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Applicability of 'New Urbanism Concept' for Sri Lankan Urban Planning:

Seeking a Fusion of Sustainability Principles and Development Regulations

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Abstract

Despite the fact that sustainability is one of the most discussed themes in recent times, its application in policy-making and implementation remains feeble. Analogous to other seminal fields to which, the aforesaid issue pertain, the fields of Architecture and Urban Planning have seen no exception. Consequently, adhering to sustainability principles in formulating and implementation of development regulations is conveniently neglected in the Sri Lankan context. One of the main underlying reasons for most of the present-day burning global issues (i.e. fuel/energy crisis, social/environmental degradation, intolerable rate of inflation and financial catastrophe etc.) is due to the neglect of the notion of sustainability. The misuse, mismanagement and exploitation of available resources – natural and man-made alike – while paying minimal attention to the most emphasized sustainability principles, have led the country to the critical chapter it is currently in. This paper investigates the possibility of adhering to sustainability principles in formulation and implementation of development regulations for Sri Lanka. In the study, the present-day development regulations in practice are analysed in terms of ten sustainability principles stipulated under discourse of 'New Urbanism Concept' (NUC). Thereby, the need of fusing development regulations with the provisions of sustainability principles is highlighted, to make them more applicable in resolving present-day urbanization issues.

***Keywords**: New Urbanism Concept, Development Regulations, Sustainable Urban Design, Walkable and Compact Cities*

Introduction

The world throughout the past decades has been through a passage of rapid urbanization, while experiencing the pros and cons of this intense phenomenon. In such a scenario, the urban planners and policy makers are working on various approaches to address negative impacts of rapid urbanization throughout the world. However, it is apparent that some of their measures reciprocate, resulting in the emergence of hitherto unforseen issues and trends. In fact, certain measures taken to accommodate and facilitate the increasing urban populations worldwide have given rise to other dire concerns that demand immediate attention. The massive transportation demands, increased motorization and traffic congestion, excessive utilization of fuel/energy as well as intense social, economic and environmental degradation are some of such concerns that have become real eye-

openers. In this light, Varma (2017) tells us *that"[the] policy makers, now, have diverted away from the traditional concepts of increase in motorization as a response, to a path which is disruptive in terms of technological innovations, socio-economic change and policy making".* On the other hand, it is observed that the provisions of traditional concepts of urban planning that had been widely practised over the world, is focussed more towards automobile-induced mobility. The facilitation of accessibility for people to further distances, and thereby, creating a low-density urban environment has been their usual strategy. The clean and organized planning in terms of judicial zoning of activities and functions were always considered as imperative to achieve better living standards of urban populations. Consequently, the aforesaid practice has gradually resulted in grim issues such as social segregation; giving rise to monotonous and static urban spaces with subdued social activities. As Varma (2017: 2) further elaborates, "*[this] created an urban setting [which is] in a negative relationship with public transportation and walkability. Social exclusion became a synonym with urban life. This exclusion affected everyone, even the people using their personal cars, since urban car travel separated its drivers from other urban residents as well as from their urban environment"*.

Moreover, the increased automobile usage has created high demand for fuel/energy, resulting in an uncontrollable environmental pollution, traffic congestion and public health hazards. This scenario has raised a crucial need of revival of inner cities in the form of walkable compact cities – stimulated by utilization of mass transit systems – while accommodating their increasing urban populations. The NUC has emerged as an answer and a positive response to address issues of automobile-induced urban planning models. This has been introduced through the traditional concepts of urban planning. This concept came into practice in the developed world in the 1980s. It focused on 'Town Planning' incorporated with an associated array of activities – tradition of mixed urban masses, social enrichment in terms of well-connected neighborhoods, walkability, mixed use as well as diversified activities, increased population density, quality responsive architecture – that were to result in improved quality of urban life (Varma, 2017).

Although hundreds of neighborhoods in the developed world such as Australia, Canada and the United States resort to the NUC in their city planning approaches, most of the developing countries (including Sri Lanka) are lagging behind; still relying on outdated traditional and non-sustainable concepts to plan their cities. As Grant (2006: 1) states, *"[new]urbanism has become extraordinarily influential in the USA and Canada, making its way into suburban forms in many regions, and even supplanting conventional zoning in a few areas. Urban villages have made an impact in the UK and Europe, with government programs to encourage innovation in many projects. We also find experiments in countries such as Japan, Australia, New Zealand, Turkey, South Africa, and Nicaragua"*. The 'Modernist Movement' – comparatively the most recent urban design approach – that highlighted the concept of clean and zoned cities (with city centers detached from residential areas), is still found to be preferred and adhered to, in formulating and implementing development regulations in most of the developing countries. Sri Lanka is no exception. Under such circumstances, it is commonly viewed that the ignorance of modern approaches in urban planning (together with directions and guidance provided through policy making in terms of planning guidelines) have curtailed the opportunities of practising sustainable approaches pertaining to urban planning in Sri Lanka (Grant, 2006). The Planning regulations that are currently being practised in the country are found to have been formulated based on traditional and out-dated concepts. Thus, they are in favour of the creation of clean and zoned cities with automobile induced mobility. Such cities are arguably neither environmentally nor socially sustainable (Varma, 2017).

Hence, this study attempts an analytical investigation of present-day planning regulations being practised in Sri Lanka, to explore their compatibility with a more sustainable modern approach to urban design – the New Urbanism Concept. The study expects to highlight the need of revising present-day planning regulations in Sri Lanka, in order to switch into a more sustainable futuristic option of urban planning; analogous to one practised by 21st century planning experts globally. There are a plenty of success stories in the developed world for the aforesaid. Green et al (2014), analyzing the Canadian urban neighborhood of Dockside Green in British Columbia, expresses inevitable

positive responses manifested within the process of urban planning, by adhering to sustainability principles laid down by the NUC. According to the Green et al (2014: 13), *"[the] aim of Dockside Green was to create a community that takes into account environmental, social and economic sustainability, and it is based on new urbanism principles".* It highlights the need of incorporating sustainability concepts in the process of policy making, in order to ensure their applicability in urban design. The first objective here is to study different planning approaches that have been practiced globally, and interpret their positive and negative impacts. The second is to compare NUC against traditional approaches, to elaborate on sustainability principles expressed through it. The Third objective is to analyze planning regulations being practiced in Sri Lanka, against sustainability principles expressed through the NUC, and review planning regulations to make them more relevant to the present-day context. Further, this paper aims to investigate the possibility of applying the novel global approaches of urban planning in the form of NUC into the Sri Lankan context. This is in order to mitigate the severity of present-day issues faced by the nation. Accordingly, the paper suggests an analysis and review of Building and Planning Regulations that are practiced in the country in terms of ten principles that comes under the NUP, to evaluate their compatibility, and thereby to suggest feasible alterations for Sri Lankan Planning and Building Regulations.

Methodology

This study is based on an inductive approach, and relies on a qualitative methodology. The strategy employed is content analysis for which, the information is derived via extant literature. The analysis is carried out using a table to arrive at conclusions. A part of the analysis establishes advantages and disadvantages of different approaches based on which, the urban design concepts are derived from time to time. Moreover, the principles of New Urbanism by which, the sustainable approach is laid down is then analytically studied, and compared against planning regulations being practiced in the country. Through this comparison, the extant gaps in Sri Lankan planning regulations in terms of facilitating ecological and social sustainability (as pronounced in the NUC), are identified and highlighted. Based on the aforesaid, possible suggestions that encompass sustainable principles are laid out to be incorporated into planning regulations of the country, for the purpose of achieving a better future.

Discussion

Evolution of Urban Planning

Since the dawn of civilization, the human race has been preoccupied with organized development of settlements that initiated based on its geographical, ecological, cultural and functional needs. This phenomenon has over the epochs seen a rapid evolution worldwide, with population/economic growth, urban-rural migration and in-situ urban transformation. As a response researchers, urban planners and architects the world over, have worked out various theories/concepts, and put them into practice in order to identify the pros and cons of practical implementation of such. As Grant (2006: 1) elaborates, *"[the major] relevant theories and movements emerged since the early years of the twentieth century when Ebenezer Howard offered the 'Garden City' concept as an alternative to the industrial city".* As for him, considering the similarities of such theories and movements, they can be classified under four main categories – the garden city movement, neighborhood unit movement, modernism movement and neo-traditional movement.

Garden City Movement Concept (GCMC)

The Garden City Movement – as a theory of city planning – was brought into the limelight by the British urban planner Ebenezer Howard, who is widely known as the person who started a new wave of utopian thinking in the early twentieth century. Howard's vision of GCMC in urban planning was based on principles of green, efficient, self-reliant and affordable communities. This notion still dominates literature and lays down major challenges on the way to achieving neighborhood sustainability. According to his proposal, *"[small] towns should be connected to each other and the older city by rail and be separated by greenbelts in order to restrict the growth and preserve land for agriculture and recreation*" (Howard, 1985 : 32). The GCM concept involves developing such satellite towns that were designed to accommodate up to 30,000 people. These social clusters were in fact called 'Social Cities' (Howard, 1985).As per Basiago (1996), each satellite town would be in circular form, and cover an area of about 400 hectares. A circular garden of about 2 hectares would be at the centre of the town. Other public buildings such as the town hall, lecture hall, theater, library, museum, picture-gallery and hospital etc. would surround this town centre. A well-developed garden city was to be equipped with a transportation network characterized by radial roads and winding routes. The land uses would be separated and zoned, allowing residents in the residential zone to enjoy living in detached dwellings located in large expanses of land. The overall density of this arrangement would be low (Banister, 2012). Thus, this form of design has attempted to incorporate village characteristics into urban life (Watson, 2009). The Institutional and commercial activities would be located along the central avenues, *"[and] ownership patterns, would become essentially compliant rather than private"* (Wheeler, 2004: 187).

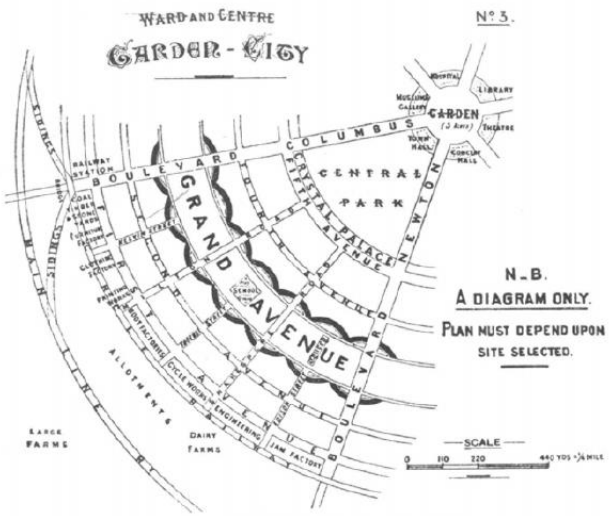

Fig. 1: Ward and Centre of the Garden City.
Source: Howard (1985).

Some salient features of the GCMC such as ample green space, single-family residential units and street patterns were perpetuated by Howard's successors, and such are still found to be employed in conventional suburban developments. However, the concept was criticized for its harsh impacts on ecological balance and excessive resource dependence. Hence, Howard's vision was not widely implemented. However, with his contribution, two pilot projects were implemented in suburban London; in the form of Letchworth and Welwyn. Accordingly, this movement became the basis for development of several post-World War I British and Swedish new towns along the same concept (Daniels, 2009).

Neighborhood Unit Movement Concept (NUMC)

Although Howard's GCMC introduced some fundamental principles on neighborhood planning, it proved challenging in practice, and its developments were implemented often by the market appeal (Grant, 2006). Beside the fact that it was not well-implemented in the real world, it became an inspiration for his followers for latter developments of neighborhoods. A garden city in Mariemont (Ohio, USA) was developed by Landscape Architect John Nolen with an incorporated comprehensive park system (Stephenson, 2002). Then again, the neighborhood unit designed by the American Urban planner Clarence Perry was meant as an instrument for addressing social problems – particularly alienation and youth delinquency – through physically enhancing the design of the community (Rohe, 2009).

The Neighborhood Unit Movement (NUM) brought into the limelight in 1923 by Clarence Perry can be considered as an improved deviation of the GCMC. It was developed deriving inspiration from Perry's previous involvement in the community-based social activities, and also having been influenced by the preceding concepts such as the GCMC. The term 'Neighborhood Unit' was invented by Architect William E. Drummond. Similar to that of Perry's plan, Drummond also had set a boundary and size for his neighborhood, specified the zones for different land uses, and also made provisions to divert through-traffic in order to create tranquil as well as safe internal streets. As per Perry's plan, each neighborhood unit was to be around 65 hectares in size, and was to provide housing for a population of 5,000-10,000 people approximately. The public facilities and allied amenities such as elementary schools, civic buildings etc. were placed at the centre, while commercial activities were located at the edge of the unit (Forsyth and Crewe, 2009; Perry, 1929). The roads were arranged arterially to surround the neighborhood units, and the internal roads were placed in a manner, where the through-traffic was discouraged in order to ensure a safe pedestrian environment (Banister, 2012). However, neighborhood units were criticized for practicing social homogeneity, where certain groups in society were discriminated (Rohe, 2009). It was also denounced for its idealistic approach that stressed on the fact that social reform could be brought about through physical design (Silver, 1985).The NUMC has been subjected to numerous criticisms over time. As Meenakshi (2011: 85) illustrates, *"[some] have opposed the neighbourhood with the claim that it leads to a grouping of people that inevitably results in compulsory class distinctions. Some categorize the neighbourhood concept as too romanticized and idealistic a delineation to be practical for modern life. At times, a neighbourhood is found to be too large to promote social behaviour and neighbourly relations".* Moreover, Perry's neighbourhood unit movement was reproached for its ill-practicality in implementation, and also in terms of functioning as elaborated below.

a. The location of the school as a focal point has been criticized for being impractical and too child-centred.
b. The community facilities have been deemed inadequate, and reproached for being too far for some residents.
c. The need for expensive maintenance in segregated small parks and other public spaces have also been criticized as mismatches in the concept.
d. The economic efficiency of the neighbourhood unit as a service district for urban services has been questioned.
e. The neighbourhood schools were commented to be too small to undertake specialized activities that are economically feasible in large schools.

Despite of various criticisms, the NUMC has been recognized as a vital one in the designing and organizing of cities. Irrespective of the scale of the city, having a unit of human scale that is at the same time sustainable is essential to merge urban patterns into a workable whole. Meanwhile, Perry's concept of having separate work and living areas is considered to be

a principle that gave rise to the subsequent widespread suburban development in the US. Moreover, the NUMC has been pronounced as an initiative that was succeeded by more novel urban planning movements such as the NUC (Banai, 2013; Farr, 2008). Hence, it is fair to claim that the NUMC has made a significant contribution to the subsequent evolution of neighborhood sustainability principles.

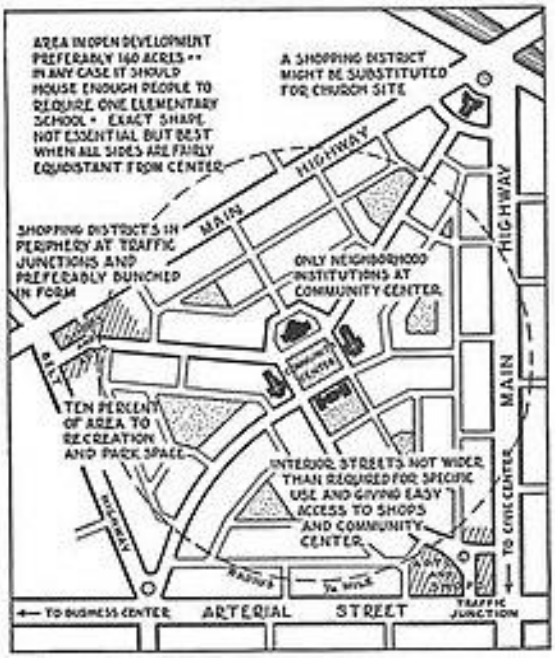

Fig. 2: The basic components of Clarence Perry's neighborhood unit.
Source: Perry, 1929.

Modernism Movement Concept (MMC)

Modernism Movement introduces certain ideological plans proposed by planners and architects in the inter-war period (1920s-1930s). Using such ideologies, solutions were sought for timely issues such as obsolescence, disorder, inequality and sprawl. These solutions were sought through certain approaches, adding novel and different elements to the GCMC. The MMC had an apparent resemblance to the GSMC based on the goals that were followed. The MMC too focused on the same set of concerns. The idea was to make humans sensitive to nature by creating a symbiotic relationship between the two, and also to facilitate leisurely environment for humans from highly-crowded urbanity (Basiago, 1996; Fishman, 1977). Addressing social problems such as injustice, lack of appealing spaces and lack of human spaces was also intrinsic to this exercise (Fishman, 1977).

However, in addressing such problems, the MMC selected drastically different approaches, leading to the creation of urban forms different from those envisioned in the prior garden city and neighborhood unit movements. The turning point for the MMC subsequently came in 1928, when the International Congresses of Modern Architecture (ICMA) was founded. The neighborhood as promoted by the MMC was composed of high-rise functional buildings surrounded by abundant open space, superblocks with internal pedestrian networks, and modern high-speed public transportation (Wheeler, 2004). This distinguished the MMC from the GCMC and NUMC that emphasized on human scale, low rise high density mixed neighborhoods and compact city formation. The MMC called for architecture to become a 'machine for living' that would contribute to the health and well-being of its inhabitants. The MMC of urban planning was pioneered by the renowned Architects and town planners of the era such as

Le Corbusier and Frank Lloyd Wright. However, the salient features pronounced through the MM such as the massive scaled built fabric, large spans of open clean grounds, and inactive dumb spaces were not recognized or accepted by most.

As Watson (2009: 166) tells us, *"[…] Le Corbusian modernism inspired skyscraper development and the City Beautiful Movement drew on the boulevards and promenades of the great European capitals".* Le Corbusier once propagated that planners should control society through ideal city forms that are organized. Such cities should have no slums, and should be divided into functional zones, while been equipped with modern transit networks. In doing so, the physical-determinism fallacy of earlier movements was repeated in an even more extreme form. Here, there was also a clear emphasis on technological-determinism. Following this philosophy, modernist urban environments were created without soliciting the opinion of people for whom the cities were built. In this light, Smith, 1997: 26) posits that *"[by] the late 1960s and early 1970s, many planners felt that modernism's clean lines and lack of human scale sapped vitality from the community, blaming them for high crime rates and social problems"*.

New Urbanism Concept (NUC)

The New urbanism is a movement that started initially in the United States to subsequently become popular all over the world over in the last few decades. This is a movement that promoted walkable and diverse neighborhoods that are environmentally-friendly. The NUC can be considered as a town planning movement that emerged to address issues raised through the prior MMC. It mainly focused on sustainable urban development allied with human scale as well as human-related activities, rather than clean and dumb automobile-driven development patterns. The practice of NUC has spread across the world since its inception in 1993. It was a way to suggest alternatives to sprawling communities. The NUC criticizes the modernist practices of architecture/planning, and have transformed urban design principles to create healthier and more accessible urbanscapes. The Congress for New Urbanism (CNU) kick started the New Urbanism Movement (NUM), where Andres Dunay and Elizabeth Plater-Zyberkare are considered its two main initiators. The movement raised subsequent to the MMC in urban design, promotes a more sustainable livelihood through walkability, mixed-use neighborhood, sustainable communities and healthier living conditions.

Fig. 3: New Urbanism (right) Vs Modernist movement (left).
Source:
https://planningtank.com/urbanisation/new-

Some researchers claim that the NUC is more related to the traditional approach of urban growth that developed through trial and error as well as natural instincts bonded with nature, community and sustainability. This process despite being slow, through the passage of time, allows repetition, refinement and experiences which enhance the quality of life and architecture. Further, it adds a unique sense of delight and most importantly, gives time for

residents to respond to their environment. Moreover, it gives them an opportunity to appreciate the very details and the character of space, and consequently develop a harmonious relationship with their urban space (Varma, 2017).

The Main concerns of the NUC thus attempt to encourage,

a) Walkability - contrary to auto-mobile induced mobility encouraged in previous planning approaches.

b) High density urban environments and mixed use of activities - facilitate walkability through reduced need for distance travelling.

c) Use of public transport - beside of self-driven personal motorized vehicles, to minimize social segregation, and thereby to improve social interactions as well as communal activities through co-presence with other city dwellers.

d) Compact cities - as a strategy for smart urban growth through increased proximities, where less needs exist to provoke individual car journeys or long-distance journeys.

As Varma (2017:4) reiterates, *"[it] deals with creating close knit homes together with commercial entities and essential amenities within walking distances".* As a mean of facilitating such concerns, the NUC is expressed upon ten principles that can be considered as its foundation.

1. Walkability - The NUC emphasizes on the need of facilitating a 10-minute walk from residential neighbourhoods to home, work and daily necessities through pedestrian-friendly environments.

2. Connectivity - The streets and grid networks to be interconnected to disperse traffic and ease out walking. A hierarchy of narrow streets, boulevards and alleyways to be introduced. A high quality pedestrian network as well as a public realm to be incorporated to make walking a pleasurable/comfortable experience.

3. Mixed-Use & Diversity - A mixed use of activities – shops, office places and schools etc. – to be introduced within neighbourhoods; within blocks, and within buildings. The idea is to allow easy accessibility for the inhabitants and to fulfil their day-to-day necessities. The diversity of people in ages, income levels, cultures and races are also to be facilitated to inset dynamism as well as liveliness into the community.

4. Mixed Housing - A variety of housing types, sizes and prices to be established in close proximity to one another. This is to facilitate affordability and encourage social interactions through fulfilling the needs of diverse user categories.

5. Quality Architecture & Urban Design - An emphasis on beauty, aesthetics and human comfort to be highlighted to create a sense of place. Also special placement of civic uses and sites within the community is to be considered. A human scale architecture and beautiful surroundings nourish the human spirit.

6. Traditional Neighbourhood Structure - Discernible centre and edge, where public space is placed at the centre. Moreover, the importance of quality public realm is to be stressed where public open space is to be designed as civic art to contain a range of uses and densities within a 10-minute walk.

7. Increased Density - More buildings, residences, shops and services to be located in close proximity for the ease of facilitating walking, to enable a more efficient use of services and resources, and to create a more convenient, enjoyable place to live. Further, NUC design principles are applied to the full range of densities – from small towns to large cities.

8. Smart/Multi-model Transportation - A network of high-quality public transportation system to be introduced as a mean of distance travelling. The trains/buses connecting cities, towns and neighbourhoods together with pedestrian-friendly roadways and designs should encourages a greater use of bicycles, rollerblades and scooters etc. as daily transportation modes, on top of encouraged walking.

9. Sustainability - A minimal environmental impact to be raised on the local eco systems through developments and its operations. A set of eco-friendly technologies is to be encouraged, while fostering respect for ecology and natural systems. A sense of energy efficiency is sought, where the use of finite fuels is to be discouraged. More local production, more walking and less driving is to facilitate such an eco-friendly environment.

10. Quality of Life - Taken together, the aforesaid points add up to a high quality of life well worth living, and create places that enrich, uplift and inspire the human spirit.

The aforementioned principles in fact, aid to counter the most common ills faced by contemporary urban/suburban Sri Lanka, as outlined in detail by Dayaratne (2011) and Wijetunge (2023). Wijetunge (2022, 2024) in fact, elaborates on such, and narrates (in a historical perspective) how the aforementioned factors saw metamorphoses. The studies by Perera (1994) and Wijetunge (2010, 2011, 2013) that traverse the histories of urbanism/sub urbanism in the island on the other hand, are also resourceful to form a background here.

Analysis and Findings

Principle	Applicable Regulations and Discussion 45 **Source:** UDA (2020): Planning & Development Regulations.
P 1: Walkability **Fig. 4:** Tree-lined streets in California, USA. **Source:** https://www.cnu.org/publicsquare/2021/08/12/we-shape-our-cities-and-then-they-shape-us **Factors Discussed** • Less automobile-induced mobility • Pedestrian-friendly design • Front porches/arcades • Tree-lined streets • 10-minute walking radius	 **Fig. 5**: Galle Road, Colombo, Sri Lanka. **Source:** https://www.youtube.com/watch?v=vFUrwvg3Ah4 a) Accessibility regulations b) Street Line (SL) and Building Line (BL) c) Regulations stipulated to maintain street character The main consideration in formulating accessibility regulations is the number of dwelling units served by the access road. The higher the number of units, wider the road that facilitates the space requirement for vehicles using it. In regulatory provisions, no special consideration has been made to provide cycle tracks/pedestrian walking paths to facilitate pedestrian/cycle movement. The SL and BL regulations are specified to some roads that are under the purview of local authorities. The SLs are mainly specified by the Road Development Authority (RDA) for future expansions of access roads. The BLs are specified as reservations, mostly to maintain a particular character or to propose a green belt along a given road. However, the BL reservations are barely identified as public spaces or boulevards which could serve as pedestrian paths/cycle tracks in regulatory provisions. Special regulations are stipulated in some earmarked areas to maintain arcades/colonnades in connection to historic buildings; as a means of preserving street character, while facilitating walkability.

P2: Connectivity

Fig. 6: Streets and grid networks to disperse traffic and ease-out walking, Australia.
Source:https://www.adcqld.com.au/what-is-urban-sprawl-and-how-do-we-manage-it/

Factors Discussed

- A hierarchy of narrow streets, boulevards and alleys
- High quality pedestrian network and public realm

Fig. 7: The streets are mainly to disperse traffic in Colombo, Sri Lanka, where planning guidelines need to be amended.
Source:https://www.news.lk/fetures/item/24574-dynamics-of-urban-sri-lanka

a) Street line and building line regulations
b) Accessibility regulations

The factor of connectivity is discussed under inter-connected streets or grid networks. Except for the considerations made in preparation of Master Plans, no special regulatory provisions are available to maintain interconnected streets or a grid network.

A street hierarchy in terms of boulevards and alleyways is considered in preparation of Master Plans/Development Guide Plans, and are implemented whenever they are required to facilitate accessibility for pedestrians or vehicular movements. This is further implemented through provisions in SL and BL regulations.

P3: Mixed-Use and Diversity

Fig. 8: Mixed use urban centres, Europe.
Source:https://www.cnu.org/publicsquare/2017/04/27/great-idea-mixed-use-urban-centers

Factors Discussed

- A mixed use of activities within neighbourhoods, within blocks and within buildings; to facilitate easy-accessibility for inhabitants.
- A diversity of people in ages, income levels, cultures, and races is to introduce dynamism as well as liveliness into the community.

Fig. 9: Streets and grid networks to disperse traffic & ease-out walking in Galle Fort Sri Lanka, where special planning guidelines are implemented.
Source:
https://www.tripsavvy.com/top-things-to-do-in-galle-sri-lanka-4689221

a) Zoning regulations

The factors of mixed use and diversity are found to be the mostly-discouraged through zoning regulations, where particular zones are allocated for earmarked uses as residential and commercial etc. In preparation of Zoning Plans (ZP)/Development Guide Plans (DGP), a compatibility of activities of adjacent zones have been considered.

However, as a fairly large extent of land is allocated for particular zones, these ZPs do not promote diversity of activities and walkability, other than in mixed residential areas.

P4: Mixed Housing

Fig. 10: Mixed use affordable housing in the Parks at Walter Reed, Army Medical Canter, Washington D.C., USA.
Source: https://www.multihousingnews.com/making-mixed-use-mixed-income-communities-pencil/

Factors Discussed

- A range of types, sizes and prizes in close proximity

Fig. 11: Luxury apartments at Havelock City Colombo, Sri Lanka.
Source: https://havelockcity.lk/

a) Master Plans (MP) and Zoning Regulations (ZR)

The Individual residential units and housing is planned as per the provisions of ZR in allied MP.

However, housing is mostly planned based on the user group and their affordability (*i.e.* luxury housing, middle-income housing and low-income housing etc.). The location of a particular housing type is determined based on the type of housing and the user category.

Hence, no deliberate attempts have been made to provide mixed housing for the incompatibility of fusing diverse social groups.

P 5: Quality Architecture and Urban Design

Fig. 12: A public space in Columbia Heights, Washington D.C., USA.
Source: https://www.cnu.org/resources/what-new-urbanism

Factors Discussed

- Creating a sense of place.
- Placement of civic uses and sites within the community.
- Human scale architecture

Fig. 13: Urban Design in Colombo, Sri Lanka.
Source: https://www.expedia.com/Colombo-Hotels-Hilton-Colombo-Residence.h607883.Hotel-Information

a) Regulations practiced for Architectural control
b) Building regulations – light/ventilation, sizes and internal heights

The regulations pertaining to architectural control and quality of architecture – such as regulations to maintain particular architectural characters in cases of earmarked areas such as Galle and Kandy – are widely practiced in granting approvals together with building regulations, to maintain the quality of architecture.

The Development Plans are also governed through regulatory provisions in Master Plans, architectural controls and certain planning regulations practiced. No regulatory provisions are available to create human scale Architecture, other than provisions in the aforesaid regulations.

P 6: Traditional Neighborhood Structure

Fig. 14 : A traditional generic neighbiurhood structure, USA.
Source: https://www.linkedin.com/pulse/traditional-neighborhood-structure-model-sustainable-livable-palani

Factors Discussed

- Public space at centre
- A range of uses and densities within a ten-minute walk
- Transect planning: Highest densities at town centre
- Mixed natural habitats and urban settings

Fig. 15 : Traditional neighbiurhood structure, Southern Sri Lanka (early 20th century).
Source: https://i.pinimg.com/originals/4d/9a/64/4d9a6468b48b38e2996b1513c663f488.png

a) Provisions in Master Plans

No regulatory provisions are available to preserve the traditional neighbourhood structures, unless a special requirement such as conserving a special community is on demand.

No special efforts have been made in formulating regulations to create apparent edges, where geographical demarcations have been used to demarcate areas. The public spaces are incorporated based on zoning requirements, but not essentially within walking distances.

P 7: Increased Density

Fig. 16: Increased density in San Francisco, California, USA.
Source: https://www.cnu.org/publicsquare/2019/02/04/health-benefits-new-urbanism

Factors Discussed

- More buildings, residences, shops and services placed closer together.
- More efficient use of services and resources.
- To create more convenient and enjoyable place to live.

Fig 17: Sky line of Colombo, Sri Lanka.
Source: https://www.re-thinkingthefuture.com/wp-content/uploads/2021/07/A4544-Architecture-of-Cities-Colombo-IMG-1.jpg

a) Provisions in Master Plans/Development Guide Plans
b) Plot coverage and floor area ratio regulations
c) Land sub-division regulations

Most of the applicable regulations are formulated to control density, rather than to increase the same. Although urban centres are proposed to be developed as high density areas, they are functionally zoned to accommodate commercial/institutional functions, while residences are zoned away from city centres.

The Development Guide Plans stipulate functional zones and amalgamation of compatible uses. The regulatory provisions encourage and highlight the need of adhering to functional zoning rather than mixed uses. Through the aforesaid, efforts have been made to create low-density residential neighbourhoods with functional zoning that facilitate motorised transportation, rather than walkable neighbourhoods.

P 8: Smart/Multi-model Transportation

Fig. 18: Multi modal transportation hub in Pune, India.
Source:https://www.youtube.com/watch?v=v5BFpjW31gQ

- A network of high-quality mass transit connecting sites, towns and neighbourhoods.
- Pedestrian-friendly design that encourage the use of bicycles, scooters and walking for daily forms of movement.

Fig. 19: First ever multi-modal transportation hub in Kottawa, Colombo, Sri Lanka.
Source:https://www.madfactorylk.com/makumbura-multimodal-center-kottawa/

a) Street Line (SL) and Building Line (BL) regulations

None of the Development Regulations highlight the need for a Mass Rapid Transit (MRT) system. Even the Development Guide Plans that are being implemented do not pay much attention to linking neighbourhoods with such a system. However, the introduction of Light Rapid Transit (LRT) system proposed as a conceptual principle into an existing development plan was principally approved, but not implemented.

No deliberate regulatory provisions are available to encourage a multi-modal/green transportation system connecting cities, towns and neighbourhoods.

The roads are designed to accommodate motorized vehicles rather than being pedestrian-friendly. A very few roads are provided with cycle tracks. Also, there exist a very few tree lined/user-friendly walking paths.

However, SL and BL reservations can be used to introduce cycle tracks/pedestrian walkways in future.

P 9: Sustainability

Fig. 20: Sustainable city, New York, USA.
Source:https://www.envirobond.com/wp-content/uploads/2017/12/urban-placemaking.jpg

- Minimal environmental impact on development and its operations.
- Eco-friendly technologies and value of natural systems.

Fig. 21: Hindered Sustainability in Urban design in Colombo, Sri Lanka.
Source;https://www.tripadvisor.fr/LocationPhotoDirectLink-g293962-i384187568-Colombo_Western_Province.html

a) Regulations imposed by the Central Environmental Authority, Coast Conservation Department, National Building Research Organization etc. for environment sensitive areas.

• Energy efficiency • Less use of finite fuels • More local production	b) Regulations to facilitate natural light and ventilation to buildings c) Regulations to facilitate open spaces around buildings Organizations allied to the UDA (as the main body of formulating regulations) such as Central Environmental Authority, Coast Conservation Department and National Building Research Organization etc. have imposed certain regulations to control the adverse impact on the environment via development and operation. No particular regulations have been formulated either to promote eco-friendly technologies in construction or to encourage energy efficiency/preservation of finite fuels. The introduction of a Green Certification is an acceptable timely attempt made to incorporate/maintain eco-friendly technologies.
P 10: Quality of Life **Fig. 22:** Sence of place brings in quality of life, as manifested by a seasonal beach in Campus Martius Park, Detroit, Michigan, USA. **Source:** https://theconversation.com/sense-of-place-messier-than-it-ever-was-so-how-do-we-manage-this-shifting-world-64591 • Sense of place • Healthier spaces that contribute to wellbeing	 **Fig. 23:** Sence of place in Kandy, Sri Lanka is achieved through special regulations **Source:** https://www.sunspottours.com/sri-lanka-holidays/kandy/ a) Regulations to maintain urban character of a place – special guidelines in demarcated areas, SL and BL reservations. b) Open spaces around buildings In very limited demarcated areas where there is a prominent character, regulations have been imposed to maintain a physical character (e.g.: Provisions in Development Guide Plans of Kandy, Nuwara Eliya and Galle etc.). Other than that, no specific regulations are being practised to maintain a sense of a place denoted by social interactions and identities.

Conclusion

The planning approaches that have been illustrated through the study manifest the reasons for their ups and downs throughout the world, over time. The incompatibilities expressed through such approaches have caused new trends to emerge. Such trends have the ability to tackle the needs of ecological and social contexts of urban environments. The New Urbanism Concept – considered as one such trend – emerged to especially address suppressed ecological and social needs that are essential/timely for any potential urban design approach.

The analytical study of ten New Urbanism principles expresses the need of adhering to such measures to address burning present-day urban issues – fuel/energy crisis, social/environmental degradation, architectural pollution and financial catastrophe etc. The present-day Sri Lankans are grappling with such issues than ever before. Developing an all-encompassing and holistic urban design approach is a long-term process that deals essentially with people – together with trial and error efforts – demand considerable time to express true transformation. Hence, a legislative backing in terms of regulatory provisions becomes essential, for the effective implementation of such.

With this view, Planning and Building Regulations that are being practised in the country were analysed against provisions given in the NUC, to identify mismatches/incompatibilities on sustainability provisions expressed through it. The analysis relied on the personal analytical observations and views of professional Architect-planners. The observations are presented in the form of a table, where principles of sustainability as expressed under NUC is compared and analyzed against the regulatory provisions of 'Planning and Development Regulations- 2020' – formulated and practiced by the Urban Development Authority (UDA) of Sri Lanka.

The assessment here is that, a sufficient and deliberate attempt has not been made through the regulatory provisions available in the country, to reach the sustainability principles discussed under the NUC. Rather, it is viewed that they have been formulated in a manner to facilitate provisions in the MMC to a greater extent, promoting on clean dumb social/functional segregations, motorized transportation, and distance travelling. It could be argued that all such have contributed to the present-day crises in Sri Lanka.

Further it is observed that certain regulatory provisions stipulated through practicing regulations (e.g. Building Line Regulations) have not been properly utilized to achieve intended goals, and that they can easily be adapted to reach provisions of the NUC. An urban design approach is a long-term process that demands reasonable time to encounter changes, and to reciprocate feedbacks. Some changes cannot be made in short periods, as they are tied up with socio-cultural background of inhabitants of a particular community. In this light, it should be admitted that neither the transformation of attitudes, habits and believes of people, nor the reverse of ecological impacts are easy. However, it is high time to accept change, in order to make our neighborhoods more sustainable, livable and dynamic.

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