Klong Toey district. It has 380 households and all of them are low-income occupants. From the beginning, it was a tanning factory, but after it was abandoned, immigrants had moved to the site and build their own houses, which had turned to slums in the 1980's. In 1981, Bangkok Metropolitan Administration (BMA) had planned for Ratchadapisek Road that will cut through this area. Then, CPB decided to develop the slum in this area by using Land Sharing Development as a tool, which CPB can use other lands after land sharing development for commercial purpose.



Fig. 3: Location of Klong Phai Singh To Project
Source: The Crown Property Bureau

The process for KPST Community had started from 1989 to 1997, when the building was completed. After moving occupants to the new high-rise building, CPB gain lands from slums to develop into other commercial projects such as Stock Exchange (1993), and Queen Sirikit National Convention Center (1989), which is the best side. (Chaidetsuriya, S. 2014.) But on the other hand, moving slum people into high-rise building without their participation on any process was challenging at that time because low-income community cannot live in high-rise building. Most of low-income people are trader or working as employee, and they are living as a group of relatives. These had caused many problems to the building such as using parking lot as a shop store, taking motorcycle to their room by elevator, stolen fire extinguish, and etc. (Champathong, P. 2014.) Besides, they had caused troubles to nearby surroundings like throwing

their junks outside the window from on higher floor. So, their junks had flown through some roofs of houses nearby. (Champathong, P. 2014.)



Fig. 4: Stock Exchange
Source: The Crown Property Bureau



Fig. 5: Queen Sirikit National Convention Center
Source: The Crown Property Bureau

However, moving slum people into high-rise building on the same location has some benefits to those occupants and surroundings' socio-economic (Rojnakarin, J. 2003.) because they don't have to move to another place and find new jobs. 65% of occupants have been working on the same job since they were living in slums (Rojnakarin, J. 2003.) such as street-side restaurants, workers, drivers, and etc. Meanwhile, the building itself also has an impact because it was a new high-rise building at that time, which was very modern and full of facilities. It had raised the look of surroundings to be more modernized.

After uncountable test, CPB's staffs and occupants have found their agreements on living in high-rise building. CPB found that participation is a very important part of this project. If they let all occupants participate in their process of design, problems learning, planning, and building up their friendship, Occupants would realize about their duties and responsible to common property and they will have a feeling that this building is their real home. (Rojnakarin, J. 2003.)



Fig. 6: A View of Klong Phai Singh To
Source: The Crown Property Bureau



Fig. 7: Klong Phai Singh To Building
Source: The Crown Property Bureau

Finally, the advantages of Klong Phai Singh To Project are 1) Occupants still live nearby their old houses. 2) The building can contain occupants more than they had estimated. 3) Physical

development of the old community and surroundings. And 4) It has been a resident for low-income workers. However, there is a disadvantage of living on high-rise building misunderstanding of occupants that caused troubles to both inside community and nearby. But, this problem was already solved. (Khamyuang, P. 2014.)

Impacts of the development of Plubpla

Like Klong Phai Singh To, Plubpla project was starting from the trail breaking in 1988, which is called “Ram Intra Road”. It is situated in Wangthonglang District in the outer zone of Bangkok. Total area of Plubpla is 300 rai and has 260 households, contains both side of Ram Intra Road. CPB had moved slums, which spread all over the area, into the area near Plubpla canal. So, this community has divided into 2 communities, called Moo Ban Plubpla Community (30 rai) and Klong Plubpla Community (46 rai). With this Land Sharing Development, CPB has gained lands for commercial development and has lands for low-income community that serves workplaces around the area. (Champathong, P. 2014.)



Fig. 8: Plubpla Before & After Land Sharing
Source: The Crown Property Bureau

Plubpla had used Low-Rise Land Sharing Development as a tool in development land and community. The project has started in 1988. By that time, CPB had surveyed and negotiated low-income community in this area for setting infrastructure. But they had some problems between CPB’s staffs and the occupants, so they brought the “Community Participation” method to use in participation with occupants. In 1992, after many meetings with occupants, CPB had announced housing criteria for the project and started design process in 1994. The first phase was Moo Ban Plubpla Community, which had 46 rai, and then to the second phase, which is called Klong Plubpla Community 30 rai. The project finished in 2001 and CPB still develops both physical and quality of life in community.

After occupants moved back to Plubpla, the research results show that nearly all of them still works in the same jobs, which are nearby workplaces such as hospital, government offices, private companies, etc. (Champathong, P. 2014.) It has impacted to occupants by upgrading their quality of living in both physical and socio-economic. But the real impact is the development process, when CPB developed Moo Ban Plubpla Community 46 rai by provided infrastructure

and built the houses. Another part, which is Klong Plubpla Community 30 rai, saw the development and interested to upgrade their community. (Chaidetsuriya, S. 2014.) This is the case that shows the will of occupants, who wished to develop their community and participated with the landowner to find a way on development.



Fig. 9: A Bird's Eye View of Plubpla
Source: The Crown Property Bureau

However, Plubpla Project had caused some problems of 1) The change of occupants' lifestyle, and 2) Inequality of taxes, rental rates, and size of housing, which CPB has to find the way to solve those problems later. (Phungsutjarit, T. 2013.) But there are more advantages on this project that 1) Occupants can live in the same area and has more security on living, 2) Better quality of living of occupants, 3) They can reach infrastructures from government, and 4) CPB gained the other parts of this area for developing.

Conclusions

Even though, these two projects have used land sharing as a tool in development. There are some differences between them such as the type of development. Klong Phai Singh To is a high-rise building but Plubpla is a low-rise community. This effects to occupants in separated way. High-rise building had caused more problems of living changing than low-rise community. CPB has to try to make occupants understand how to live in high-rise building and to concern about nearby environments. But in low-rise community, occupants don't have to change their lifestyle much, but have to understand about common property and how to live with others.

In common ways, both projects have effect to nearby surroundings as follows 1) CPB gained the other parts of this area for commercial development, 2) They have urged nearby surroundings to upgrade and develop their properties, 3) They have upgraded images of city of Bangkok as they are part of the city, and 4) They are affordable housing for low-income people in Bangkok, which serve and drive the city movement.

Finally, suggestion for CPB's developments in the future is Collaboration with Local Government such as Bangkok Metropolitan Administration (BMA) would be a better way on developing and planning of the CPB's land. With more than 20% of land in Bangkok's urban area, CPB and BMA can lead the way of Bangkok overview development and will be guidelines for other landowners,

and private developers on project development that concerns about impacts to nearby living environments and urban socio-economic in the future.

References

Boonnak, C., Boonyabancha, S. (1985) Community Development by Land Sharing, Bangkok.
Boonyabancha, S. (personal communication, November 8, 2013)
Burikul, T. (2005) *Participation: Concept, Theory and Process*, Bangkok:
Panitchphranakorn.Chaidetsuriya, S. (personal communication, February 28, 2014)
Champathong, P. (personal communication, March 16, 2014)
Cox, W. (2012) The Evolving Urban Form, Wikipedia, viewed on 4 August 2014, http://www.newgeography.com/content/003367-the-evolving-urban-form-bangkok
Crown Property Bureau. (2011) *Annual Report 2011*. Bangkok: Daoruek Communications.
Crown Property Bureau. (2012) *Annual Report 2012*. Bangkok: Daoruek Communications.
Crown Property Bureau. (2013) *Annual Report 2013*. Bangkok: Daoruek Communications.
Department of City Planning. (2013) Interesting Contents of Urban Planning, viewed on 4 August 2014, http://cpd.bangkok.go.th/sara3_t.html
Fugsang, P. (personal communication, May 20, 2014)
Jariyawittayanon, S. (1982) *Participation*, Bangkok.
Khamyuang, P. (personal communication, August 1, 2014)
Morra Imas, Linda G.; Rist, Ray C. (2009) *The Road to Results: Designing and Conducting Effective Development Evaluations.* World Bank. © World Bank, viewed on 25 July 2014, https://openknowledge.worldbank.org/handle/10986/2699 License: CC BY 3.0 IGO.
Mrauksirisuk, P. (2001) *"Land Sharing Process": A Case Study of Sengi Community.* Master's Degree Thesis, Housing Development, Faculty of Architecture, Chulalongkorn University, Bangkok.
Panitchpakdi, K. & et al. (2014) 1st Report of The Development Operation in Real Estate, Community and Housing Projects by The Crown Property Bureau. Bangkok: Chulalongkorn University.
Pattanapongsa, N. (2004) *Participation: Basic Principles, Techniques and Case Studies*, Bangkok.
Phungsutjarit, T. (2013) Development Monitoring on Land Sharing Project by the Crown Property Bureau: A Case Study of Plubpla Project, Wangthonglang District. Master's Degree Thesis, Housing Development, Faculty of Architecture, Chulalongkorn University, Bangkok.
Rabe, P (2010) *Land Sharing in Phnom Penh and Bangkok: Lessons from Four Decades of Innovation Slum Redevelopment Projects in Two Southeast Asian 'Boom Towns'*, viewed on 28 July 2014, http://www.worldbank.org/content/dam/Worldbank/document/urban/places-we-live-competition-Rabe.pdf
Rojnakarin, J. (2003) *Living pattern after slum relocation to a high rise flat: a case study of Sub-Sin 26-7 community building, Klong Toey, Bangkok.* Master's Degree Thesis, Housing Development, Faculty of Architecture, Chulalongkorn University, Bangkok.
Roonrakwit, P. (2001) *Community Participation*, Bangkok: Silpakorn University.
Social Science Research Institue, Chulalongkorn University. (2001) *Report of Din Daeng Community Survey and Action Plan*, Bangkok: Chulalongkorn University.
Thananta, N. (personal communication, August 1, 2014)
Thankul, M. (personal communication, March 16, 2014)
(2014) Bangkok Metropolitan Region, Wikipedia, viewed on 2 August 2014, http://en.wikipedia.org/wiki/Bangkok_Metropolitan_Region

Effect of Street Canyon Materials on the Urban Heat Island Phenomenon in Colombo

N G R Perera* , **K P P R Samanthilaka**
Department of Architecture, University of Moratuwa, Sri Lanka

Abstract

An Urban heat island (UHI) is best visualized as a dome of stagnant warm air, over the heavily built-up areas of the city. These have been observed practically all over the world and Colombo, Sri Lanka is no exception. It is known that the replacement of natural surfaces and radiation trapped in 'street form' urban canyons is one of the primary drivers of this phenomenon.

This study quantifies and compares the local warming effects caused by materials used in street canyons in the warm, humid climate of Colombo.

A process of ascertaining street canyon materials by survey and simulation using a simple force restore model, the Surface Heat Island Model (SHIM) generate data for specific urban canyons and the respective local warming effects they cause.

Aluminium cladding in buildings, showed the highest and the lowest intensity. The highest UHI intensity of 2.87°C was recorded In LCZ2-commercial. While, the lowest UHI intensity of 1.78 °C can be seen at LCZ3-sea front zone.

Analyses highlight the predominant material occurrence and discuss implications for nocturnal UHI amelioration, in warm, humid, Colombo, Sri Lanka.

Keywords: Urban Heat Island, Warm Humid Tropics, Street Canyon Materials, Local Climate Zone, Surface Heat Island Model, Colombo, Sri Lanka

Introduction

Almost 90% of the global urbanization between now and 2025 will occur in countries of the developing world located mostly in tropical/ subtropical regions. Such statistics underscores the urgency of studying the human consequences of tropical urbanization.

There is evidence that researchers are increasingly turning their attention to tropical urban climate issues. (Emmanuel, 2005) Yet, urban design and planning policy instruments for mitigation of the negative impacts of

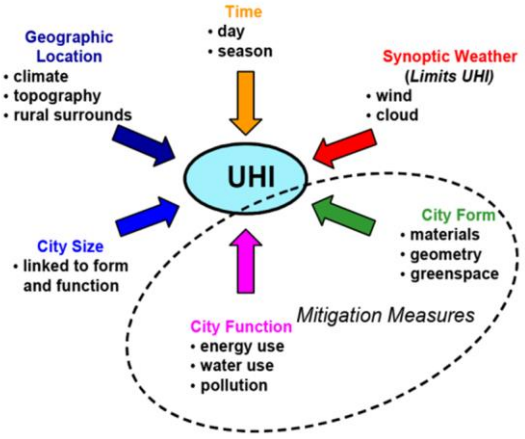


Fig 1: Factors that affect the UHI phenomenon: A focus on mitigation measures
Source: Voogt, 2011

*Corresponding Author: N G R Perera; E-mail- nareinperera@gmail.com

tropical urban climate remains largely unexplored.

The Urban Heat Island (UHI) phenomenon is a key reason for the microclimatic change in cities. Many important factors influence the UHI intensity (Fig 1). With a focus on mitigation of these effects, emphasis is placed on the City Form. The research is further limited to street canyon materials, within a fabric of specific geometry.

Background

Apart from the adverse global impacts, urbanization and industrialization affect regional urban areas more seriously and perceptibly, where more urbanized and heavy use of synthetic construction materials is commonly observed.

Higher urban heat is mainly caused due to the anthropogenic heat released from vehicles, power plants, air conditioners and other heat sources and due to the heat stored and re-radiated by massive and complex urban structures. Similarly, huge quantities of solar radiation is stored and re-radiated in urban areas due to construction material and enhanced due to decreased sky view factor.

The manmade structures such as walls, roofs, gardens, paved areas etc., and natural structures continuously absorb and store this radiation in the form of heat energy from sunrise until late afternoon. (Rizwan, et al., 2007).

Urban heat island is known to occur on two distinct scales; Urban Canopy Layer and Urban Boundary Layer. Canopy level layer characterized by air less mixed, air temperature with more influenced by local surface heat island effects (Oke, 1982). The focus here is on the UCL heat island.

Urban heat island intensity (UHII)

UHII is determined as the spatially averaged temperature difference between an urban and its surrounding rural area (Kim and Baik, 2005). UHIIs have been based on the difference between air and surface temperatures (Rizwan et al., 2007). Many studies have reported that the UHIIs were high during nighttime or early morning and low in daytime.

Urban Heat Island Mitigation

Heat Island mitigation is a growing need for human thermal comfort in the urban outdoors. The mitigation measures could be categorised relative to reducing anthropogenic heat release, related to better roof design, other design factors. (Humidification, increased albedo, photovoltaic canopies etc.) Some of them could only be implemented during the design and planning stage such as building material, sky view factor etc. These following facts are the basis of most mitigation methods. (Kannamma 2012).

The provision of:

- shade & shelter (trees, awnings, narrow spaces)
- high reflection or emission of radiation surfaces (light surfaces, surface films)
- surface moisture (water, vegetation, permeable covers)
- good or poor heat storage (massive walls, roof insulation)

Material properties on Urban Heat Island

Akbari (1997) reported that the UHI measured at the canopy layer may exhibit high spatial and temporal variation as a result of the variable thermal properties of the urban construction materials that in combination with the three-dimensional geometry of built-up surfaces modifies neighbouring air temperatures. The formation of urban heat islands relates to the thermal properties of the urban fabric. The heat capacity and consequently the thermal inertia, of urban construction materials, such as concrete and asphalt are greater than that of natural materials found in rural environments.

The complex geometry of urban surfaces influences air temperature. There will be increased friction created by a rough urban surface as compared to a smooth rural surface reduces horizontal airflow in the city. The urban surface also can change the urban radiation budget. During the day, vertical canyon walls trap (reflect & absorb) short-wave radiation. Nighttime losses of infrared energy are also retarded due to the decreased sky view below roof level. Rural surfaces have comparatively smooth and greater nocturnal radiative flux divergence than complex urban surfaces.

The adding natural ventilation, vegetation covers and high albedo and high emissivity materials in urban areas can reduce UHI effects and balance energy consumption. The surface temperature of the material is lower than that of a material with low albedo. Because the urban ambient temperature is associated with the surface temperatures of the building façade, lower surface temperature can obviously decrease the ambient air temperature and eventually contribute to better urban thermal environment (Shahmohomadi et al., 2010). As researched by Bretz and Akbari (1997), while the term “white” and “light coloured” is used to mean high-albedo and “dark coloured” defines low- albedo.

Material with high albedo can reduce the solar heat gain during daytime. Because the urban ambient temperature is associated with the surface temperatures of the building façade, lower surface temperature can obviously decrease the ambient air temperature and eventually contribute to better urban thermal environment (Shahmohomadi et al., 2010).

Method

The objective of the method is to ascertain the local warming effects caused by materials used in the urban canyons, in Colombo, Sri Lanka. A numerical scheme to simulate the cooling of rural and urban canyon surfaces on calm, cloudless nights is the main methodological tool for the study.

To limit the scope of the study and therefore focus on the critical aspects of Colombo’s microclimate, a step-by-step process of extracting salient patterns is adopted. Here, the data generated from the preceding action becomes the input values for the next.

These steps are defined as;

- Site selection and representative focus areas based on local climate zone classification, predominant land use and proximity to natural areas
- Survey and establishment predominant material typology in the selected representative urban fabric of Colombo
- On-site measurements of surface temperature

- Simulations using SHIM to establish nocturnal cooling patterns within distinct urban canyons of identified materiality

Site selection

Colombo, Sri Lanka is located at 6^0 54' N, 79^0 52'E on Sri Lanka's West coast. With the rapid and haphazard urban development and warm humid climatic context, it typifies a microclimate of a city affected by UHI in the region.

Colombo is a lowland region with a typically hot humid climate that is affected by the seasonal wind reversal of the Asian monsoon. The monsoon blows from the SW from late May to late September and the NE from late November to mid February. Air temperature and humidity are high throughout the year. Wind speeds are low, especially during the inter-monsoon periods of March to April and October to November. The annual rainfall is 2300mm with two seasonal peaks. Solar radiation is intense under clear sky conditions. However, there is a high probability of cloud development, especially during the afternoon. The main daily sunshine duration varies between 5 hours in June and 9 hours in February (http://www.meteo.gov.lk/)

Local Climate Zones

A significant problem in heat island methodology, is that the term urban has no single, objective meaning, and thus no climatological relevance. What is described as urban in one city or region differs from that of another city. The term urban is therefore impossible to define universally for its physical structure, its surface properties or its thermal climate. (Stewart and Oke, 2012)

In response to the above statement, the study adopts the LCZ classification system developed by Stewart (2011) to simplify the urban context. The LCZ classification uses observational data to define zones based on characteristic geometry and land cover that generate a unique near-surface climate under calm, clear skies.

The name, LCZ, is derived because the classes are local in scale, climatic in nature and zonal in representation. The physical properties are measurable and nonspecific as to place or time. (Stewart and Oke, 2009).

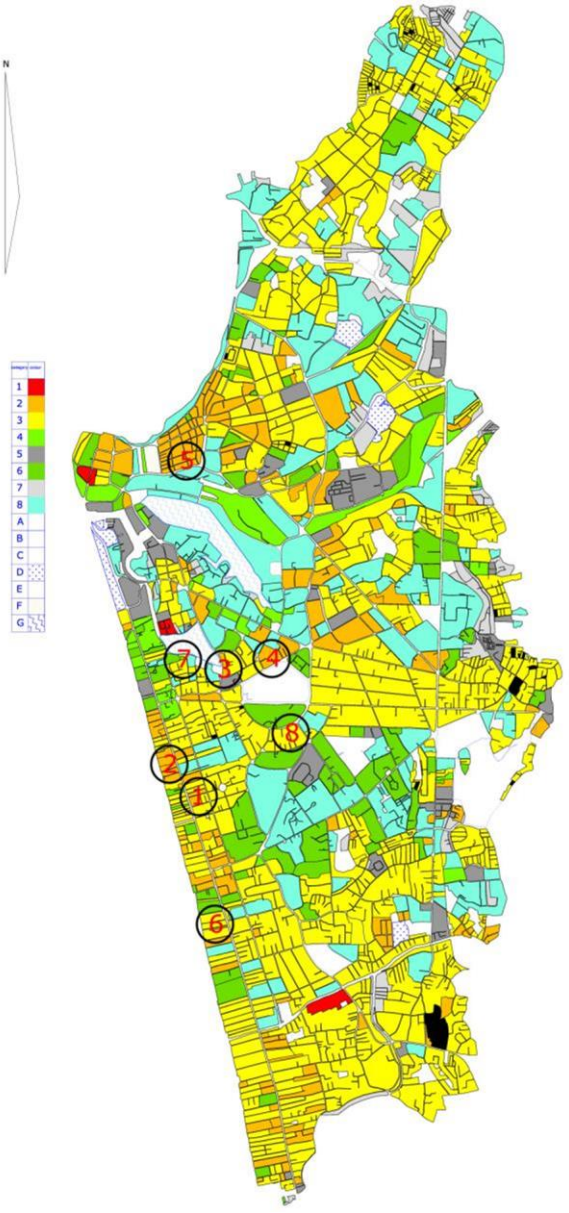


Fig 2: Local Climate Zone Map, Colombo Showing selected sites.
(Source: Perera et al, 2012)

The LCZ and representative site selection utilises the LCZ map of Colombo (Fig 2) developed by Perera et al., (2012) (Perera, Emmanuel, & Mahanama, 2012) as the primary resource. A detailed account of the process of classification is included in the same, therefore not repeated herein.

A survey of LCZ typologies relevant for Colombo showed that much like many developing cities Colombo is dominated by residential and mixed-use zones (more than 55% of the total land use). Much of these zones fall under LCZ3 – Compact Low-rise, LCZ2 – Compact Midrise and LCZ8 – Large Low-rise categories. (Perera, Emmanuel, & Mahanama, 2012)

In consideration of the above sites encompassing LCZ2 and LCZ3, of four distinct land use and proximity sites are selected as representative sites for which a 'typical' street canyon is analysed. Each of these defined street canyons will have a specific form and materiality.

Table 1 : Typical characteristics of selected sites (as shown in Fig 2)

Site	LCZ	Proximity / land-use	Description	Representative image
Site 1	LCZ2	commercial	Dense mix of midrise buildings 4-9 storeys. Flat. Compact skyline. Vary in height and construction. More lightweight construction materials. Land cover & street paved. High traffic flow. Commercial buildings. No green cover. East front	
Site 2	LCZ2	Sea front	Dense mix of midrise buildings 4-6 storeys. Small buildings. Pitched and flat roofs. Uniform in height and construction. More heavy construction materials. Land cover & street paved. Less green cover. Low traffic flow. Opposite to sea.	
Site 3	LCZ2	Lake front	Compact set buildings 4-9 storeys. Natural surroundings. Some green cover. Pitched roofs. Uniform in construction. Commercial & residential buildings. Land cover & street paved. Low traffic density. Lakefront.	
Site 4	LCZ2	residential	Dense mix of low-rise buildings 4-9 storeys. Large buildings. Flat. Apartment buildings. More heavy construction materials. Land cover & street paved. Facing to an open park area. Less green cover. Moderate traffic flow.	
Site 5	LCZ3	commercial	Dense mix of low-rise buildings 2-3 storeys. Flat. Compact skyline. Uniform in height and construction. Heavy and light mix construction materials. Land cover & street paved. High traffic flow. No green cover. Commercial buildings. South-facing.	
Site 6	LCZ3	Sea front	Mix of low-rise buildings 1-3 storeys. Small buildings. Pitched and flat roofs. Uniform in height and construction. Heavy construction materials. Land cover & street paved. Less green cover. Low traffic flow. Opposite to Sea.	
Site 7	LCZ3	Lake front	Compact set buildings 1-3 storeys. Natural surroundings. Some green cover. Pitched roofs. Uniform in construction. Commercial & residential buildings. Land cover & street paved. Low traffic density. Lakefront.	

Site 8	LCZ3	residential	Dense mix of low-rise buildings 1-3 storeys. Small buildings. Pitched roofs. Residential. Heavy construction materials. Land cover & street paved. Facing to an open park area. Less green cover. Low traffic density.	

Survey and establishment predominant material typology

The survey of materials adopts the building envelope as the primary element influencing the urban canyon. Therefore, the data collected encompasses building façades and categorised as per LCZ and proximity. Fig 3 shows the summary of the survey, where material and frequency of occurrence within a typical sample of 20 buildings is signified. Glass and Aluminium are predominant in LCZ2 while LCZ3 shows more of a mix with Glass, Aluminium and Rough plastered facades.

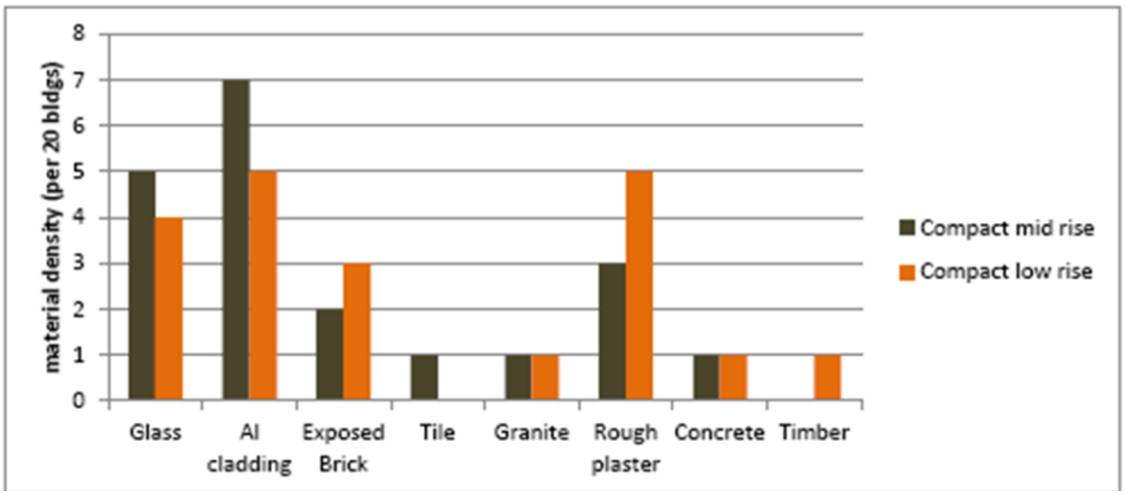


Fig 3: Survey summery of materials & frequency of occurrence
Source: Author

On-site measurements of surface temperature

Infrared thermal images of surface temperature were captured with a FLIR ThermaCAM S60 (Fig 4) at key locations of selected buildings. Captured images were obtained by mobile sampling measurements at peak time. The temperatures were observed in a calm clear in March when the incoming long wave radiation is high.

Two measurements for each façade materials were obtained, one in the morning one in the evening. Further, the surface temperature probe (Technoterm 9400 Surface Temperature Probe) (Fig 5) was utilised to ensure the accuracy of the thermal camera. This probe was specially used to measure floor surface temperatures.



Fig 4: FLIR ThermaCAM S60
Source: Author

SHIM Simulations

The SHIM is a simple force-restore model that simulates the nocturnal cooling of an urban canyon (walls and street) (Fig 6) under 'ideal' conditions of calm winds and clear skies, therefore, all cooling is assumed to take place via radiative heat loss. No account of evaporative heat transfer is possible. However, the SHIM is an excellent tool to isolate the effects of urban geometries (density, height: width ratio and the sky view factor) as well as surface thermal properties. It thus enables us to explore the urban warming potential of rapid changes in urban growth epitomised by densely arranged buildings with excessive thermal capacities. (Emmanuel et al, 2011)



Fig 5: Technoterm 9400 Surface Temperature Probe & Thermal images in morning – evening
Source: Author

SHIM is initiated at the time of sunset and requires several inputs to run the model.

The governing force-restore equation used by SHIM for the nocturnal cooling of a homogeneous substrate with layer thickness D is given as:

$$\frac{dT(D_i,t)}{dt} = \frac{\sqrt{2\Omega}}{\mu_i} - \Omega(T_{D,t} - T_i)$$

Where T (Di, t) is the temperature of a layer i at time t, TD represents a "deep temperature" that is constant, μ is the thermal admittance of the soil, Ω is the angular frequency of the heating wave and L* is the net long-wave radiation.

SHIM requires initial values of the surface temperature (T), deep soil and/or building temperature (T_G or T_B), surface thermal admittance (μ), sky view-factor (ψ_S) and surface emissivity (ε) for all of the surfaces to be simulated in addition to the incoming long-wave radiation to the total system ($L_{\downarrow}$). (Johnson et al., 1991)

Values for each were determined by various means as outlined below together with the values defined by the individual LCZs.

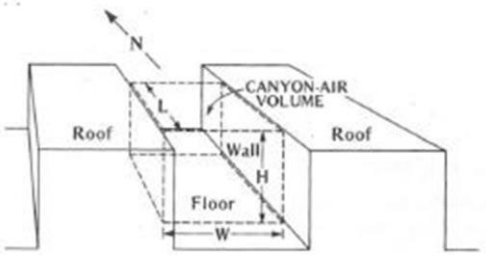


Fig 6: Typical Urban Canyon
Source: Oke, 1987

(source : Oke, 1987)

T Measured directly or a measured near-surface air temperature was used as a surrogate, (using FLIR ThermaCAM S60 and Technoterm 9400 Surface Temperature Probe)
T_g Estimated using the 3-day average air temperature as suggested by Deardorff (1978)
T_B Estimated from building interior set point temperature (assumed to be 27^oC)
μ Estimated from published values (e.g. Oke, 1987)
Ψ_s Calculated from fisheye lens photographs
ε Estimated from published values (especially Arnfield, 1982 and Oke, 1987)
$L_{\downarrow}$ Calculated using the empirical formulae of Idso and Jackson (1969) with measured humidity and air temperature.

The surface heat island model is available in simple computer spreadsheet form to simulate the cooling effects over variable urban/rural context as a function of the built features and rural aspects of any environment. The model acts as a mechanism to understand the highly complex nature of urban effects during night-time commencing at 6pm (Brazel & Crewe, 2002)

The SHIM model simulation results are compared with the rate of cooling at a 'rural' station (using data from the synoptic weather station at the Colombo International Airport (Lat: 7° 10'N; Lon: 79° 52'E; Elevation: 8m asl; WMO Station ID: 434500) and an 'urban' weather station at the Colombo City Airport (Lat: 6° 49'N; Lon: 79° 52'E; Elevation: 5m asl; WMO Station ID: 434670).

Limitations

The main limitation to the method is seen in both the LCZ classification and SHIM simulation, where 'ideal' conditions of calm winds and clear skies were assumed. It is known that the UHI is most intensive under these conditions. The morphological and materiality simplification as a representative sample of the city has limitations, such that in a real world scenario, the urban fabric is much more heterogeneous.

Results and Discussion

Relationship between UHI intensity and materials in different LCZs and Proximity

UHI intensity discussed in the following analyses signifies the temperature difference between the rural site and the urban. It is essentially the disparity between the nocturnal cooling potential between contexts. Fig 7 shows the variation of UHI intensity by different materials under selected climatic contexts. Significant temperature difference/ highest UHI intensity is recorded in LCZ2-commercial for all selected materials. Where the zones are influenced by vegetation, wind and water bodies (sea front and lake front zones), it is evident that the intensity is lower than that of the land locked LCZs.
Aluminium cladding in LCZ2-commercial, recorded the highest UHI intensity of 2.87^oC. While, the lowest UHI intensity of $1.78\ ^oC$ can be seen at LCZ3-sea front zone, also for Aluminium cladding.

Considering materials within a particular LCZ only, overall, brick and aluminium cladding have the greatest intensity in LCZ2. A distinct change in the behaviour of Aluminium cladding in the LCZ2 and LCZ3-sea front zones is highlighted, where it cools faster than in other zones and materials.

Reflective Glass shows the lowest intensities across all LCZs and proximities. An exception is seen only in the sea front proximity, where Aluminium cladding is cooler.

Overall, materials with the ability to store incoming radiation, like brick and Aluminium cladding (which usually includes a brick inner structural layer) tend to cool slower. Yet, in contexts that

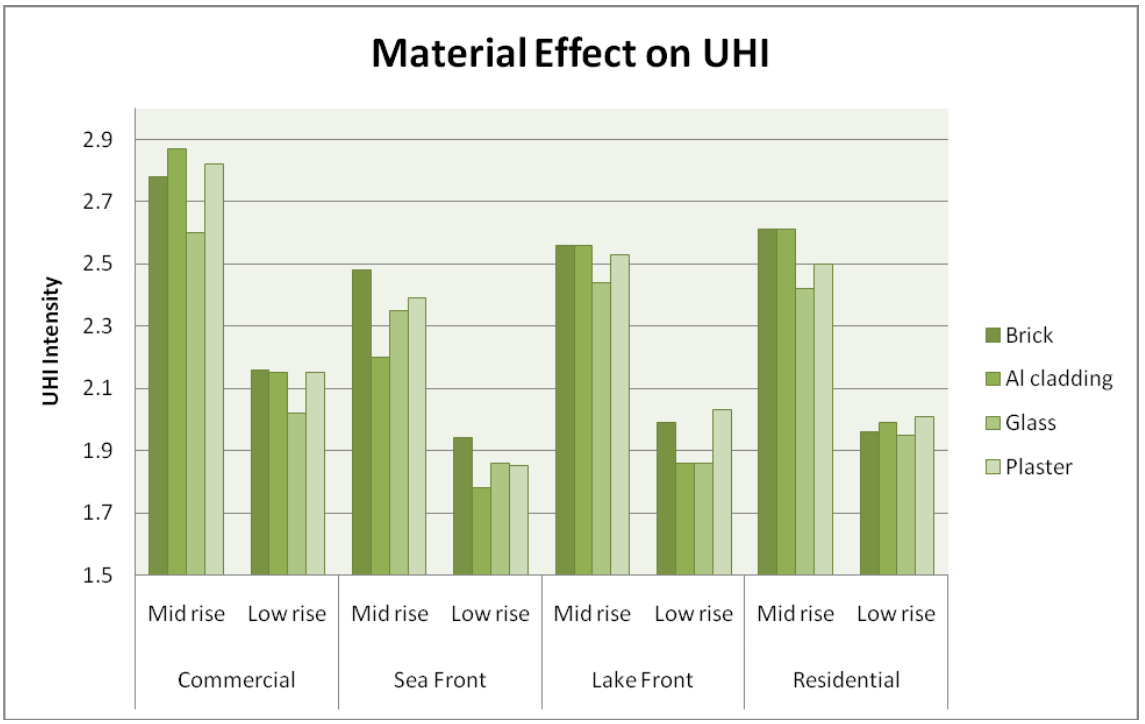


Fig 7: Material Effect on UHI
Source: Author

have enhanced ventilation and therefore disperse radiation more efficiently, perform markedly better. Plastered brick walls with usually painted façades cool faster than exposed brick. The increase in the ability to cool is deemed due to the increase in albedo of plastered, painted brick.

Façades that utilise Glass, with its ability to reflect most of the incoming radiation, cools faster, than all materials compared.

The design implications of the study are clear and in line with established thinking, that high-albedo materials are more effective in ameliorating nighttime UHI. Yet, Errel et al. (2012) highlights that the reduced surface temperature due to reflected radiation and thus reduced long-wave emission can have a negative effect on the pedestrians using the street.

“Increasing the albedo of urban surfaces may thus be a small increase in the thermal stress to which pedestrians are exposed – rather than the expected improvement in thermal comfort”. (Erell, Pearlmutter, & Boneh, 2012)

Although, outdoor thermal comfort cannot be ignored, it is well established according heat transfer theories, that indoor temperature significantly depends on outdoor temperature. Therefore, the exploration of the link between the urban microclimate and indoor thermal comfort is key, to provide for buildings that adopt passive strategies for thermal comfort and thus, reduced energy use. (Perera, Emmanuel, & Arooz, 2012) In this context it is crucial to consider all aspects relative to material use and its repercussions, albeit in the urban outdoors, indoors, diurnally and in terms of thermal comfort.

Urban design strategies to ameliorate night time UHI should encompass:

- Use high albedo materials like reflective glass, yet adopt strategies to shield pedestrians from the reflected radiation. Use both horizontal, vertical shading and double skin façades to shade.

- Restrict use of materials like aluminium cladding. Shade façades from solar radiation, thereby avoid excessive storage and release at nighttime.

- Encourage urban level ventilation to encourage rapid radiation loss in general and from canyon surfaces in particular.

Relationship between UHI intensity and canyon façade material combinations

In real-world situations, building façades in urban canyons is rarely comprised of a single material, but a combination of two or more materials. The preceding analyses adopt canyon façades of predominantly one material. Here, a series of combinations are explored for greater applicability. The method adopts walls of differing materiality on either side of the street canyon and therefore surface temperature used as input values for SHIM, is specific to the façade material on either side of the canyon. The comparison is made for the warmer LCZ2-commercial, as the worst-case scenario among LCZs and proximity, discussed in the preceding section (Fig.8).

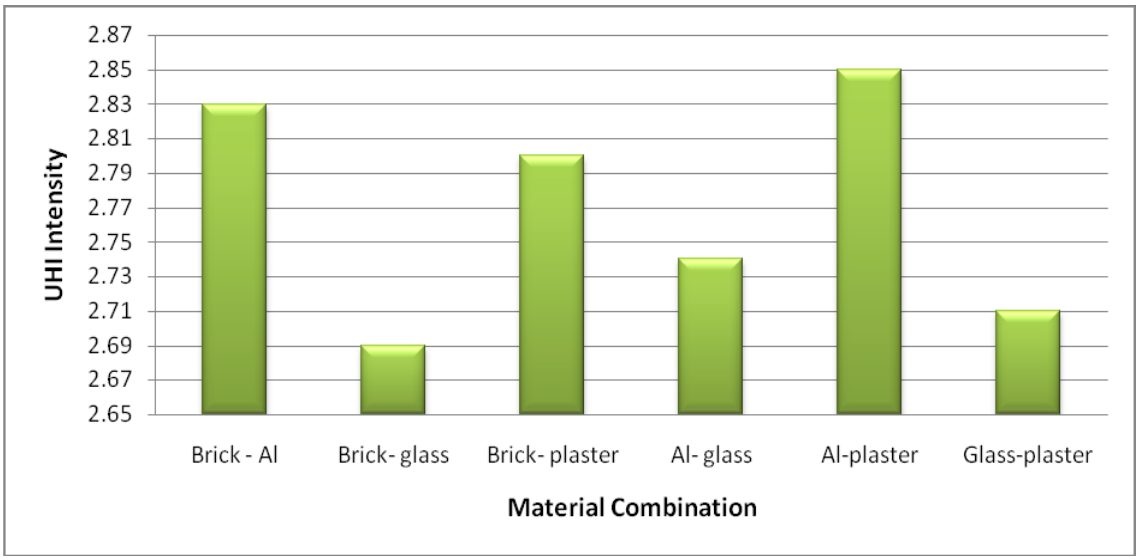


Fig 8: Effect of material combinations on UHI intensity (LCZ2-commercial proximity case)
Source: Author

The warmer street canyons include Aluminium cladding, while, the coolest are the combinations that include reflective glass. Even though glass was seen as the material in which nocturnal cooling was most rapid, here, a combination with Aluminium cladding diminishes this ability, thus showing significant UHI intensity. This is true for combinations with other materials as well, all showing higher intensity than the base, glass only canyon.
The results show that conscious mixing of the street canyon façades can help mitigate the ill effects of nocturnal warming and excessive radiation emitted by high albedo materials in the daytime.

Implications are explored within the framework discussed in the previous section;

- Adopt material combinations to decrease the negative impact of a particular type of material, whilst reaping the benefits of its positive aspects.

    - Materials could be controlled to get the best of them, depending on the function, period and time of use. Thus, the materiality of the fabric could correspond to the zoning of functions in a public outdoor space.

    - Define maximum façade material ratios and window to wall ratios
        - Explore control of material in a particular context to avoid over use.
        - Define ideal window to wall ratios for indoor visual and thermal comfort, energy use and effect on the urban outdoors

    - Explore best-case scenario materials for particular contexts and orientations of street canyons within urban fabric.

Conclusion

The main objective of the research was to quantify and compare the local warming effects of street canyon materials in the warm, humid climate of Colombo, Sri Lanka.

A survey of LCZs based on the LCZ map of Colombo developed by Perera et.al, (2012) showed that LCZ2 and LCZ3 are predominant. They were also seen as critical in terms of local level warming. The simplified interpretation of the urban fabric by the use of the LCZ system allowed a better focus on the envisioned material aspects.

Data collection of materials within selected LCZs showed that Aluminium cladding, Brick, Plastered walls and reflective glass were predominant.

Analysis of data generated using SHIM for street canyons of specific materiality showed that; Aluminium cladding in LCZ2-commercial, recorded the highest UHI intensity of 2.87^{o}C. While, the lowest UHI intensity of 1.78 ^{o}C can be seen at LCZ3-sea front zone also for Aluminium cladding.

Similarly, simulations that explored material combinations in street canyons showed that the inclusion of Aluminium cladding adversely affected the UHI intensity than those of other combinations. Street canyons that included Reflective Glass showed a higher rate of nocturnal cooling, thus, of lower UHI intensity.

In this context, it can be concluded that the materiality of the existing fabric of Colombo has a negative effect on the UHI intensity. The use of materials like Aluminium cladding is rapidly growing. It has generated a building typology of blank façades with no possibility for passive light or ventilation. These buildings generate large amount of anthropogenic heat by its use of mechanical ventilation and artificial lighting, also resulting in extensive energy use. The research clearly demonstrates that trend is not healthy for the city.

Similarly, the 'glass box' commercial building was the predecessor to the aluminium-clad façade, in Colombo. Although, the high internal heat gain and cooling load resulting energy hungry

usage of such buildings is evident, a possibility for natural lighting and better nocturnal cooling of façade materials, places it on a better footing.

Strategies for UHI amelioration in warm humid Colombo, needs to adopt conscious material usage patterns, according to applicability, rather than for mere adherence to a trend. Trends, which are deemed irrelevant and ill advised in terms of urban design, architecture and climate sensitive design.

Further research should encompass the complete range of LCZs and with it a wider material exploration. Methodological limitations of analysing nighttime UHI could be broadened to ascertain the effects of materials on the urban outdoors for the total day, thereby include not only UHI amelioration, but thermal comfort as well.

The challenge of future research and design is to ascertain and establish the appropriate materiality for the city. These efforts should encompass aspects of not only UHI mitigation, but also avenues for achieving outdoor thermal comfort.

References

Akbari, H., Bretz, S., & Rosenfeld, A. (1997). Practical issues for using solar-reflective materials to mitigate urban heat islands.

Brazel, A. J., & Crewe, K. (2002). preliminary test of a surface heat island model (shim) and implications for a desert urban environment, phoenix, arizona. journal of the arizona-nevada academy of science, 0104(2), 98–105.

Dennis, L. Y.C., Rizwan, A. M., Liu, C. (2008). "A review on the generation, determination and mitigation of Urban Heat Island," Journal of Environmental Sciences, vol. 20.

Emmanuel, R. (2005). Thermal comfort implications of urbanization in a warm-humid city: the Colombo Metropolitan Region (CMR), Sri Lanka. Building and Environment, 40(12), 1591–1601. doi:10.1016/j.buildenv.2004.12.004.

Erell, E., Pearlmutter, D., & Boneh, D. (2012). 236 : Effect of high-albedo materials on pedestrian thermal comfort in urban canyons. Simulation, 8–11.

Johnson, G. T., Oke, T. R., Lyons, T. J., Steyn, D. G., Watson, I. D., & Voogt, J. A. (1991). Simulation of Surface Urban Heat Islands under "Ideal" conditions at night. Boundary-Layer Meteorology, (56), 275–294.

Kannamma, D. (2012). Optimizing heat gain by building materials through landscape elements, Ijmie.vol 2.

Kim, Y., & Baik, J. (2002). Maximum urban heat island intensity. Seoul Journal of Applied Meteorology, 41: 651–659.

Kim, Y., & Baik, J. (2005). Spatial and temporal structure of the urban heat island. Seoul Journal of Applied Meteorology, 44: 591–605.

Oke, T. R.(2009). Classifying urban climate field sites by local climate zone':The case of Nagana Japan, The seventh international conference on Urban climate.

Perera, N. G. R., Emmanuel, M. P. R., & Arooz, F. R. (2012). Indoor Comfort Implications of Urban Microclimate : Case study of Office Buildings in Colombo. In FARU International Research Symposium 2012 – University of Moratuwa, Sri Lanka.

Perera, N. G. R., Emmanuel, M. P. R., & Mahanama, P. K. S. (2012). 576 Mapping " Local Climate Zones " and relative Warming Effects in Colombo , Sri Lanka.pdf, (Fig 1), 2010–2013.

Shahmohamadi, P., Ramly, A., & Maulud, K. N. A. (2010). Reducing urban heat island effects : A systematic review to achieve energy consumption balance. International Journal.

Stewart, I. D., Oke, T. R. (2012). Local Climate Zones for Urban Temperature Studies. Columbia.

Voogt, J. (2011). How Researchers Measure Urban Heat Islands. Retrieved September 08, 2014, from http://www.epa.gov/heatisld/resources/pdf/EPA_How_to_measure urban heat islands.

Social Resilience and Urban Growth Exploring Urban 'Strategies' and 'Tactics' in Bangkok and Colombo

Koen, De Wandeler[*]
Faculty of Architecture, KU-Leuven, Belgium

Abstract

This paper contends that re-inventing the city involves a level of 'social resilience' that permits to face the challenges presented by urban development at moments of growth as well as in times of adversity and crisis.

It is a conceptual exercise that largely draws on the distinction which the French anthropologist Michel de Certeau between 'tactics' and 'strategies'. He described 'tactics' as everyday practices through which large parts of the population respond to power 'strategies' imposed on them from above. While tactics and strategies may sometimes clash, synergy between them is crucial to build 'social resilience' and make city life more sustainable.

To illustrate this claim, the paper ventures into a comparison between the urban discourses that were circulating in Bangkok in the booming early-1990s and an exploratory observation of similar trends in contemporary Colombo. Whilst two decades and vastly diverging historical backgrounds separate these contexts, the urban development strategies deployed in both situations are marked by strong economic growth and a booming real estate sector. In spite of political turmoil, social resilience in Bangkok has manifested itself in 'tactical urbanisms' that range from dissatisfaction and confrontation to consensus-building and cooperation. In view of Sri Lanka's recent past of armed conflict, the paper cannot offer such clear-cut insights on Colombo. Instead, it advances a series of logical presumptions by way of final reflection and invitation for further research.

Keywords: social resilience, tactical urbanism, Bangkok, Colombo.

Introduction

Cities are continuously being re-invented through a mixture of social and cultural practices, powerful imaginaries about city life as well as astute discourses about a sustainable urban future. Everyday practices may pass largely unnoticed but virtual realities circulated by rumours and gossip circles, tabloids, marketing and advertising agencies, social media and mainstream journalism are more conspicuous in adding spice to urban life. The liveliness of these narratives, in turn, stands in stark contrast with the drabness of official communiqués and urban agendas put forward by national or international agencies.

[*] Corresponding Author: Koen De Wandeler; E-mail- koen.dewandeler@kuleuven.be

The French anthropologist Michel de Certeau (1984: xix) adequately captured this complexity by distinguishing 'strategies' from 'tactics'. He identified strategies with the "calculus of force-relationships" imposed by "subjects of will and power", typically associated with political, economic and scientific rationality. Strategies provide the policies, statements, reports and blue-prints that strive for political stability, economic growth and scientific progress. Tactics, by contrast, do not rely on calculus or clearly localized entities; they are typically associated with the ways of operating of ordinary people in everyday life. Tactics are fragmentary, unpretentious victories of the "weak" over the "strong" and range from necessary acts of survival to clever tricks and conscious acts of contestation and resistance.

This paper takes this distinction as a starting point to elucidate a growing interest among urban practitioners and academics for range of urban practices and interventions broadly labelled as 'tactical urbanisms' (Gadanho, 2014:94)[1]. In addition, it links this distinction to the rising interest in notions of resilience and the relevance of 'social resilience' in particular (Asia Society, 2014; da Silva & Morera, 2014).

It then ventures into a tentative comparison between urban discourses that were circulating in Bangkok in the booming early-1990s and contemporary trends of urban development in Colombo. Here again, the distinction between strategies and tactics proves useful to explore the role, relevance and importance of social resilience in the re-invention of the city. Fieldwork in Colombo was limited and doesn't offer the benefit of hindsight as in the case of Bangkok. Yet, the exercise does allow to conjecture the likely development of tactical urbanisms in Colombo and offer recommendations for further research accordingly.

1. Paradigm shifts in urbanism perspectives and practices

As an ever increasing portion of the world population settles in urban areas, cities come to face a series of unprecedented challenges. Many cities have become more heterogeneous in terms of people (ethnic origin, religious conviction, social mobility), activities (global network, local markets, civil associations, artists' groups, street-wise gangs), and places (the CBD, downtown bazaars, suburban malls, recreation areas, slums, gated communities, etc.). At the downside, growing diversity also entailed growing disparities as well as rampant urban poverty.
This has created a situation where urbanites have been forced to come up for themselves, and local authorities had to 'rethink' the city in terms of planning, designing and management. Only trust and consultation could forge a way to re-invent cities' working and dwelling environment in a creative and sustainable way.

In the past decades, this realization has set in motion various new approaches towards urban development. In the Global North – and in the 'old' continent of Europe in particular – the combination of urban sprawl, massive inflows of (inter)continental migrants, de-industrialization and ageing society gave rise to public-private alliances. These partnerships began to "experiment with looser planning visions and design frameworks, linked to smaller, often temporary

[1] By using the plural form, Gadanho (2014:97) intends to cover ' sponateous interventions', 'hands-on urbanism, DIY and handmade urbanism, open-source in the urban realm or even peer-based technologies to appropriate the city. The incredible challenges of urban development and the range of hybrid urban designs model that respond to it will be explored in an upcoming Moma exhibition: *Uneven Growth: Tactical Urbanisms for Expanding Megacities*, New York;
http://www.moma.org/visit/exhibitions/upcoming

initiatives designed to unlock the potential of sites right away rather than in 10 years' time when formal master-plans may reach implementation" (Bishop & Williams, 2012:3)[2]. In the Global South, where the pace and intensity of urbanization have become far more overwhelming than it ever was in the North, the close proximity of recent rural migrants, urban residents and local or foreign investors have generated unseen decisiveness, resourcefulness and entrepreneurship to overcome poverty, attain a middle-class urban life-style or capitalize on the development of industries, services, and real property.

Lacking power and resources to restrain or control migration flows and urbanites' spontaneous initiatives, top-end authorities engaged in high-level debates whether cities were engines for economic growth or rather causes for concern, if not for an unending crisis. Local leaders and urbanites worldwide, however, were less concerned about these macro-economic dimensions as they became ever more focused on the urban 'system' – in the ecological sense of the term – and ways to make their habitat a better and more liveable dwelling environment.

1.1. Sustainability, resilience and the built environment

As a result of these ground-breaking efforts, the issue of sustainability has come to revolve around a better understanding of 'resilience'[3]. This notion refers to the capacity of a system – a company, a city, an eco-system – to survive, adapt, and grow in the face of unforeseen changes, even catastrophic incidents. By now, it is generally understood that the "triple bottom line" of sustainability lies with a multi-dimensional assessment of resilience, i.e.:

- *Economic resilience*:
  Reflects the financial strength and stability of the system, including the economic vitality and diversity of the communities in which it operates, the supply chain that it rests on, and the markets that it serves.
- *Environmental resilience*
  Reflects the operational efficiency and effectiveness of the system in terms of resource utilization and waste minimization, as well as its ability to protect and nurture the natural ecosystems in which it operates.
- *Social resilience*:
  Reflects the "human capital" of the system, including the capability, teamwork, and loyalty of its members, the strength of its relationships and alliances, and the political and cultural cohesion of its host societies.

Resilience thus implicates both strategic and tactical – i.e. both top-down and bottom-up – approaches towards urban development. More recent discussions even favour to erase these labels in order to establish a level playing field where fresh alliances can be forged and new

[2] In The Temporary City (2012), Bishop and Williams elaborate cutting-edge research and writings by Berlin's Urban Catalyst team (2007) and the seminal work of Haydyn and Temel (2006). This body of work covers a range of temporary projects in Germany, the Netherlands, the UK and the US. Some of these ventures were initiated by private entrepreneurs, others by local authorities and yet others through private-public partnerships. The trend is continuously updated in websites such as: http://popupcity.net, http://www.urbantactics.org, http://www.meanwhilespace.com (all accessed on 22 July 2013).

[3] For a broader discussion of sustainability and resilience, cfr. http://www.resilience.osu.edu/, on which this passage is largely based.

possibilities emerge (Kee 2014)[4]. Viewed in this perspective, it is clear that social resilience is essential to realize the other two dimensions of resilience. Social resilience essentially is a characteristic of a social system: it relies on a system's grasp of cause and effects, as well as interdependencies and reciprocity. The level of social resilience of any given system – be it an eco-system, a corporation or a city - thus is largely determined by personal traits of the members of the system, the social structure and processes in which these members interact, and the cultural narratives that underlie these interactions. This does not belie the materiality – the forms, states and qualities – of the built environment. Quite on the contrary, since the built environment constitutes one of the major media to shape, express and (re)produce social structure and processes.

1.2. Strategies, tactics and urban discourse

> Discourse embraces all of the practices through which meanings are communicated, not just speech and writing. The built environment, like food, fashion or film, is a primary form of discourse. Discourse is entangled in power relations since 'subjects' *i.e. human beings as individual agency] are constructed according to certain interests. These include the interests of the state in maintaining power and social order; private interests in stimulating consumption; and those of dominant classes, cultures and groups in the maintenance of privilege.
>
> Dovey, 2008: 33 (my brackets)

Both strategies and tactics envisage to strengthen resilience; both are deeply implicated in the discourses that build, maintain, and transform the city. To illustrate this act of continuous re-invention, I draw on fieldwork conducted in Bangkok in the early 1990s as part of my doctoral research[5]. With a robust economy, a strong faith in future growth and prosperity and a booming real estate sector, the situation in Bangkok twenty years ago brings to mind current developments in Colombo. This resemblance leads me to venture into some analogies and differences between the 1990s testimonies on urban discourse in Bangkok and tentative observations on urban-ness which I made in Colombo over the past year.

1.3. Methodological considerations: gathering scraps of information

A short note on methodology will clarify that these reflections are meant as a thought experiment rather than as a thoroughly researched exercise. While the proposed comparison may seem random, more in-depth research is required to prove it right...or wrong.
In Bangkok, I conducted fieldwork over a period of 18 months. In line with anthropological tradition, I anchored research in a "locale" that served as a unit of reference for broader "processes". On the one hand, I relied on participant observation of daily practices, casual conversations and interviews with residents to gain insight in the dwelling environment where I had resided since 1988. On the other hand, I included a wide range of urban issues that were raised in the local media, in private conversations or in public discussions. This included participatory observation of a loose association of "concerned citizens" who addressed issues like civil education, self-governance, urban environment and conservation.

[4] For a global analysis of how people take ownership of their urban surroundings in Amsterdam, Hong Kong, Moscou, New York and Taipei, cfr. Kee and Miazzo (2014) We Own The City.
[5] Text and illustrations about the situation in Bangkok were largely drawn from De Wandeler (2002) Locality and Urban Discourse: Bangkok in the mid-1990s. London: SOAS.

In comparison, my observation of urban-ness in Colombo is only in an infant stage: it was limited to less than a month's observation on site, follow-up of local and international news on Sri Lanka – and the Colombo real estate sector in particular – and scraps of information gathered from just a few public discussions and exchanges with students, academics and urban practitioners. Given this limited exposure, my presumptions about tactical urbanism in Colombo are based on logical deduction rather than on data mining in the field. I explore some of these viewpoint tentative. Although I present some of these conjectures in the final section of this paper in order to set a scope for further research.

2. Bangkok in the mid-1990s

Bangkok has been experiencing exponential urban growth since the 1960s. It was marked by a 'leap-frogging' urban sprawl characterized by 'superblocks': built-up areas stretched along the city's major roads and left interstitial land unaffected. Public agencies could not keep up the provision of welfare housing to a swelling corps of civil servants and the number of private sector employees in need of housing was sharply increasing. In response, land brokers and petty entrepreneurs embarked on small-scale land- and housing schemes (PADCO-LIF 1990). Their projects penetrated the superblocks with a multiplication of *soi* – side-streets off the main roads – that could either stretch over a few hundred meters, or become concatenated over several kilometres and ramify into an outgrowth of sub-*soi* (Cohen 1985; Yinyeod 1971). As large tracts of land at the core of the superblocks remained poorly accessible, they became encroached by squatter- and slum settlements[6]. This development pattern heavily affected urban mobility: the city was plagued by defective public transport and notorious for its continuous traffic jams.

Authorities generally adopted a "laissez-faire" attitude towards urban development. In 1973, the government had established the National Housing Authority with the mandate to address housing needs of lower-middle and low-income groups. By 1991, the agency had constructed 80,000 new housing units and improved another 70,000 housing units through slum upgrading. By then, the first phases of an extensive network of elevated toll-ways had been completed and efforts to 'retrofit' super-blocks were underway. New distributor roads or conversion of cul-de-sac *soi* into regular 'through-traffic' side-streets opened the way for a further expansion of the property market, albeit at the expense of poorer sections of the population (Durand-Lasserve 1976, 1983; Angel & Sopon 1989; Dowall 1989; Angel & Sureeporn 1990).

Meanwhile, Thailand had steadily realized double-digit economic growth for several consecutive years and became branded as the emerging fifth "Asian Tiger". The country's political leadership and business community displayed an indomitable faith in progress and modernization, as demonstrated by following titles in a publication promoting the 1995 Board of Investment Fair:

> Thailand's Real Estate Draws Global Players
> Can Thailand make Top 10?
> Construction pumps up the volume
> Tapping into Vietnam
>
> Bangkok Post, Showcase Thailand, 1995: 36; 44; 49; 54

[6] These 'underdeveloped' tracts of land absorbed flood waters during rainy season and functioned as 'lungs' for the traffic-choked city. Their later conversion to urban land uses proved detrimental for the city's ecological balance (Anuchat & Ross, 1992).

“Globalisation” had become a new national buzzword but also an issue over which people were deeply divided (The Nation, 28 Jan. 1995:6). One view regarded globalisation as a growing exposure to foreign customs and practices. In conjunction with rapid economic growth and the consumer behaviour spurred by higher income levels, it caused a Thai cultural crisis and threatened Thailand's “unique cultural heritage” (The Nation, 5 December 1994). Adherents of this perspective tended to question whether national development plans had been right to prioritise economic development over "human" development. To emphasise their argument, they pointed out social and environmental problems that besieged Bangkok in the wake of its unbridled growth: traffic congestion, income disparity, stress, alienation and criminality. Notwithstanding such discussions, Bangkok’s property marketss came to reflect the country’s impressive economic track record.

2.1. Dwelling environments as the workings of an industry

By 1990, more than one thousand professional developers were active in Bangkok alone. The total value of property transactions nationwide increased with nearly 60 per cent from roughly 300,000 million Baht in 1990 to 475,000 million Baht in 1994. Within the same period, the number of property companies listed on the Stock Exchange increased from six to thirty-two. Internal growth of the sector lead to a higher degree of professionalism and more sophisticated outputs, which in turn required increasingly complex brokerage roles. The processes of site prospection, land conversion and -subdivision became dominated by specialised agencies. Supervision and construction management, marketing and promotion, as well as sales and estate management followed suit. In addition, local consultants and think tanks began to face competition from international real estate agents.

Not surprisingly, real estate advertising became one of the ubiquitous features of Bangkok’s streetscapes. Gigantic billboards towered along motorways and at major intersections. Stacks of property magazines piled up at news-stands. Radio- and television channels aired weekly broadcasts to provide home-buyers with brisk, business-like updates of the property market.

2.2. Weaving dreams in real estate…

Property advertising seized daily life in its minutest details. Its message was unambiguous: "YOU could be so much be better off, if you'd live in OUR housing estate or condominium "[7]. Location was and still is the foremost feature on which consumers need information, especially in a traffic-choked city like Bangkok. Location maps showing major access roads and nearby amenities therefore figured in every advertisement and brochure. Whether the location was accessed by ground-level streets, elevated highways or toll-ways implied a different level of wealth and distinction at a time when city authorities had yet to implement the mass transportation schemes.

Promotion material for suburban housing estates showed a rosy picture of life. Healthy-, trendy-looking young people and cute little children – one boy, one girl – figured in impeccable leisure wear in nearly every picture. Their life seems to consist only of leisure and romance. The names of housing estates exude an air of exclusiveness and distinction, and carry obvious connotations to a green and healthy environment. Set in these lush environs, then, neighbourly contacts are friendly, joggers greet each other on their rounds, and friends jovially spend time together near

[7] Property developers spent millions to get this message across: the amounts increased nearly five• fold from 1,260 million Baht in 1990 to 5,647 million Baht in 1994 (De Wandeler, 2002)

the swimming pool. This closely-knit community is safely guarded from the outside by private security guards and yet, within easy reach of all urban amenities.

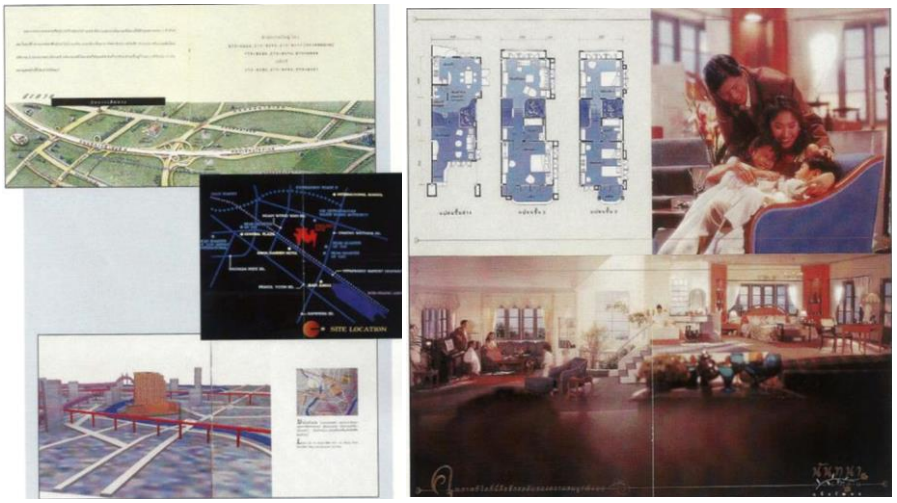


Fig. 1: (left) Representations of location in real estate advertisements in Bangkok, 1994
Source: De Wandeler, 2002

Fig. 2: (right) The brochure of Nantana Gardens proclaims
"Thini mi khwamsuk nai thuk tarang niu – Here happiness reigns in every square inch"
Source: De Wandeler, 2002

In contrast to this predictable array of connotations; marketing of inner-city condominiums communicated a different – and often more puzzling – message. Some, like the advert for Ban Chao Phraya Condominium, stress comfort and convenience: it does not depict anyone enjoying these comforts, as if living high above the crowds made people invisible.

Visual metaphors were taken one step further in a promotion campaign for "Sarin Place", a building surrounded by major thoroughfares that was designed as an office tower but converted into a residential condominium while under construction. The campaign included newspaper ads that cleverly targeted yuppie consumers. It departed from expected patterns as it turned the building's unattractive location as an isolated tower into an asset. To see without being seen was here promoted as the ultimate of city living ("*maimi saitakhudai marobkuan pomloei*- no pair of watching eyes can bother me here").



Fig. 3: Newspaper advertisement showing the comfort and privacy to be enjoyed at Sarin Place
Source: De Wandeler, 2002

2.3. And waking up to reality…

Property developers often failed to live up to the expectations created in marketing campaigns. Administrative red-tape to approve projects sometimes took longer than developers cared to wait; they disappeared once they had cashed in on the sales campaign (Bangkok Post, 4 April 1995: 17). Some other projects were approved while the developer was not the rightful landowner or had mortgaged the land (The Nation, 21 May 1995: B2). Other approved construction sites were situated underneath high-voltage lines or crossed by oil- or gas pipes (The Nation, 30 May 1995: B3). Faulty workmanship and the use of substandard materials caused major disturbances to neighbours, damaged surrounding building or even caused new buildings to collapse (Bangkok Post 22 April 195:2).

Only major cases of fraud or mismanagement were reported in the media, but thousands of households saw their dream housing delayed, cancelled or delivered without any of the promised recreational facilities. Until the present day, living conditions in suburban housing estates as well as in inner-city condominiums hardly ever comply with the projected imagery. Many suburban housing estates are walled, rather bare stretches of land where standard-type houses are packed rather too closely together. Residents go about their lives minding their own affairs *(tang khon tang yoo)* and, except for an occasional jogging round in the early morning or the late evening, do not trouble much to enjoy communal spaces. In the daytime – when children are off to school and their parents at work – the maids, gardeners and security guards have the place for their own.

Due to the estates' remote location, residents had to rely on private modes of transportation to commute to work or reach the suburban shopping mall and other amenities clustered near it. High-rise, high-income condominium buildings that mushroomed along well-connected *soi* in the inner-city or near the major thoroughfares, by now line up at a stone's throw away from one another. Entire *soi* are plunged in their shadows, clogged up with through-traffic during most of the day, commuters' coming and going at rush hours and plunged into darkness at night.

The real estate boom created new types of trendy, exclusive neighbourhoods that provided a home for some and displaced many others. More than half of the households in Bangkok could not afford to purchase the cheapest unit in what analysts assessed as an "efficiently performing housing market" (Dowall, 1989). In Bangkok and its suburbs alone, the property sector produced 755,000 housing units between 1992 and 1995. Yet, about 40 per cent of those units remained unsold at the time. Statistics showed that only thirty per cent of the households in Bangkok owned their housing unit; fifty per cent could not afford even the cheapest housing unit for sale at the time. Instead, they relied on rental or rent-free accommodation which they secured in niches within or in between formal housing delivery systems. Amongst them were over one million dwellers of slum- and squatter settlements and – at the height of the construction boom – near to one million construction workers housed in temporary camps (Ogunlana, 1993).

2.4. Manifestations of tactical urbanism

The massive, multifaceted transformation of the city-scape spawned conflicting interests which involved rows, violent clashes as well public outcries. Ever since the late 1980s, the Ban Krua community, for example, had opposed construction of an elevated expressway overhead their neighbourhood. Over the following decade, successive city administrations had construction plans approved, modified , questioned, withdrawn and re-approved. In the meanwhile, the little Muslim community set up an efficient neighbourhood watch system and a local fire

brigade to prevent arson, as well as a strong leadership and tight relations with congenial groups, both Muslim and others in Thailand as well as abroad.
Similar incidents of displacement occurred throughout the city, wherever absentee landlords (both private and public) saw an opportunity to cash in on the sale or development of land which low-income households had rented or squatted upon for years. Many communities resisted and secured support from NGOs or government agencies to claim their "right to the city" (Lefebvre 1996; Harvey 2008).

These claims were not limited to the urban poor but also transpired in the political climate. By 1997, academics, social critics, NGO's, and broad sections of Bangkok's middle classes had pressured political reform towards decentralisation and promoted a more responsible, more 'civil' society. In Bangkok, civic groups like Bangkok Forum advocated to revitalise a sense of community in order to 'humanize' the city[8].

2.5. Struggles towards reinventing the city

Bangkok's unprecedented property boom came to an abrupt end in July 1997: the Thai government was forced to float the national currency in the face of an overextension of real estate loans and excessive circulation of so-called "hot money". Whilst the financial crisis spread like a fire throughout Asia, the economic resilience of Bangkok's financial and property sectors were scattered. Many Bangkokians – disillusioned with corporate strategies – showed renewed respect for the countryside and its agricultural, manufacturing and trading potential (Pasuk & Baker 1989). Admonished by country's revered monarch, public discourse and practices adopted the adage of self-sufficiency. White-collar employees dispersed to secondary cities and plied their trade in less corporate ways. Migrant workers returned upcountry and fell back on the social resilience of traditional family support systems.

After two decades of retrofitting road infrastructure, tinkering with public bus lines, cancelling one mass transportation scheme and delaying others, government strategies finally managed to remedy urban mobility. Two elevated light railway lines became operational in 1999, and part of subway loop system was inaugurated in 2004. This mass transit system meant a major step forward in the environmental resilience in inner city. As the network is spreading to suburban areas, it has the added benefit to attract property development to its immediate vicinity.
Whilst the economy had regained some resilience by the turn of the century, repetitive political upheaval and the 2008 global recession thwarted a full recovery. Mounting political antagonism in recent years is often portrayed as a deficit of social resilience, while it may well mark an uprising of a tactical nature against established forms of patronage, cronyism and corporatism. Whilst the down-market trend in communication technologies helped raise citizens' awareness, it also strengthened media competence to critically evaluate the cultural and environmental impacts of projects and policies. Contestation of public schemes and resistance against random private development projects has indeed grown beyond piece-meal occurrences. Disinvested communities, for example, have realized important progress in bridging the 'top-down-bottom-

[8] This programme was set to address five topics which include: the conservation and restauration of neighbourhoods and communities, the aesthetics of urban life, the management of the urban environment, the management of the urban geography and city life, and the restructuring and reform of the city's bureaucratic system. Even though this particular program has since been abandoned, the association has continued its awareness-raising campaigns until the present.

up' divide by strengthening NGO networks, as well as cooperating with the State-led Community Organization Development Institute (CODI) and its nation-wide *Baan Mankong* project[9].

3. Present-day Colombo

> As you walk in to the arrivals area of the international airport at Katunayake, a large brightly lit billboard declares 'Dream City, Happy Life!' It is advertising Sri Lanka's latest infrastructure and real estate project, the Colombo Port City. *…+ you could be fooled into thinking it was something coming up in Dubai or Qatar *…+ The ambition and optimism of this project reflects the wider sentiment about Sri Lanka's economic prospects after the end of the war in May 2009.
>
> Wijesinha,A. 2014



Fig. 4: Overview perspective of Colombo's new Port City
Source: http://cdr-international.nl/portfolio-item/sri-lanka-chec-port-city-colombo-value-engineering/

Sri Lanka's development aspirations over the past five years have brought relief from protracted separatists violence, realized impressive economic growth and rising living standards for many citizens. GDP growth in the past years has averaged 7 per cent while the Asian Development Bank forecasted a 7.5 growth rate in 2014; lower inflation and greater price stability helped to reduce absolute poverty and income inequality across sectors and provinces of the country (Weerakoon 2014). These headlines match the confidence in continued future growth that marked urban discourse in Bangkok in the mid-1990s. Contemporary growth in Sri Lanka, however, has been spurred by massive government efforts to restore physical and social infrastructure and communication systems. With generous support from foreign donors and – largely Chinese – government loans, recent public works include two ports, an international airport, and a power plant. Three expressways and a multitude of new roads and bridges reach out and funnel funds into war-torn and impoverished regions. Notwithstanding efforts to extend the benefits of political stability and economic growth to the wider population, the Colombo metropolitan region remains the main commercial and financial hub and the international

[9] Somsook (2011) explains that CODI focuses on the mobilization of financial resources for disinvested communities: it organizes community saving groups and mobilizes revolving low-interest loans for upgrading or resettlement. The *Baan Mankong* project streamlines this kind of projects country wide: it seeks to provide a common forum for disinvested communities within any given city, to strengthen their capacity to rank development issues in their city and to build a national (and even international) network For full information on this initiative, cfr. http://www.codi.or.th/housing/aboutBaanmankong.html

gateway to Sri Lanka. Government strategies so far have sought to tap this competitive advantage in order to stimulate country-wide economic growth.

3.1. Making Colombo "the most attractive city in South Asia"

Whilst Colombo has long been established as an international harbour and the country's transportation hub, civil unrest long stifled the city's comprehensive urban development. Hardly one year after the conflict was ended, devastating floods hit the city and strengthened the government's resolve to boost the city's resilience. With financial backing from the World Bank, it formulated the "Comprehensive Metropolitan Colombo Urban Development Plan" (MCUDP) aiming to reduce the physical and socioeconomic impacts of flooding and to improve urban infrastructure and services (World Bank 2013).

According to reports by the Urban Development Authority (www.uda.lk), fact finding surveys identified priority concerns as diverse as poor solid waste management, frequent flooding, massive hawkers' trading along road sides, poor walkability of pavements, inadequate and ill-maintained infrastructure, underserved settlements, and insufficient city spaces for the public. To address these issues, the Ministry of Defence and Urban Development, in cooperation with the Urban Development Authority (UDA), the Colombo Municipal Council (CMC) and other local authorities, devised urban development strategies that envisaged city beautification, urban regeneration and revitalization of landmark cultural heritage sites as well as mega development projects. The latter would be realized through PPP arrangements or land concessions to local or overseas investors.

First priority was given to issues that could be addressed in the short run and had a high visibility impact. These included: more efficient waste collection, the resettlement of street hawkers, reconstruction of damaged pavements for improved walkability and rehabilitation of roads and intersections for alleviating traffic congestion. In addition, several tracts of public land were cleared of their surrounding walls and developed into urban spaces for the citizenry to gather and enjoy the views and the greenery: the Galle Face Green, Independence Square, Vihara Maha Devi Park, and the Parliament Grounds have by now become some of the most popular spaces for locals and tourists alike.

In addition to initiatives to make the city green, clean and accessible to the public, authorities initiated various schemes to make Colombo "the most attractive city in South Asia". This array of projects targeted various categories of investors (local and foreign enterprises, Sri Lankan expats, HNI's) and end-users (civil servants and armed forces, middle classes and the urban poor, as well as expatriates, returning Sri Lankan retirees, etc.). The common feature of these projects is that they generate return on investment and revenues to secure additional loans from international donor agencies. In this way, authorities could realize long range strategies that strengthen the city's resilience in terms of water- and waste management, provision of basic amenities, and handling capacities of supervising agencies and local authorities[10].

One set of actions focussed on the renovation of colonial buildings and other large buildings in prime locations of the city. Interventions restored heritage buildings to their former glory and

[10] Immediate measures in flood prevention, for example, were limited to the digging of new lakes in the upper catchments areas, clearing of obstructions and accumulated debris from the main canal system, installation of cleaning mechanisms and more efficient maintenance for micro drainage systems. In the long-term, however, measures will need to include the provision of micro tunnels and pumping stations, the improvement of the micro drainage system, and canal bank protection (www.uda.lk)..

refurbished them into venues of leisure and luxury with retail spaces that catered for the needs of high-end consumers. Outstanding examples comprise the Old Dutch Hospital, the adjacent precinct and further expansion into the historical Colombo Fort area, the Race Course complex and the former Auditor General building. In addition, the former St. John's fish market and Gaffoor building are due to be renovated and refurbished into high-tech economic nodes in central Colombo (Yatawara 2014b).



Fig. 5: Arcade Independence Square on opening day, 13 July 2014
Source: www.dailynews.lk/

> Arcade – Independence Square has been created to fulfil a unique requirement. That is to create "one space" where entertainment, shopping, leisure and dining can all be offered to please the requirements of the entire family. The portfolio of brands that are present at the Arcade become a crowd puller for they are the most coveted global brands available.
>
> Newspaper advertisement, Sunday Observer, 13 July 2014: 22)

The regularisation of street vending is less cost-intensive and serves to ensure less affluent portions of the population with access to daily consumer goods. It resettles market vendors and street hawkers to regular market sites, including some that are developed as part of a beautification project. These venues are highly accessible to a wider range of people and particularly popular among citizens who spend leisure time in outdoors settings. Examples include the floating market along Beira Lake offering retail spaces for the sales of handicraft and food, and the Diyatha Uyana market with retail spaces for horticulture products as part of the Diyawanna Oya Lake Development programme.

A far more problematic and lengthy process of negotiations is required to realize the authorities' ambition to "eliminate shanties, slums and other dilapidated housing from the city of Colombo by resettlement *…+ in new housing schemes of internationally recognized standards"[11]. City-wide surveys had revealed that close to 70,000 "underserved" settlements occupied some of the most valuable land in Colombo. Only a portion of the revenue generated from clearing this land and putting it up for sale, long-term lease or concessionary holding is needed to provide

[11] The quote is taken from the UDA vision on urban regeneration through resettlement: "To eliminate shanties, slums and other dilapidated housing from the city of Colombo by resettlement of the families presently living under unhygienic and poor environmental conditions in such housing in new housing schemes of internationally recognized standards and in doing so to make the City of Colombo the most attractive city in South Asia" http://www.uda.lk/investment_relocation.html viewed 28 September 2014.

displaced households with financial compensations, temporary rental provision and the allocation of a new housing unit in UDA's newly built low-income apartment buildings (e.g. in Wanathamulla and Demathagoda). However, unlike other mega development projects such as the relocation of the Defence Quarters or the restoration of Beira Lake, these interventions risk confronting UDA with contestation and resistance from disgruntled households, community leaders and political activists.

3.2. Colombo: the heartbeat of Sri Lanka?

Meanwhile, the private sector caught up with the evolution of the real estate market: driven by increasing land prices in Colombo and rapid urbanisation of the population, the demand of condominium residencies in central Colombo has been rising, while traditional villas and detached houses were being pushed to the peripheral areas. Colombo became a city brimming with construction sites for standard and luxury apartment buildings as well as five star hotels and shopping malls with glossy frontages for international clothes chains.



Fig. 6: Southward view from Galle Face Green, Colombo, July 2014
Source: author

A survey conducted in mid-2013 found that on-going developments would add 3,000 apartment units and more than 3,000 three to five star hotel rooms in the coming four to five years. Most apartments fell into the standard category, while medium to luxury units were mainly in demand by Sri Lankan expatriates or by families of businessmen living in rural areas. While the former group intended to let the unit to another party, the latter made the purchase in view of convenient access to schools, higher education and employment in the vicinity of the project. (http://www.dailynews.lk/?q=business/colombo-modern-city-making/0, 23 and 24 July 2013, viewed 28 September 2014).



Fig. 7: Billboards and magazines advertisements promote medium to luxury apartment units
Source: author (left); HitAd Classifieds 13 July 2014 (right)

In spite of recent restrictions on the purchase of property by foreigners, and warnings that these market segments would soon be saturated, property development companies baffled the markets with projects for which they had commissioned world-famous designers. For its first project in Sri Lanka, the Indian property group South City Projects (Kolkata) Pvt. Ltd. (SCPKL), commissioned starchitect Moshe Safdie who designed a high-end, eco-friendly 65-storey condominium tower (http://archives.dailynews.lk/2012/05/28/bus01.asp). More recently, the well-established John Keells Holdings (JKH) which primarily concentrates on the development and sale of residential apartments announced details of its Waterfront project. The scheme will include a 6 star hotel, apartment blocks, large retail centre, office buildings and car parks. The entire project including design and interior design, engineering, cost-control, project management and site supervision, will be provided by a multi-disciplinary team led by world renowned architect Cecil Balmond.

With the exception of the huge displays at the construction sites of mega developments or five star hotels, the Colombo cityscape remains relatively spared of billboards similar to those that are still disfiguring Bangkok until this day. It is not clear whether that is due to the absence of major cross-city expressways or regulations on city beautification. Moreover, promotion campaigns nowadays have found direct entries into consumers' homes through television commercials, promotion on internet and direct mailing through social media. The advertisements, however, contain almost an identical message to what was noted in Bangkok. They depict a happy family life with a life-style, in which a healthy diet, exercising and socialising are essential – and often complementary - ingredients. It is not by chance that property developers seek to set up projects near public parks, renovated lakes and newly paved jogging and cycling tracks. Even in the vicinity of these facilities, they try to integrate elements of this new life-style in so-called mixed-use developments. Many of the materials promoting these new dwelling environments suggest a sense of fulfilment and what their realization implies for national pride.



Fig. 8: Magazines advertisements for suburban villas and detached houses depict the fulfilment of a life-long dream and a family life set in greenery and luxury/
Source: HitAd Classifieds 06 July 2014 (left); Sunday Observer ADZ, 13 July 2014 (right)

3.3. Limitations to strategists' deployment

Amongst the mixed use developments that are already in use, Havelock city is known as an estate that was quickly sold out and timely completed. However, the same cannot be said of all developments: a summary review of the property pages in newspapers and magazines reveals that quite some developers neglect the timely provision of collaterals for bank loans, adjourn or suspend project implementation, or fail to deliver the services that were included in the original blue-prints and sales brochures[12].

In view of the sudden growth and the pace and complexity of the real estate developments, local authorities may lack qualified experts to check projects' conformity to building codes in detail (Yatawara 2014a). Likewise, the judicial system handling complaints from disgruntled home-buyers may face difficulties in mobilizing all stakeholders for on-site inspection and thus cause further delays and considerable backlogs (Balendra 2014).

Pressure to raise the financial resources and to strengthen the human resources capacity of these regulatory and judiciary bodies is likely to increase as commodification of urban property proceeds, disputes over property development multiply and the range of plaintiffs grows larger. Landowners may be opposing land reclamation, dissatisfied with the granted compensation or fighting encroachment of their land by rural migrants in search of work. Likewise, migrant workers or slum dwellers may oppose eviction, or beneficiaries of low-income resettlement housing may refuse to move. Home-buyers lured to invest their savings in projects that are cancelled, postponed or poorly executed, may want to fight back especially if they include disappointed Sri Lankan expats returning home. Last but not least, stakeholders in the real-estate sector itself may start infighting over deliveries delayed, payments eluded or workmanship poorly executed.

On the bright side, the real estate sector is likely to fine-tune its discipline to deliver quality products as expats' remittances increase, customers' purchasing power grows and competition with foreign companies intensifies. Provided that transparent and accountable control mechanisms are in place, internal competition will single out those companies that pursue high standards of quality control, top-end customer care and professional after-sales and maintenance services.

In addition, urbanites are likely to grow accustomed to the new trends of urban living and wary of ever more "must-see" developments and "must-do" leisure venues. Whilst they may enjoy jogging along wider pavements with flower-troughs and unbroken curbs, they might also yearn for the diversion and liveliness of road-side stalls or succession of hawkers throughout the day. The vendors' presence may help passers-by to quench their thirst or appease a sudden craving. Such digressions from the monotony of daily routines helps keep both mind and human relations in a healthy state. They mesh with the aspiration for a healthy urban lifestyle, rather than contradicting it. Colombo, like other world-cities, may do well by integrating citizens' concerns for a green and clean environment as well as their fondness of an animated street-life.

[12] For example, cfr Balendra, 2014 in bibliography; also: http://www.lbt.lk/news/business/6156-krrish-controversy-re-surfaces-dr-harshas-concerns

4. Final Reflections

The Sri Lankan government has laid down a clear vision for the future (*Mahinda Chinthana*): "to transform Sri Lanka to be the Pearl of the Asian Silk Route once again". This aspiration calls to mind Thailand's ambitions to spearhead economic development in Southeast Asia by "turning battlefields into a marketplace" under the Chatichai Choonhavan administration (1988-1991) or resurrecting the suvarnhabhumi or "golden peninsula" concept under Thaksin Shinawatra's premiership (2001-2006). While Choonhavan's government was cut short by a military coup, Thailand subsequently saw a succession of short-lived governments and an unprecedented economic crisis. After an economic revival under premier Thaksin and another military coup, Thailand has been plunged in repeated political upheaval that may express the country's social resilience, but has left the Thai population deeply divided. By contrast, Sri Lanka thrives on a desire to consolidate national unity ever since the end of civil war in 2009.

A stable political situation has helped the Sri Lankan government to gain international recognition, forge new alliances, and secure foreign donor commitments. Foreign Direct Investment has been soaring; as it was mainly directed at real estate and tourism development the manufacturing sector is somewhat lagging behind (Wijesinha, 2014). Government and corporate strategies thus have created employment opportunities for a wide range of professionals and absorbed a huge mass of skilled and unskilled labourers. This certainly came as a blessing for thousands of households left stranded after years of hostilities and helped to consolidate social resilience. Since Colombo is in the thick of this investment hype, however, it would be particularly hard hit if the property market would collapse as it did in Thailand in 1997 and in the U.S.A. in 2008. In such a scenario, the tourism- and the IT and software development industries could only absorb a portion of the unemployed. For many others, tactical diversions towards secondary cities or the countryside could only be successful to the extent that Colombo's economic benefits have trickled down and raised economic resilience elsewhere in the country as well.

In terms of environmental resilience, present-day Sri Lanka benefits from the deepened ecological awareness accrued over the past 20 years. Government strategies have clearly prioritized water- and waste management as well as a "green and clean" urban agenda. However, the private sector drive for short-term gains could well undermine government-initiated environmental achievements. Whilst the urbanization pattern in metropolitan Colombo may be more evenly spread then it used to be in Bangkok, current development trends are geared towards densification of the most sought-after inner-city neighbourhoods. Inhabitants' tactical urbanism – their life-style and aspirations – including a higher car-dependency – could be counter-productive: the concentration of emerging urban middle classes could lead to traffic congestion and higher CO2 emissions. In order to pre-empt this decline and prevent a highly polluting stalemate as experienced in Bangkok, city authorities will need to muster the city's potential as transportation hub and develop a multi-modal mass transit system that covers the entire metropolitan area.

To an outside observer, the sense of national pride runs as the most striking feature throughout all aspects of Colombo's contemporary urban discourse. Such a unified and clearly stated vision for creating liveable cities provides a formidable asset from a strategic point of view. In terms of tactical urbanism, however, key questions remain: to what extent leaders and citizenry share that vision; to what extent institutions are capacitated and empowered to implement that vision; and above all: to what extent the crafting and implementing of that vision is done

inclusively i.e. giving the poor and marginalised an opportunity to realize ownership and participation (Asia Society/ULI 2014:10)?

The tribulations that have dominated Thai social and political life over the past twenty years indicate that the country's economic progress has achieved little more social resilience than was already in existence before. Aside from people's pervasive reverence for their monarch, even crises like the 2011 floods give rise to expressions solidarity as well as demonstrations of envy and dissatisfaction. And, yet, a positively oriented interpretation may view the current divisiveness as tactical urbanism trying to come to terms with long-established malpractices.
As post-war exuberance in Sri Lanka subsides and the number of stakeholders multiplies, social partners are likely to critically examine the state-led vision on the future and the way it is being implemented. Among the elements at stake in the emergence of tactical urbanisms in Colombo, one may presume that the issues of prosperity, returning diaspora, education and institutional capacity will be of critical importance. Rising remittances and income levels heighten living standards as well as aspirations and expectations: emerging middle classes are likely to express their views in the same way their counterparts in Bangkok did 20 years earlier. Returning Sri Lankan expats bring outside perceptions and perspectives: they may become vocal in any citizens' initiative. Education – an obvious consideration in any crafting of the future – will figure as a prime concern for a generation that overcame the fear, suspicion and insularity of protracted civil unrest.

Based on these presumptions, one may expect that issues like transparency, accountability and governance will soon be at the centre of civic concern in Sri Lanka. Further research will need to establish the specific, local conditions required to come to a level playfield where strategies and tactics – top-down and bottom-up approaches – meet one another. It will need to establish how Institutional capacities can overcome post-conflict trauma and acquire the skills and confidence to realize the formidable challenges ahead. But research should not only focus on public institutions: community organizations and NGOs, business associations and media also need to be enabled and empowered. The level of synergy between all these players will shape the social resilience, the dynamism and the tactical motivation required for crafting sustainable prosperity.

References

Asia Society, Creating Resilient and Livable Cities, viewed 17 August 2014, http://asiasociety.org/creating-resilient-and-livable-cities.

.Angel, S. and Sopon Pornchokchai (1989) 'Bangkok slum lands. Policy implications of recent findings', *Cities*, May 1989: pp. 136-46.

Angel, S. and Sureeporn Chuated (1990) 'The down-market trend in housing production in Bangkok, 1980-87', *Third World Planning Review*, Vol.12, No. 1, pp. 1-20.

Anuchat Poungsomlee and Ross, H. (1992) *Impacts of modernisation and urbanisation in Bangkok: an integrative ecological and biosocial study*, Bangkok: Institute for Population and Social Research, Mahidol University.

Balendra, K (2014) 'Justice delayed in condo issue', Letter in Business Times*, The Sunday Times*, 6 July 2014. http://www.sundaytimes.lk/140706/business-times/justice-delayed-in-condo-issues-105594.html, viewed 6 July 2014;

Bender, T. (2006) *History, Theory and the Metropolis*. CMS Working Paper Series Nr. 005-2006. TU Berlin: Center for Metropolitan Studies

Bishop, P. and Williams, L. (2012) *The Temporary City*, London/New York: Routledge.

Cohen, Erik (1985)'"A Soi in Bangkok - the Dynamics of Lateral Urban Expansion', *Journal of the Siam Society*, Vol. 73, Nos. 1&2, pp. 1-35.

da Silva, J. and Morera, B. (2014) *City resilience Framework*, New York: The Rockefeller Foundation

de Certeau, M. (1984) *The Practice of Everyday Life*, Berkeley, Los Angeles, London: University of California Press.

De Wandeler, K. (2002*) Locality & Urban Discourse. Bangkok in the mid-1990s*. Ph.D Dissertation in Anthropology and Sociology, London: School of Oriental and African Studies.

Donald,J. (1992) 'Metropolis: The City as Text', in R. Bocock and K. Thompson (eds.) Social and Cultural Forms of Modernity, Cambridge: Polity Press, pp.417-470.

Dowall, D.E.(1989) 'Bangkok: A Profile of an Efficiently Performing Housing Market', *Urban Studies*, Vol. 26, pp.327-39.

Donald, J. (1999) *Imagining the Modern City,* Minneapolis: University of Minnesota Press,

Dovey, K. (2008) Framing Places. Mediating power in built form, 2nd edn, London/New York: Routledge

Durand-Lasserve, A. (1976) *Les facteurs et les mécanismes de la croissance de Bangkok à l'époque contemporaine*, Travaux et Documents de Géographie Tropicale, 26, Talence: CEGET-CNRS,.

Durand-Lasserve, A. (1983) 'The land conversion process in Bangkok and the predominance of the private sector over the public sector' in S.Angel, R.W. Archer, S.Tanphiphat and E.A. Wegelin (eds.), *Land for Housing the Poor*, Singapore: Select Books.

Gadanho, P. (2014) 'Tackling Uneveness: the Emergence of Tactical Urbanisms', *DAMN°*45 *magazine /URBANOLOGY*, July-August 2014, pp. 94-97.

Harvey, D. (2008) 'The right to the city', *New Left Review*, 53, pp. 23–40

Haydyn, F. and Temel, R. (eds.) (2006) *Temporary Urban Spaces: Concepts for the Use of City Space*. Basel: Birckhäuser.

Kee, T. (2014) 'Owning the City. A kickass project from the bottom-up', *DAMN°*45 *magazine / URBANOLOGY*, July-August 2014, pp. 98-101.

Kee, T. and Miazzo, F. (2014) *We Own The City: Enabling Community Practice in Architecture and Urban Planning*, Amsterdam: Trancity/Valiz

Lefebvre, H. (1996 [1968]) *Writings on Cities*, Oxford: Blackwell.

Mendis, C. (2013), 'Colombo's facelift: urban regeneration in the metro Colombo region is beautifying the city while adding value'. *Daily Financial Times,* 22 February 2013.
Viewed 1 September 2014 http://www.ft.lk/2013/02/22/colombos-facelift/

Ogunlana, S. (1993). *Thai women construction workers*. Bangkok: Interdisciplinary Studies in Gender and Development in conjunction with the Structural Engineering and Construction Program, Asian Institute of Technology.

PADCO-LIF (1990) *Bangkok Land and Housing Market Assessment. Final Report*, Bangkok: Land Institute Foundation.

Pasuk Pongpaichit and Baker, C. (1998) *Thailand's boom and bust*, Chiang Mai: Silkworm Books;

Somsook Boonyabancha (2011) 'Trusting that People Can Do It' in: Smith, C.E (ed.). *Designing Inclusive Cities. Design with the Other 90%*:.New York: Smithsonian, CITIES, pp.61-70.

Urban Development Authority of Sri Lanka, website and facebook entries. www.uda.lk

Weerakoon, D. (2014) 'Sri Lankan economy looking good but in need of a long game', *East Asia Form*, 6 January 2014. Viewed 1 September 2014, http://www.eastasiaforum.org/2014/01/09/sri-lankan-economy-looking-good-but-in-need-of-long-game/

World Bank (2013) 'Colombo: the heartbeat of Sri Lanka', *World Bank News*, 21 March 2013. Viewed 1 September 2014, http://www.worldbank.org/en/news/feature/2013/03/21/colombo-heartbeat-sri-lanka

Wijesinha, A. (2014) 'Can Sri Lanka build a prosperous post-war future?', *East Asia Forum*, 10 June 2014. Viewed 1 September 2014, http://www.eastasiaforum.org/2014/06/10/can-sri-lanka-build-a-prosperous-post-war-future/.

Yatawara. Dhaneshi (2014a) 'Urban Planning sets the stage for a modern Colombo', *Sunday Observer,* 6 July 2014.
Viewed 1 September 2014, http://www.sundayobserver.lk/2014/07/06/fea01.asp

Yatawara. Dhaneshi (2014b) 'Arcade Independence Square; An added spark of colour to Colombo', *Sunday Observer,* 13 July 2014, p.4

Yinyeod, S. (1971) 'Soi Problem on the rise', *Bangkok Post*, 25 July 1971

Urban Policy Changes in Chandigarh: Fallibilism or Fatalism

Sohan Lal Saharan[*]
Chandigarh College of Architecture, Chandigarh, India
Manjari Chakraborty[**]
Birla institute of Technology, Mesra (Ranchi), India

Abstract

Since last two decades, some of the major urban policy, legislation and building regulation changes have been made in Chandigarh, which are having a major impact on the physical and the visual fabric of the city. This paper, which is a pre formative guideline for author's further research is an attempt to understand these policies and urban regulation changes and how are these going to affect the future growth of the city?

Some of the regulations may be required to keep the pace with time while others have been made as part of public demand or few of them may just be for speculative purposes but all of these are going to have some affect on the city character.

This paper highlights some of the major changes in the original master plan of the city which could have some irreversible impact that could take a long time to restore the concept. It is an initial exploration by author in the field of city regulations. A change in land use or in building regulations is an attempt to make the city lively and growth oriented for citizens, but are these changes really helping or not is another important aspect to be understood.

Keywords: Chandigarh, Urban controls, Building regulations, visual character, urban policy

Introduction

Chandigarh has been one of the best examples of modern city planning where the growth has been totally regulated by a set of rules and regulations as envisaged by the author of the plan, who is a famous architect and planner of the modern architecture **Le Corbusier**. Almost for 50 years, Chandigarh has maintained its original planning concept, i.e. the symbolic representation of the city as Head, heart and body. Even the visual character of the city also evolved as envisaged by the planners through various controls.

One of the first and one of the most significant urban projects of the post war period arose in India in 1950 with the establishment of Chandigarh, the new capital city of the province of Punjab. At the time Chandigarh was conceived, conditions in India were chaotic, especially in the province of Punjab, which has been physically dismembered, shown in the process of its best

Corresponding Authors: [*]; E-mail- saharansohan@hotmail.com
[**] dr_manjari@bitmesra.ac.in

arable land, disrupted socially, and burdened with refugees. The economy was prostrate, future uncertain, and although the government may have had some sort of general aims regarding future industrial development or economic improvements, nothing specific in the nature of comprehensive planning was underway.

As it happened, the planning of Chandigarh was purely physical; one might say, in fact the city was designed rather than planned. The program of the city as a government centre would govern the overall building pattern of the city.

By and large, Chandigarh represents a currently unfashionable type of planning, inasmuch as almost every major decision relating to the city-selection of the site from the air, the establishment of population densities, the layout of the streets and sectors, and the creation of the capitol complex-was made intuitively.

This story about the design of Chandigarh as told in the early sixties by Norma Evenson continued to be held there during the construction of this capital city till the early nineties.
But since the introduction of the market driven economy and decentralization of cities, enactment of 73 and 74th amendment to the constitution of the India, the planning and development of Chandigarh has also undergone major transformation. Physicists and socioeconomic changes have made the governing people to change some of the major aspects of the planned city.

In the case of Chandigarh great difficulties are evident in problematic contexts, where planning and design traditions have certainly been reliable and influential .Over the last decades, the gap between disciplinary dreams and real outcomes has been growing in the field of urban planning and urban design. However, there is an astonishing lack of critical reflections within the disciplinary field. The aim of this paper is to focus on a set of critical issues, and to suggest new directions in the current practice as listed below under different heads.

Planning and Change

In a variety of contexts, a large number of experiences demonstrate that planning mistakes tend to proliferate, and the difference between hopes, plans and effective outcomes has been ever wider. However, these empirical observations do not appear to give rise to a real desire for critical thinking and, where necessary, changes to the stances and behaviour adopted within the discipline.

The capacity to direct and control spatial transformation appears weak not only from the regulatory point of view, but also from that of the effective capacity in terms of voicing and urban designing. In general, doubt is cast upon the social role and influential capacity of the disciplines of spatial organization and transformation.

It is still relevant to Chandigarh the statement as written by Pier Carlo Palermo in one of the research articles (City, Territory and Architecture 2014, 1:7) “At the same time, however, the culture of urban planning continues to display certain patterns of involution. The ambitions declared on its foundation at the start of modernity, often realised in unsustainable ways, even in the second half of the 1900’s (Boyer 1983) were followed by appeasing visions lacking a solid basis and real effectiveness, such as the strand of “collaborative planning” which saw its heyday in the 1990’s (Healey 1997), as well as some purely intellectual reveries involving unjustifiable and inconsequential themes and visions (Gunder and Hillier 2009). In many cases, the real effect was that of abandoning reforming aspirations in favour of the adaptive spirit of Post modernity,

that sort of "adaptive realism" of which Koolhaas himself became the exemplary figurehead (Koolhaas 2000)."

The recent experiences of urban development in Chandigarh offer a complete array of possible critical points. Amongst the most striking points are: extremities of land use; the dearth of a comprehension; architectural elements, which are thrown together in an almost haphazard fashion; the foreignness of the emerging forms with respect to the urban history and context, the indifference shown towards the director unexpected consequences that such large-scale intervention wreaks on the entire urban organization.

Legal structures to control the city development in Chandigarh

Urban controls as a tool to govern were on the agenda of the team working in Chandigarh even before the selection of the architect /planner to design. Mr. Varma was the strongest voice regarding instituting legal structures. It was under his direction, legislation to govern construction, Land and economics was established. Varma was agitated from the very beginning for control over the quality of building materials used, building standards, and over the construction itself. It was only because of this reason that in the contract of Albert Mayer the architectural controls were one of the earliest to be decided and finalized by the planner. Mayer suggested institutionalizing a strong system of City Planning that would periodically review the master plan, based on public understanding and acceptance.

Le Corbusier more than Mayer, saw the need to treat the city as a finished work of art Whereas Mayer preferred to make it an ongoing process with feedback on people's needs in the planning loop, Corbusier instituted bylaws that controlled visual parameters-location, heights, blocking, band widths, even column spacing- of public buildings and residences fronting onto main public streets. Schematic design controls were set in place for cinemas and petrol pumps. And, the control on architectural treatment of the exteriors was applicable to all buildings along m and the City Centre. He also suggested institutionalizing a strong system of National City Planning to enforce this control.

Master plan edict change

The prime objective of the Master Plan is to guide and rationalize the future growth and development of urban centres, promote economic development, improve service delivery, provide an appropriate level of amenities, ensure quality of life and making rational policy choices. The growth and development of Chandigarh have been, primarily and essentially, dictated by "The Capital of Punjab (Development & Regulation) Act, 1952" which is the mother law defining the framework of city planning and construction of buildings.

To create it as a finished work, Le Corbusier designed the master plan (Fig1), gave an edict for its realization and operation, and designed the Capitol Complex at the head of the city. Le Corbusier conceived the master plan of Chandigarh as analogous to the human body, with a clearly defined head (the Capitol Complex, Sector 1), heart (the city Centre, Sector 17), lungs (the leisure valley, innumerable open spaces and sector greens), the intellect (the cultural and educational institutions), the circulatory system (the network of roads, the 7Vs) and the viscera (the industrial Area). The concept of the city is based on four major functions: living, working, care of the body and spirit and circulation. Residential sector constitutes the living part, whereas the Capitol Complex, city centre, Educational Zone and the Industrial Area constitute the working part. The Leisure Valley, Gardens, Sector Greens and Open Courtyards etc. are in the care of

body and spirit. Nonetheless, local order in Chandigarh may spring from the design of surprising public, commercial plazas, as in the central commercial sector contrasting with the repetitive, banal and uninformative configuration in Chandigarh.

This uninformative configuration along with the new socioeconomic needs must have asked for major changes in the recent time in the Chandigarh plan which was being perceived as monotonous and confusing by the visitors but for the city residents it became a status symbol of living because of its best physical infrastructure. These changes by relaxing certain controls have their success or failures.

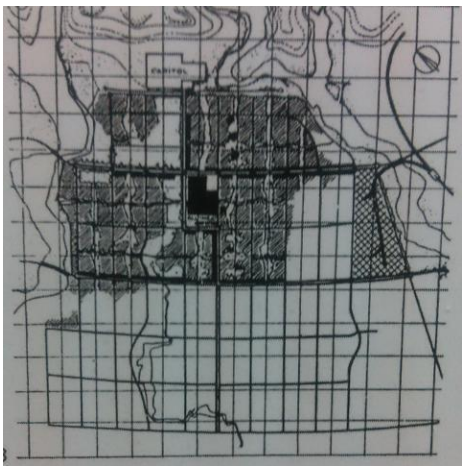


Fig.1 original concept plan
(source: Hasan- Uddin Khan)

Failures and Good practices

IT PARK

It was one of the first major physical transformations in the city plan which was guided by the new economic and technological transformed global world to create new employment opportunities in stagnating opportunities for jobs. At that time by most of the planners (especially conservation architects who liked it as a potential heritage site status) perceived this as one of the major threat to the planning and architectural character of the city.

Over the time due to its location disconnect and the new typology of architecture merging with the peripheral development has been accepted as a good development. Though there is a different point of view on the new mixed architecture, developing here, which is thought to be not in line with city vocabulary? But its landmark quality has attracted the people towards this new development. Another opportunity has been in creating the alternate traffic routes to reduce the traffic congestion on connecting corridor to eastern development. . Therefore, also in this case there are some of the negative consequences to be feared, notwithstanding the fact that there is some indication of success.



Fig.2 New development in IT Park (source: Rajiv, cca)



Fig3:Opportunity for new architectural form experiment (source http:// blackeyes ontarget. blogspot.in/2010/06/air-tel-office-in-it-park-chandigarh.html)

Industrial area land use change

From the very initial stage of planning the Industrial area has struggled to establish. In the 2nd phase of development additional area was developed. Guidelines along which the Chandigarh administration developed this area are that "As a planned city, the industrial pattern has to fit into the overall planning and architectural control and cannot impair the aesthetics of the city."

But the "Chandigarh conversion of Land use of Industrial sites into commercial activity/services in the Industrial area, Phase I and phase II, Chandigarh scheme, 2005" has just reversed the above statement by allowing to convert the same land given on cheap rates to promote industry into commercial areas(fig4). This conversion has posed some serious questions on the conceptual order of the city as envisaged by the planners. "A lack of capacity to conceive and manage the great urban project as a complex program has been displayed in this decision, which requires guidance and public learning, but also interaction and partnership between the multiple players, with the possibility of evolutionary developments, which may help to perfect the project in the course of time, without ruining it.

Certainly the role played by urban planning has been of little importance in this case, both in terms of the capacity to regulate and to orientate. The fundamental choices have regarded the concession of building rights, which are always exaggerated, following a rational of mere building development. In reality, no real attempt whatsoever has been made to examine the links between rules and shapes in greater depth; likewise there has been no attempt to conceive a truly spatial framework". (Palermo)

Temporary success of one of the largest shopping malls in industrial area could be attributed to its size and scale and other factors as described, "In managing public spaces, "people are drawn to, and tend to stay longer in, public spaces that offer interest and stimulation and/or a degree of comfort. Survey and observation data show that people appreciate and look for special events and activities in public spaces, both locally and in the town center. Unique and special events including spontaneous 'street entertainment' also grab the attention and help to define places as interesting one. People are more likely to linger if there is somewhere comfortable to sit, especially if there is also some protection from the weather". (Sivas Jalaladdini and Derya Oktay) Long term impact of it may be seen on the Central business district(sector-17) and the new commercial development already planned in the master plan in the southern part of the city (Vikas Marg).



Fig4: Largest shopping mall as a destination In industrial area but facing co existence



Fig5: chaotic visual environment for New Functions (Source: Author)



Fig6: Conversion totally in Contrast to City character (from order to chaos)
(Source: Department Of urban planning, Draft master plan)

Commercial area streets revival

Though there is no major visual fabric transformation of the city, but changes in the most of commercial areas which are part of the neighborhood and the main streets, have been affected in terms of small modifications such as removal of trade change restrictions, change in shop cum flat to commercial allowed, entry to the first floor from the front side in internal markets etc.. But the city streets have been revived and made livelier as the number of food joints and discotheques opened in the shops where it was not allowed earlier. The sV4 market street of sector-11, 10, 9 and Madhya Marg Street in sector -26 are a few of the successful examples of this change.

Cautious and meticulously thought of decisions have been able to maintain the order and at the same time the upcoming demands of society have also been catered for without any change in

city's visual character. This new buzz has rather created new landmarks and nodes for the citizens which is changing the image for visitors also.



Fig7: Sector-26 is the latest food street of The city changing the visual image (Source: Rajiv,cca Photographer)



Fig8: Sector -11 market is now most happening place with variety ofshops/ activity. (Source: Rajiv,ccaPhotographer)

Residential area change

Increase in the FAR (Floor area ratio), front side projection beyond the frame, coverage equivalent to Ground floor allowed on other floors, any material and finish on the exterior and some part of residence can be used for commercial purpose by professional people are some of the significant changes which have been made in the residential areas called as Marla houses which is more a part of plotted development in the city along the V3 (sector surrounding roads). Opportunity to increase the FAR has not been exploited much as yet because most of the construction is recent and people do not want to demolish the newly built houses. But it has started to reflect its impact on the sector peripheral roads with rear side zoning line extended and the terraced form being flattened to make vertical wall directly abutting on the V3 street. In the long term the climate advantage as planned in initial plan may have a huge impact on the energy demand and on the reduction of city green cover which is not legible as yet.

The increase in the number of households as every plot could have three units will result in road congestion due to traffic increase, but at the same time can result in more livelier streets, the sign of which has started appearing in the few parts of the city.



Fig9: V3 Street from ordered terraced to Flattened and chaotic (source: Rajiv, CCA)



Fig10: Parking problem already visible on Marla houses street in sec-46 (source: Rajiv, CCA)

Conclusions

Today the space for problems of urban transformation is a playing field used by the operators of several different disciplines and professions, often at the same time, and motivated by interests which are generally competitive. What legislative and procedural framework and what planning tools would be more coherent with the idea of urban design that they support?

Over the last 10-12 years the spatial change in Chandigarh has manifested the mixed character of the ideology of Chandigarh administration. There is a visible conflict in the decisions of change between the planners and the administrators. If planners have been successful in conserving the character of commercial areas the local politicians have been Key to get transformed the industrial area. In most cases, the intervention has been legitimized by way of ad hoc variations of obsolete planning tools. Author is looking at these ad hoc challenges as fatalism to conceptual plan if the remedies are not provided immediately.

There is little doubt, in fact, that we must test the potential effects of urban-planning regulation in space and on site, in other words, to perfect form-based normative codes instead of the traditional zoning systems. More in general, we certainly need an adequate “design code”, whether it be Quaroni’s idea plan, or the more current master plan, to place the territorial transformations in the physical and spatial context. The issue of the urban project is undoubtedly fundamental to the conception and realisation of important urban transformations; however, it should respect a double-barrelled requirement, which is often neglected. On one hand, the emerging projects must be well-rooted within a spatial development framework in order to find coherence and validation (Siavash Jalaladdini and Derya Oktay,).

Before Lecorbusier it was Albert Mayer and First it was the team of Albert Mayer and Mathew Nowicki who were working on Chandigarh plan but it was due to death of Mathew Nowicki in a plane crash that Le Corbusier was brought in.

References

Book – single author / multiple authors:

James A. Kushner,(2003) comparative urban planning law, Carolina academic press, Durham, North Carolina

Hasan-Uddin Khan with Julian Beinart and Charles Correa,(2009),Le Corbusier Chandigarh and the modern city, Mapin Publishing

Norma Evenson, (1966) Chandigarh, university of California press, Berkeley and Los angles, California

Edited book

Sangeeta Bagga Mehta, editor (2003) architecture and aesthetic legislation, proceedings of quality improvement program for teachers of architecture and planning

Journal article

Enrico Gualini & Stan Major (2007) Innovative Practices in Large Urban Development Projects: Conflicting Frames in the Quest for "New Urbanity", Planning Theory & Practice, 8:3, 297-318, DOI:10.1080/14649350701514637

Manoj Kumar Teotia Assistant Professor (HUDCO chair, coordinator), CRRID, Chandigarh, planning for the urban poor in north western India: emerging policies, practices and issues (a case study of Chandigarh), a study conducted under HUDCO research grant

Niloufar Rastegar, Maral Ahmadi, and Mandana Male, Factors affecting the vitality of streets in the downtown Johor Bahru city, Indian j. SCI. Res. 7 (1): 361-374, 2014

Palermo: whatever is happening to urban planning and urban design? Musings on the current gap between theory and practice. City, territory and architecture 2014 1:7.

Rachel Berney (2010) Learning from Bogotá: How Municipal Experts Transformed Public Space, Journal of Urban Design, 15:4, 539-558, DOI: 10.1080/13574809.2010.502344

Siavash Jalaladdini and Derya Oktay, Urban Public Spaces and Vitality: A Socio-Spatial Analysis in the Streets of Cypriot Towns, Procedia - Social and Behavioral Sciences 35, (2012) 664 – 674

Xiaoming Wang & Translated by Liu Yang (2010) From architecture to advertising – the changes in Shanghai's urban space over the last 15 years, Inter-Asia Cultural Studies, 11:1, 21-44, DOI:10.1080/14649370903403538

Web site documents

http://chandigarh.gov.in/cmp_2031.

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