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About the Journal

Journal of contemporary urban affairs is the interdisciplinary academic, refereed journal which publishes two times a year by Anglo-American Publications LLC. Journal of Contemporary Urban Affairs brings together all the theories, manifestoes and methodologies on contemporary urban spaces to raise the understanding for the future of urban planning. Overall, the journal of contemporary urban affairs aimed to establish a bridge between theory and practice in built environment. Thus, it reports on the latest research brings and innovative approaches, methodologies for creating, assessing, and understanding of contemporary built environments.

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Some Notes about Architecture, Urbanism and Economy

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ABSTRACT

Economy can be considered as the transversal component of the human activities over territories. This fact can be observed from a diachronic perspective: the way how architectural typologies arose through history. But the relations between Economy and Architecture are not only established by the small scales but the larger ones. Cities and territories evolved from compact forms till spread ones in a parallel way to the arousal of the shopping areas. Urban sprawl could never be understood without these new typologies. The paper is based on the key note speech was held in the International seminar "Economy today" last September 2017 in Andrićgrad (Bosnia and Herzegovina). It is divided in two blocks: the first one relates to a general review of the historical reflections of this relation with a special mention to the consequences of an economic crisis either in the landscape or urban scales. The second part, partially included in the conclusions, reflects on the necessary changes in the university curriculums for a better visualization of this relation. It would imply new attitudes able to explain most of the architectural processes as the formal result of a larger interaction.

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1. Introduction

Architecture and urban planning as human activities, are necessarily linked to Economy. The economical component is present in their respective design processes, since they need funds to be developed. There are not urban forms without relations with economy, but at the same time it is difficult to understand the economy without an urban basis supporting it. Urban societies were the perfect location for sharing the first trading experiences. That is the reason why cities reflected this relation since the first ages. There are a lot of examples through History: Agoras (Figure 1), Forums, Souks and Medieval markets (Figure 2) are good paradigms of these relations. Their respective different cultures are beyond these simple urban forms. Galleries and arcades during the 19th were in fact the precedents of the 20th mall centers, meanwhile the Central market typologies arose in the main cities of the planet. All these typologies provoked different reactions and they were engines of new territorial or urban developments. Shopping centers proliferated during the second half of the 20th century.

They can be considered as one of the main

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causes of the urban sprawl, as a tool linked to other phenomena like the compounds, the large urban sprawl urbanizations with detached typologies and golf clubs.

Development of the cities and antrophization of territories cannot be understood without economic reasons. Both of them can be explained through the Economic history studies. In fact, Tony Garnier based all his urban design of the new cities concept on the economic activities to be developed as the engine for them. (Fig 3 and 4)

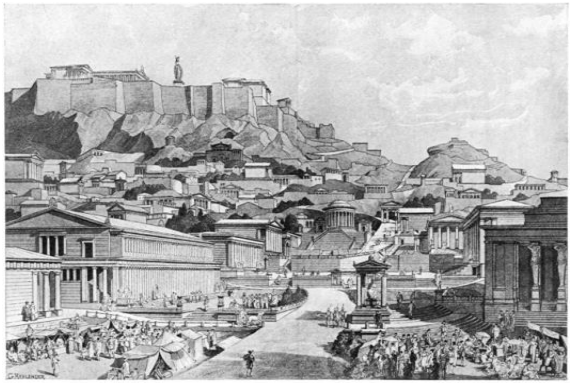

Figure 1. Agora in Athens.Reconstruction by G. Rehlender. From: SpamersillustrierteWeltgeschichte (Spamer's illustrated history of the world) vol. 1, by O. Kaemmel and R. Sturmhoefel, Leipzig, 1893.

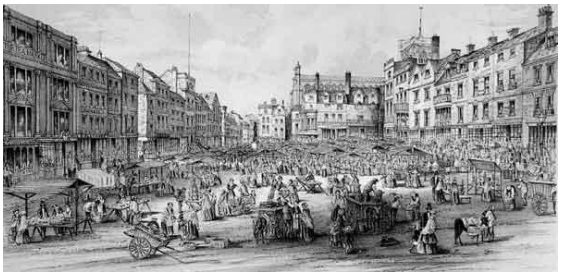

Figure 2.Market place, Norwich. 1854. From: Norwich Museum & Art Gallery.

Figure 3. Tony Garnier, UneCitéindustrielle. Ètude pour la construction des villes, 1917.

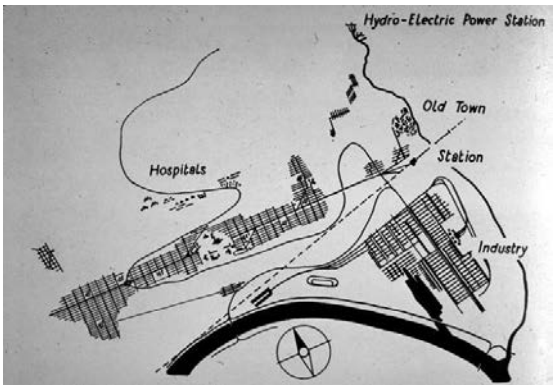

Figure 4. Tony Garnier. Proposal for a French city of 35.000 inhabitants.

The harmonious growing processes were based on a balanced relation between Territories and economies settled on them. The break of this balance provoked in each case anomalous reactions transformed into economic crises or city abandonments by appearing in the contemporary times the shrinking processes. Detroit city was largely studied in the last decades (Adedeji&Arayela, 2017) .

These phenomena cannot only be understood from the urban scale but also they can be upgraded to territories. Cities are the "natural" scenario for developing human activities, even the economic ones. The interrelation among the several cities needs this territorial support, as the basis for the territorial antrophization. They cannot be understood without the economic reasons beyond that. In fact Factory-cities, or cities with a dominant economy activity based on such specific production, like mining or cars are repeating cycles alongside the History. Detroit is a clear contemporary example for that. (Figure 5 and 6)

This is why we can affirm that Economy is an important factor for generating urban and territorial forms.

Figure 5. Detroit. From: Detroit by Air, by Alex S. MacLean.

Figure 6. Packard plant, 1900, today. From: Detroit by Air, by Alex S. MacLean.

2. The City as a Growth Machine

The vision of the city as a growth machine can be an appellative image for the comprehensive perspective. Some years ago, in 2013, Harvey MOLOTCH (1976), published a paper titled "The City as a Growth Machine: Toward a Political Economy of Place". It would be a vision of the contemporary society linked to continuous competition among economic power. *A city and, more generally, any locality, is conceived as the areal expression of the interests of some land-based elite. Such an elite is seen to profit through the increasing intensification of the land use of the area in which its members hold a common interest. An elite competes with other land-based elites in an effort to have growth-inducing resources invested within its own area as opposed to that of another*. In the end the author confirmed his vision about the society, where the ... ". *Conditions of community life are largely a con sequence of the social, economic, and political forces embodied in this growth machine: The city is, for those who count, a growth machine*." It seems logical to ask for the real limits of this growth process.

The growing process cannot be explained only from an economy theory point of view. Social aspects are really hardly linked too. And these questions are today clearly modified by the digital Era effects. Recent improvements about the theories of engagement of communities, under the umbrella of a participative network where the digitalization of the relations has an important role to achieve explain how these networks can work, as see in Figure 7. A fictional social network diagram consist of 165 Nodes and 1851 Edges. The SVG-file was auto-generated by script. The underlying node/edge data can be extracted from the circle/line elements

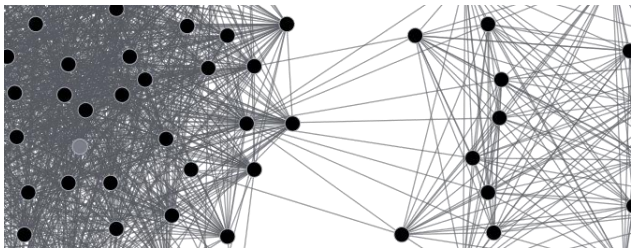

Figure 7 . "Social Network Diagram (segment)" by DarwinPeacock, Maklaan. Licensed under CC BY 3.0 via Wikimedia Commons – https://commons.wikimedia.org/wiki/File:Social_Network_Diagram_(segment).svg#/media/File:Social_Network_Diagram_(segment).svg 12/14/2015 Karen Calhoun

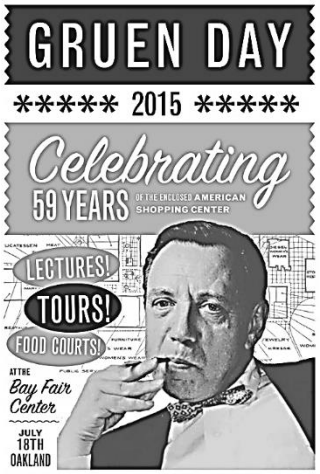

Figure 8.Gruen Day 2015 at the Bay Fair Shopping Mall in San Leandro, California.

3. The City as an Economic Machine

The relations between urban form and architectural typologies through the urban economic activities were previously exposed. The vision of city-market evolved till the concept of global economic machine.

Victor Gruenis considered as the first reference for these aspects, since he was one of the most important shopping malls designers. It explains the celebration of the Gruen Day. This event is the result of collaboration between 99% Invisible[1] and the Bay Area Infrastructure Observatory, at the Bayfair Center to celebrate Victor Gruen, the inventor of the modern shopping mall. In his book "The city as an economic machine"Gruen remarked the potentials of maximizing unplanned and impulsive purchases.

[1] This initiative is an initial joint venture between KALW public radio and the American Institute of Architects in San Francisco. See http://99percentinvisible.org/about/the-show/

In fact this mental process, known as Gruen transfer, is based on the eventual irrational economic mistakes of the consumer within a specific ambience. The idea would be to reproduce this atmosphere in the market places, (Figure 9) in a similar way to Manhattan's Times Square (Figure 10) or London's Oxford Street. A continuous visual aggression coming from the endless long roads with a large quantity of stores and neon lights compose these urban landscapes. Nowadays shopping malls try to reproduce this model.

According to these theories, the city is used as an economic machine, able to grow and develop its own process based on the economic principles of Competitiveness and hyper consume. The balanced process kept a sustainable vision for a long time. The hyper development of such activities in the chain production broke the balanced process till then.

Figure 9. Quartz shopping by Gruen.

Figure 10. Times Square. New York.

4. Globalization of the Relation between Economy and Architectures of the Cities

In 1900, only 10 percent of the world's 1.6 billion people lived in cities. During 2000, just over 50 percent of the world's six billion people lived in cities. And, by 2050, 67 percent of a projected population of 10 billion people supposedly will live in cities. This is how an urban crisis is becoming in a global crisis too. If we observe the relation between Economy and Urbanism, previously presented, we can easily understand the consequences of an urban-economy crisis, as a global one. We can take into consideration the data of the relative weight of the biggest cities into world economy. Today only 600 urban centers generate about 60 percent of global GDP (Dobbs, 2011).

This urban concentration has contributed for a more global world, bigger capacities for networks and better communication. A progressively bigger global concern about common topics was brought up and concepts like environmental issues, Ecology, social networks arose. The globalization included a deeper collective conscience. The global economy was included in this new vision of the world where old physical frontiers were overcome. Luke (2003) referred these concepts in his paper about global cities. He understood the global Urbanism as the creator of a set of contested regions where opposite concepts must all be rejiggered daily as transnational commerce dumps an ever-accelerating turnover of goods and services into the global economy. These concepts would be command and insubordination, control and resistance, communication and confusion, and intelligence and incomprehension (Luke, 2003).

These characteristics didn't appear suddenly, but as a consequence of a long process of internationalization and a later globalization. The break of sustainable development processes can be defined in the Modern ages during the Industrial Revolutions (18th and 19th centuries). The imbalances between offer and demand provoked exceptional crises along with an uncontrolled economy. Europe knew quite well the consequences of these processes, where the irruption of neoliberal policies applied to the respective national economies played an important role.

Recent crash of 2007 affected in different proportions the developed countries all around the world. In this case the vision of this crisis in Southern countries was stronger. Most of these countries, with more pronounced visions in the last ten years as a consequence of the economic crisis of 2007, not yet surpassed in this country today.

One clear example can be the legal framework of the Land Law in Spain. This policy, translated into territorial terms, implied important changes in the legal framework. The Spanish Land Law experienced great changes between 1956 and

1997. The original concept for the land in 1956 would be referred to the natural vocation of being agricultural, where the urban spaces became as exceptions within the landscape. This initial legislation tried to avoid the early transformation of the rural land into urban one. On the other side, the preamble of the legislation in 1997 justified this total liberalization of the land because of the high cost of the land and the needs to open the market to everyone, as well as the need to adapt the role of the Professional associations to the liberal market, according to then EU rules.

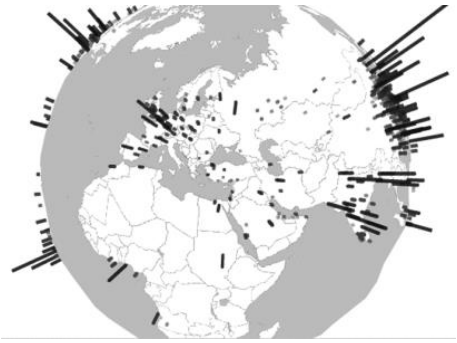

Figure 11. Interactive map of Mc Kinsey report 2011.

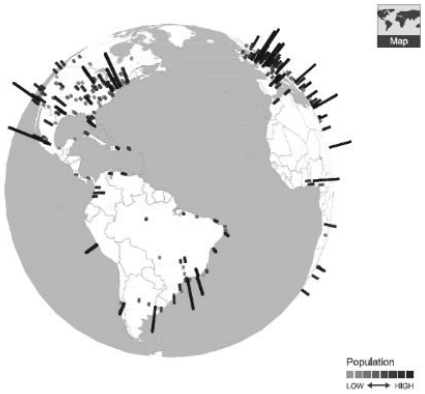

Figure 12. Mc Kinsey report interactive map from American continent.

Figure 13. Black Thursday effects in 1929 crisis.

Figure 14. Comparative evolution between rent houses/bought houses and Spain vs. England.

But this phenomenon was not only affecting Spain. All the Southern European countries experienced these consequences in a clear way. If we pay attention to these economies, they knew several concatenated expansions without any decrease, at least between 1985 and 2007. These years were punctually affected by local crises because of an unusual increasing of economic activity around specific events, like Olympic Games in Barcelona and International Exhibition in Sevilla, but in any case, the normal growing process was recovered in a short time. These processes would be initially assumed by the general European context, where Greece, Portugal and Spain would be integrated into the European Union. Greece would be integrated in 1981, meanwhile Portugal and Spain would be in 1986. It is not casual the celebration of two international Fairs in Lisbon and Sevilla and the Olympic Games in Barcelona.

Neoliberal policies and thinking controlled so many countries around the world in a slow rhythm since the seventies. Their effects were visible in so many sectors, through the privatization of the different social resources and the progressive disappearance of the State intervention in the different sectors. This ideology was inside the different regulatory frameworks where the different countries of the EU would converge. The adaptation of so many laws contributed for a very positive attitude to liberate the control mechanism over the society.

Architectural and Urban planning processes were not an exception on that. In practical terms during the "golden" years of the Spanish economy, the building sector gave employment to 12.5 % of the work hand in the country, with the highest ratio inside the EU. These values linked the economy process to the results of the Real Estate process with a high risk.

In fact the bubble consequences were fatal for the whole economy involving banks in this global crisis.

The results of the development of neoliberal laws in Spain, together with the generosity of the loan grant were the worst consequence from a progressive neoliberal statement since the seventies. An exponential increase of the prices, a high risk policy to impulse prices and markets with impossible loans and a creation of an artificial scenario where the banks suffered the consequences of a collapsed economy and a great percentage of unfinished public works all over the country. Similar scenarios were developed in other countries of Southern Europe. Italy got an important percentage of landscapes transformed into dismissed buildings of structures. Spain and Portugal knew similar scenarios. The task of recycling these scenarios is nowadays an important task.

Figure 15. Guadassuar.Valencia.Spain before 2007 crisis.

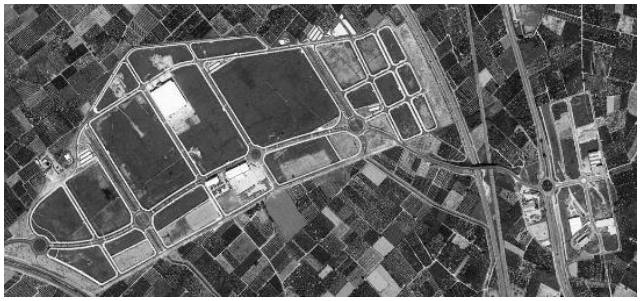

Figure 16. Guadassuar.Valencia.Spain after 2007 crisis.

A real estate bubble with catastrophic territorial consequences in Spain and Portugal started in 2007. Spain can be considered as a paradigm in the economic crises in 2007, affecting important world economies. Prior to this debacle, Spain's economy was largely admired by Western commentators. This country was able to create a total amount of 7 million jobs during the 1990s, with a yearly growth of nearly 4% in the period 1995-2007.

Figure 17. Quijorna. Madrid, Spain before 2007 crisis.

Figure 18. Quijorna. Madrid,Spain after 2007 crisis.

The tourism sector modernization brought up the possibilities to think of reasonable wealthy perspectives (Iranfar, 2018). Property development was other sector which capitalized this extraordinary economic boom. House prices accompanied simultaneously to both sectors, becoming by 220%, with a total expansion of the sector around a 30% in the period 1997/2007; something like more 7 million units. One of the effects of this bubble is the large number of inhabited houses. The 13, 65% of the Spanish houses were waiting for an owner, after 2007 crises. It was a total of 3.443.365. Homes, as well as other 676.000 unfinished houses. Prices evolutions were linked to this situation, as seen in Figure 19.

Spain has suffered several ups and downs in the ownership system. The Minister of Housing in 1957 defined the objective of converting the tenants in owners. The percentage of the renters changed coming from the 45.5% in 1960 to achieve less than 10% in the last 2000s and growing up till 21,2% in 2014.In any case the system to get the properties was always based on mortgage loans . The voracity of the financial entities dragged towards an unprecedented crisis that brought the crack of the whole system and forced the whole country to a long desert crossing till now.

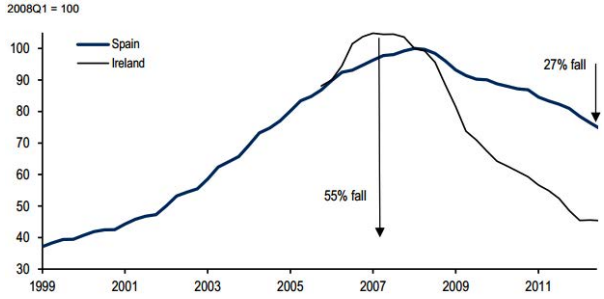

Figure 19. Comparative evolution between Spain and Ireland bubble effects. Source: Credit Suisse studies unit.

It is important to remark that several characteristics were always kept during these crises: Countries with very low interest rates and low to moderate tax rate as well as high loan-to-value ratios have the potential to experience large property bubbles. The physical consequences if that are always visible throughout the respective landscapes and territories.

5. Economy and Landscape Transformations

Economy has even influenced in other scales and spaces. Landscape transformations are usually based on economic decisions. Mediterranean terraces obsolescence is linked to the unfeasibility of economic processes on them. (Figure 20) It provoked the ruined landscapes of important territories where other purposes were got through agricultural activities. Geologic and ecological stability as well as fixing populations were parallel goals to be achieved.


Figure 20. Abandoned terraces in Alto Douro.

Plots redistribution in Galician territories, commonly known as re-parceling brought up important landscapes transformations in the last 50 years. (Figure 21) These processes consisted of new property distributions to easy better economic results in the agriculture production. Regional economy is based in this case on a family scale, rather than major ones.

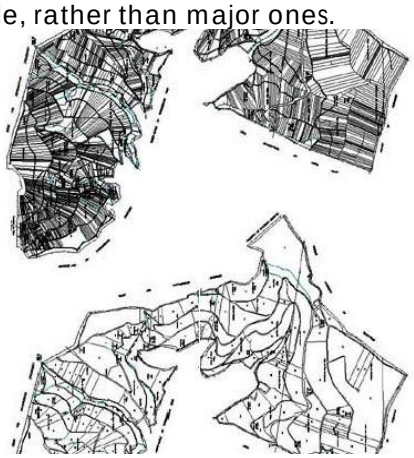
Figure 21. Plots redistribution in Galicia Spain 1964.

We can realize important changes in the Argentinian Pampa landscapes when the irruption of the soy within a scenario mainly dominated by the wheat. (Figure 22)


Figure 22. Argentinian Pampa region with wheat 2015.

The optimization of economic results was the main factor for a new strategy in Badajoz during 1950´s and 60´s. Badajoz Plan was able to transform an important area (196943 Ha) and 50 new towns. The total implementation was an area equivalent to Luxembourg. This plan implied the construction of important dams to provide electrical power and enough irrigation systems to the region. A parallel population increase transformed the whole landscapes alongside Guadiana River.

Finally, economy influences into the architectural and territorial scales. It can be

observedin the emerging countries, even in Africa.

Egypt can be a paradigmatic case and two examples can be highlighted: The first one is the generation of new urban forms as the resource to generate more economic activity, with the launching and construction of a new capital for the country. These actions were developed since 1957 by the different Governments till today. The proposal of a new capital for the country is a clear reference for that. The second example is settled in Cairo where 60% of its urban tissue is occupied by the real state bubble informal city shapes. Manshayet district is a well-known reference with an important economic basis: the Municipal solid waste (MSW) is the reason of the urban development as well as the chaos provoked. Its existence is as contested as necessary.

The post socialist city is other clear example of the relations between architecture and economy, where the most visible issue can be symbolized by two facts in Vilnius. The first one is the transformation of the old town hall into a shopping center. (Figure 24)

A simultaneous arrival of sprawl city typology and the displacement of decision makers to peripheries was noted. The implementation of new functions to ground floors with formal transformations in the different residential typologies have been the most "shocking" attitudes within the urban shape.

If we look at the global phenomena, we can note the hyper concentration around Mediterranean basin was strongly reinforced by tourism economy together with the second residence factor. This process is even exported to the southern med countries. The fall of this economy based on tourism sector has provoked important territorial imbalances and the solutions are not always better than the generated problems. Apartments, initially thought for the tourist never arrived, were transformed into university dorms too far from the campuses.

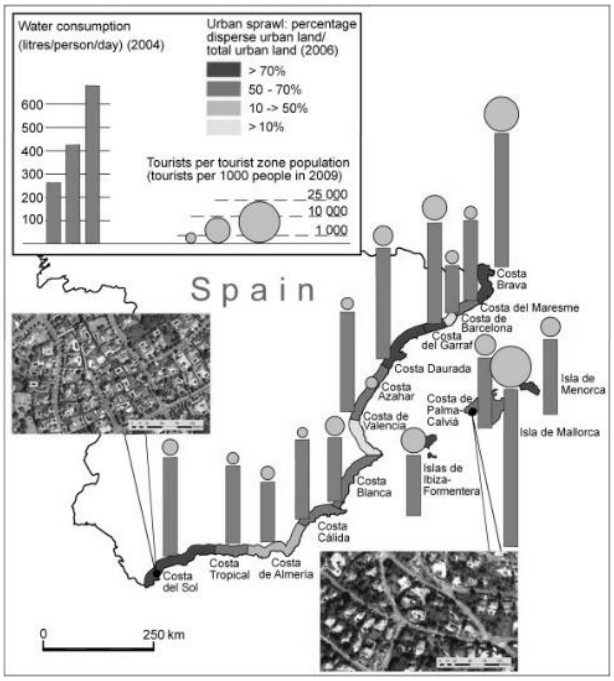

Figure 23. Water consumption in Mediterranean Spanish littoral region.

Figure 24.Gediminos 9 mall center, ancient Town Hall, Vilnius Lithuania.

6. Conflict Cities: Economical Aspects and Urbanization Processes

Divided territories and cities are special cases where the effects of this division carried on such economic status and, in a parallel way, the urban consequences were visible in both ways. As a case study I would like to refer Cyprus Island and more specifically the interruption of economic cycles in the copper production and the environmental consequences in Lefke, as well as the divided city of Nicosia versus the urban growth.

Divided territories suffer the economic effects in a specific way. Ex. Nicosia in Cyprus versus Limassol and Larnaca effect). The desolated Nicosia, especially in the surroundings of the buffer zone, is highly contrasted by the Limassol and Larnaca effects. Nicosia was collapsed due to the buffer zone effect and the economy didn't expand in the same way other southern cities did in Cyprus, like Larnaca and especially

Limassol. (Figure25) Similar effect can be felt in the northern side of Nicosia where its blocked urban evolution was in parallel to the important growth of Girne.

DISTRICT	1996	2015
Total		
Total	**666.3**	**848.3**
Lefkosia	268.0	330.0
	0.402	0.389
Larnaka	111.2	144.2
	0.167	0.170
Lemesos	191.5	237.0
	0.287	0.279
Urban Areas		
Total	**454.7**	**570.2**
Lefkosia	195.7	241.4
	0.430	0.423
Larnaka	67.6	84.9
	0.149	0.149
Lemesos	151.7	180.3
	0.334	0.316

Figure 255. Comparative population 1996-2015 in Cyprus. Source: Statistical Service of Cyprus (CYSTAT).

7. Economy as a Correction Factor of Urbanism

Historically the role of the Economy inside the urban discourse was always discussed, especially in the Contemporary architecture ages.

Eric Mumford (2000) is one of the most distinguished authors working on the Modernist discourse. His work on the CIAM (Figure 26) discourse changes in the period 1928-1960 is well-known.[2] According to him, Urbanism would be a complex subject justifying this concept because of his urban vision as not only a development coming from the Economy and production mechanisms but from the life of the human being born always together with other ones.

In the opposite way, and during the fifth CIAM JosepLluisSert emphasized the chaos of the modern industrial cities problem, as a threat to the Public health of the labor population. According to Sert the solution would pass by a more useful and harmonious city through a reorganization process. It would be only possible using what he defined as "big technical instruments always supported by the new urban economy". Sert deepened on the idea of cities being understood as a part of an economic, social and political complexity coordinated with the different biological activities. He named this complexity "the individual and the collectivity". His discourse would be parallel to Le Corbusier who published at this time "Ville radieuse".

Port cities expansions transform radically the urban shape, when needed. Till 2000 the less accessibility in port cities coast lines, the more economic activity. Today there is a change in this aspect at the same time there is a change of the economic basis for urban societies. Hiedanranta Bay's new master plan Tampere seems to follow this line. The proposal was chosen to be developed in the next 20 years tries to respond to the rapid growth of Tampere's central region. The proposal, by bySchauman&Nordgren Architects, previews the transformation of the former industrial district into an innovation hub for sustainable economic development, creating 10,000 new jobs, and housing over 25,000 new residents.

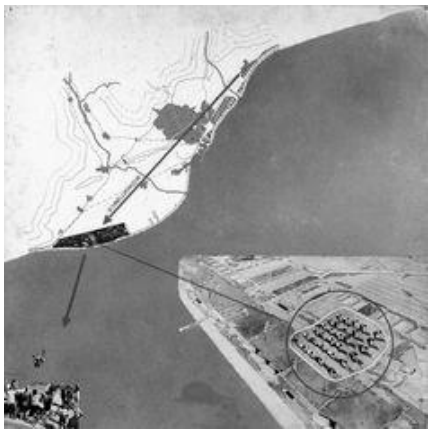

Figure 266. GATEPAC, launching panel of the GATEPAC. "La Ciutat de Repòsi de Vacances" "Tourism city". CIAM, 1933.

Figure 27. Image from "Let's transform Moscow into exemplary socialist city of the proletarian state" by AleksandrDejneka, 1931.

Gentrification is one more example of urban transformation that only can be explained from an economic point of view. Neil Smith's contribution was interesting, when he defined

[2] El discurso del CIAM sobre el urbanismo, 1928-1960 Eric Mumford (2000)
Translated by: León Darío Espinosa Restrepo from original, Mumford, E. (2000) The CIAM Discourse on Urbanism, 1928–1960. Cambridge: MIT Press.

this phenomenon as a global urban strategy in despite of being initially emerged as a sporadic quaint, and local anomaly in the housing markets of some commander-cities"[3]. He defended the idea of these processes have been "thoroughly generalized as an urban strategy that takes over from liberal urban policy."

Much as the neoliberal state becomes a consummate agent of rather than a regulator – the market the new revanchist urbanism that replaces the urban policy in cities of the advanced capitalist world increasingly expresses the impulses of capitalist production rather than social reproduction. As globalization bespeaks a rescaling of the global, the scale of the urban is recast.

8. Conclusions

A strong relation between Economy, Urbanism and Architecture was always remarked. This relationship has been a fundamental piece in the development of the best and worst scenarios in the several scales, Territorial, landscape, urban planning and architectural scales. A good example would be the Suez Canal. This relationship is not reflected on the academic curricula in the schools of Architecture and it was better welcomed in the departments of Economy, Several examples can illustrate this fact:

The current department of Economy and Management of the University of Ferrara was namedDipartimento di Economialstituzioni e Territorio, with important contributions to these relations, like the Master in city management or the Master in Environmental management and sustainable development.

It makes sense to deep on the idea of joining Architecture and Economy as the basis for new academic paths for learning both fields. Eventual paths of schools of Architecture must be based on these three eventual principles.

1. The idea of insetting economy in outcomes in some courses. As an example, the integrative design studio courses would include notions about Economy and production
2. The concept of proposing elective courses, or even major ones, with a clear economic vocation. IE gives to their Architecture students the possibility of doing a minor related to this area.
3. The concept of master programs joining these two concepts. Masters in Urban economy are linked to this idea of transversality. MAPAUs, as a transversal experience for five years.

The links between Economy and Urbanism were more developed nowadays. The coming challenges are the links between both of them, the last Pritzker Aravena and the previous writings from Koolhaas define future lines to be followed.

Figure 28. Hiedanranta Bay's new master plan Tampere. Master Plan by Schauman&Nordgren Architects.

Figure 29. Master course in Urban Economy, University Torcuato di Tella, academic year 2016/2017.

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Urban Growth, Liveability and Quality Urban Design: Questions about the efficacy of urban planning systems in Auckland, New Zealand

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ABSTRACT

Preventing sprawl and concentrating future urban growth at transit centres, typifies many urban planning strategies in a number of Australian, New Zealand and North America cities. Newer iterations of these strategies also argue that compact development delivers public benefits by enhancing urban 'liveability' through good urban design outcomes. Where neoliberal economic conditions prevail, achieving these aims is largely dependent on market-driven development actions requiring the appropriate urban planning responses to ensure these outcomes. However, there are growing concerns that urban planning approaches currently used are not effectively delivering the quality urban design outcomes expected and enhancing residents' liveability. This paper reports on an evaluation of three medium density housing developments located in areas designated for intensification in Auckland, New Zealand. Examined is the extent to which the development outcomes are aligned with the statutory urban planning requirements for quality urban design. The results indicated contradictions and points to limitations of the statutory planning system to positively influence quality outcomes, leading to enhanced residents' experiences.

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1. Introduction

Among others, an important goal of urban planning is directing future development towards outcomes that will deliver enhanced social, environmental, cultural and economic benefits. A number of urban planning approaches that restricted urban sprawl were thus initially promoted on the argument that this would preserve the natural environment and rural character surrounding cities as a necessary amenity for urban dwellers (Ingram, et al, 2009; Haarhoff, et al, 2012). The higher density development that is a consequence of containing urban growth within an urban boundary was subsequently justified by evidence that a more compact urban form reduces fossil fuel consumption and noxious emissions, and leads to enhanced sustainability (Newman and Kenworthy, 1989; 1999).

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Characterised by Quastel et al (2012) in their study of Vancouver as 'sustainability as density', the outcome is also argued to deliver benefits to urban dwellers.

These arguments are key to underpinning urban growth management plans in many cities across Australia, New Zealand and North America including the cities of Auckland, Melbourne, Brisbane, Portland and Vancouver (cf. Auckland Council, 2012; Department of Transport, Planning and Local Infrastructure, 2002; Department of Infrastructure and Planning, 2009; Metro Portland, 2012; Nikoofam, & Mobaraki(2016) ;Metro Vancouver, 2010). They all establish urban growth boundaries to contain urban sprawl, and concentrate the greater part of future development to designated areas within walking distances of public transport, as transit-oriented development (TOD's). These transit centres (activity centres in Australia, town/metropolitan centres in Auckland, station communities in Portland) as points of concentration also play a role by providing local employment, services and a range of retail and public amenities. The concentration of future development in, and around, transit centres requires the deployment of multi-unit housing typologies to achieve the higher densities, contrasting with lower density detached housing that has, and indeed still does, dominate most cities in these countries. This intention to concentrate growth is made explicit in the Victoria State government's growth plan for metropolitan Melbourne where it is seen as '… the lynch-pins of a multi-centred structure …where people can enjoy the benefits of living closer to work with less congestion on the roads and public transport networks' (Department of Transport, Planning and Local Infrastructure, 2010, p. 5). There is now sufficient evidence to demonstrate that these policies are being successful in terms of increasing the number and proportion of higher density, multi-unit housing options in Australian and New Zealand cities (Bunker et al, 2002; Buxton and Tieman, 2005; Randolph, 2006; CHRANZ, 2011). Indeed, in Australian cities this change is seen by Randolph as 'a revolution' where 'little over a generation ago living in flats (apartments) was a minority pastime' (2006, p. 473).

Despite this apparent success in delivering higher density options, critics argue that this is not necessarily delivering fully on the aims of the associated urban growth management plans for a number of reasons. This include resistance to living at, and with, higher density, market reluctance to invest in the higher density housing typologies, and argument that this form of urban growth management negatively impacts housing affordability (Haarhoff et al, 2012). A newer area of critique suggests that the urban planning system and current approaches themselves may be faulty. For example, despite urban growth management plans requiring concentration of new development at activity centres, there is evidence of slippage in meeting this goal (Bunker et al, 2002; Buxon and Tieman, 2004; 2005; Woodcock et al, 2011; Haarhoff et al, 2012). Phan et al. (2009), in their study of the spatial distribution of new residential construction between 2001-2006 in the City of Clayton in the Melbourne metropolitan region, found that the goal of directing development to activity centres has not yet been achieved. Much of the residential development occurred as urban sprawl beyond an 800-metre walking distance of activity centres. For Melbourne as a whole, Woodcock et al. argue that 'seven years into the implementation of Melbourne 2030 … not only has there been very little intensification of activity centres in established suburbs, but there have been few urban design visions that might engage the public imagination or that of the development industry' (2011, p. 95). Indeed, they assert that higher density housing is being approved 'almost anywhere' despite concentration being mandated within walking distances of 'activity' centres (Woodcock et al, 2011).

This suggests a weakness in the urban planning system to fully deliver outcomes that are well aligned with the urban growth management plans. This point is also made by the Victoria State government's own 2007 audit of Melbourne 2030,that found a lack of specific urban planning tools to direct development into the designated 'activity centres' (Woodcock et al, 2011). On this issue, Buxton and Tieman (2005) suggest that the 'urban consolidation of Melbourne 2030 will be undermined where there is policy confusion involving some signals which seek urban consolidation and other signals which allow urban dispersal' (Buxton and Tieman, 2005, p.155).

These assessments are related to a perceived failure on the part of the relevant urban planning systems to comprehensively direct new development towards areas within walking distances of designated activity centres. In part, shortcomings also result from a failure to provide the infrastructure on which transit-oriented development depends, especially on the urban peripheries (Buxton & Tieman, 2005; Jain and Courvisanon, 2008). To add to these issues, more

recent iterations of urban growth management strategies have raised expectations further. To counter arguments that higher density development negatively impacts on the urban experience, more recent iterations of urban growth plans are justified on the grounds that quality urban design inherently enhances urban 'liveability' (Haarhoff et al, 2012, and 2016). Such goals are expressed in the UK Government's strategy for improving place quality in declaring that 'good quality place should not be seen as a luxury but a vital element in our drive to make Britain a safer, healthier, prosperous, more inclusive and sustainable place' (UK Government, 2009, p. 2). The idea that development focused on the primacy of street life, a sense of urbanity, walkable neighbourhoods, and connected communities promotes urban 'lliveability' is well argued in current practices (Calthorp, 1993; Ditmar and Ohland, 2004; Condon, 2010;Arenibafo, 2016 Campoli, 2012).

The emphasis on 'liveability' also underpins calls for the replication of 'traditional' town forms in which these urban qualities are embedded, particularly in the practice of New Urbanism (Barnett, 2003). Critics of this approach have questioned whether such traditional qualities can be achieved solely through design actions and manifestos (Dixon and Dupuis, 2003), and doubts can be raised about whether manifestations of New Urbanism in the form of gated communities result in the urban public life envisaged. Despite these doubts, The Auckland Plan, is Auckland non-statutory spatial plan is promoted as a strategy to 'create the world's most liveable city' (Auckland Council, 2012), and to promote:

'more compact neighbourhoods, supported by quality networked infrastructure offers opportunities to create healthy, stimulating and beautiful urban environments…that enhance social cohesion and interaction by attracting people…to a mix of cafes, restaurants, shops, services and well design public spaces' (2012, p. 42).

This paper adds to a small but growing number of studies reporting on efficacy of the urban planning systems to deliver outcomes well aligned to aims of the urban growth management plans. This paper questions the ability of urban planning methods and tools to deliver the enhanced liveability and quality urban design outcomes being promoted in recent iterations of urban growth management plans. Any failure to deliver the quality urban design promised not only potentially brings disappointment to city residents, but might also bring into question the efficacy of this form of urban growth management.The effective implementation of urban growth strategies requires alignment with the local statutory land use plans, and the support of the local authorities who are normally responsible for implementing the higher order policy directives (Beattie and Haarhoff, 2014; Waldner, 2008). This requires the local statutory plans to have the appropriate urban planning and design policy responses, and the right mix of statutory tools and methods to achieve the quality urban design outcomes sought. The New Zealand urban planning system, not unlike those found in Australia, Canada and United States, uses a rational conformance based approach that links the local statutory plan (district plans) to intended policy outcomes to the built outcomes (Beattie, 2013; Laurian et al, 2010; Ericksen et al, 2003). Based on land use zoning designations, these methods usually take the form of zone codes setting out permitted uses supported by a range of performance-based rules. These include controls over building height set back from boundaries, that development proposals are required to meet. In this way, the district plan provides a range of methods for district plan users and developers to follow, which if adhered to, should achieve the intended policy outcomes in the in the physical development (Beattie, 2013; Ericksen et al, 2003).

The paper aims to test the extent to which the application of high-level policies for urban intensification are effectively applied at the local level to positively influence development towards good urban design outcomes. This is assessed through three case studies of medium density housing development located in two suburban town/metropolitan centres in Auckland designated for higher density development in the Auckland Plan and Auckland's statutory land use plan adopted in 2017; the Auckland Unitary Plan (Auckland Council, 2012 and 2016). Auckland is New Zealand's largest city, containing a third of the national population and is facing significant growth pressure. Current predictions estimate that the current population of 1.5 million will increase a further 1 million by 2030 (New Zealand Government, 2010; Auckland Council, 2016).

It should also be noted that in 2010, new unitary governance arrangements were establishment for the Auckland region. The new Auckland Council replaced a regional authority and seven previous local authorities that had responsibility for a range of urban planning functions in their districts. The case study locations of Albany and Onehunga were previously under the jurisdiction

of the North Shore City Council and the Auckland City Council (1999) respectively. Planning consent for the case study developments reported in this paper predate the release of the Auckland Plan and the newly adopted Unitary Plan. However, the previous local authorities statutory district plans were all aligned to the 2005 Auckland Regional Policy Statement (ARPS) adopted by the now disestablished Auckland Regional Council (ARC), that followed the same policy direction towards urban intensification as expressed in both the Auckland and Unitary Plans. The ARC was legally required to provide a regional and strategic planning overview to local authorities, including urban growth management issues that the local authorities were required to give effect to through their district plans. This enables the three case studies to be assessed against an earlier regional policy (the ARPS) and the two-relevant district plans under the jurisdiction of the previous local authorities that specifically sought to translate the higher-order policies into good urban design outcomes through the development process.

2. Research Design and Methodology

A four-phase mixed research design was employed using quantitative and qualitative assessment techniques to examine the three case study developments. The first phase sought to determine the relevant policy outcomes for medium density housing from each of the relevant district plans to consider whether the policy responses were aligned with the strategic regional policy direction in the ARPS. This was achieved by examining the district plan objectives and policies, and comparing these with the district plan's stated expected results (Environment Results Expected). This follows the policy outcome mapping technique developed by Beattie (2013), building on the Laurian et al (2010) and Ericksen et al (2003) approach to plan quality and evaluation. The second phase examined the relevant district plan's methods and tools, including the zoning codes and performance standards designed to achieve the district plan's urban design policy goals. The third phase involved an independent assessment of the developments using urban design best practice criteria established by the Ministry for the Environment (MFE) and published in their guide: Medium-Density Housing: Case Study Assessment Methodology (Ministry for the Environment, 2012). Using the MFE guide enabled a consistent and comparable assessment to be undertaken of all three case studies in their neighbourhood contexts, the elements of which are set out in Table 1.

Table 1.Urban design assessment criteria
Source: Ministry for the Environment's Medium-Density Housing: Case Study Assessment Methodology (2012)

Key urban design areas	Sub element
Site context and layout	Neighbourhood context
	Site context
	Landscape coverage
	Outdoor living spaces
	Car parking and access
	Service areas and utilities
Building form and appearance	Horizontal modulation
	Continuous building line
	Building roofline
	Façade articulation
	Material use and quality
Street scene	Street edge continuity and enclosure
	Building entrances
	Façade opening
	Street boundary treatment
Internal configuration	Internal / external relationships
	Visual privacy
	Aspect / natural ventilation

The final phase involved interviewing 8 of the previous local authority's urban planning officers who processed the resource consent applications for the three case study developments. The interviews followed the non-standardised approach outlined by Davidson and Tolich (2003, p240). This approach allowed for semi-structured, open-ended questions where we guided the interviewees into the relevant areas related to the research to gain their perspectives. The questions covered their role the in resource consent process; their understanding of the relevant district plan's policy intention for urban design outcomes; whether the district plan provided clear methods for achieving those policy goals; whether the final outcomes represent a good urban design solution for the site; whether the development integrates into the local context, and whether there were any other factors in the district plan process which may have contributed to the actual development outcome. The interviews were carried out at a place of the interviewees choosing, lasting between 45 to 60 minutes, audio recorded under (protocols approved by the University of Auckland Human Ethics Committee), and transcribed by a third party. The interview transcriptions were analysed using narrative analysis to discover the key emerging themes (Wiles et al 2005).

3. Case study locations and context

Medium density housing case study developments were selected that were within suburban areas designated for density intensification in the Auckland Plan (called 'areas of change') and within the previous relevant district plans and ARPS (Auckland Council, 2012 and 2016). Two case studies are located in the Albany town centre 17 kilometres north of the Auckland's CBD, and one in the Onehunga town centre 12 kilometres south of the CBD (see figure 1).

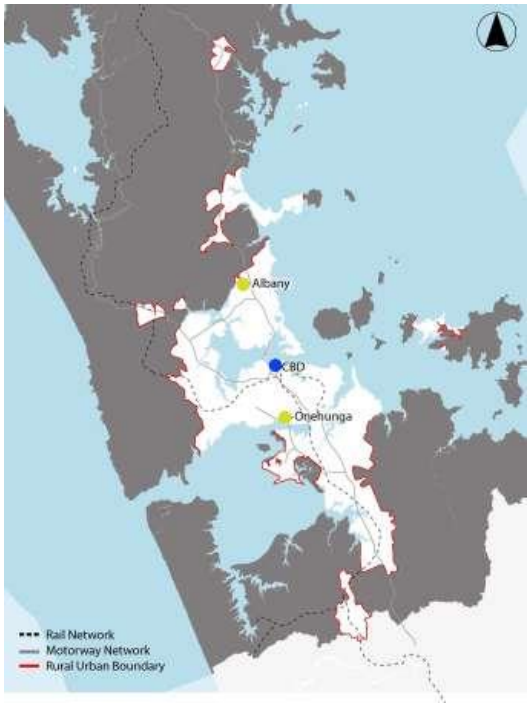

Figure 1.Auckland urban region showing the CBD (blue), and in red, Albany to the North and Onehunga to the south.

Now designated as a metropolitan centre, Albany has attracted considerable public infrastructure investment from both the previous North Shore City Council and the New Zealand government as a regional centre on Auckland's North Shore (Haarhoff et al, 2012). The area is dominated by a large shopping centre surrounded by other 'big-box' retailers and car parking, where most land currently remains vacant. Albany is served by a rapid bus service to central Auckland via a local bus station, largely operating as a park-and-ride facility. The two medium density case studies developments (The Ridge and Spencer Road) are within 800 metres of the bus station and shopping centre. Figure 2 show the location of the two-case study development in the Albany context, and 800 metre walking distance circles.

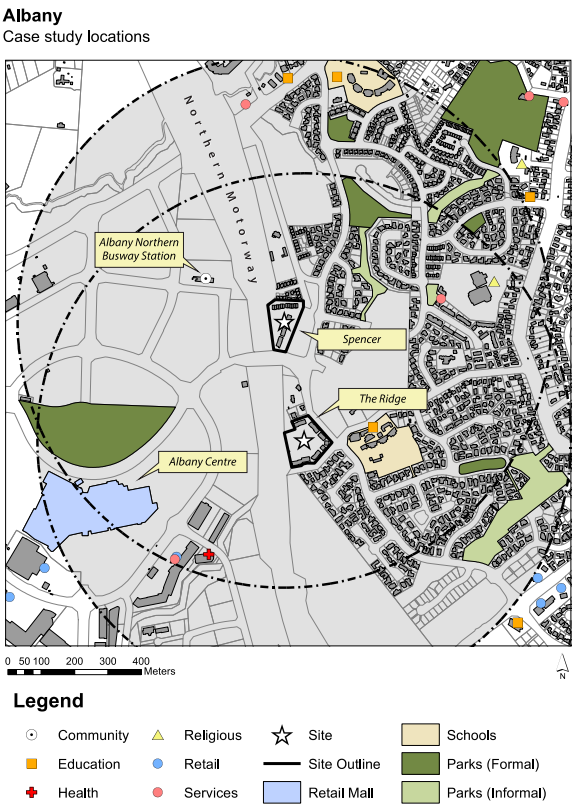

Figure 2.Albany case study development locations.

The area to the east of the case studies is dominated by detached housing, although zoning permits multi-unit housing. Both case study developments were zoned Area D: Varied Residential under the North Shore City district plan, which provides for a range of housing typologies subject to an urban planning and design assessment, that includes a range of performance standards such as density, building height and car parking. Built between 2005 and 2007, the developments together have 169 units at a net density of 67 units per hectare. The single level, two-bedroom units each with a floor area of 49.5 m2 are contained in a series of identical three storeys blocks (figure 3).

Figure 3. 'The Ridge' development (Left) and the 'Spencer' (Right) (Source: Google Earth, 2016)

Onehunga is one of Auckland's oldest and most established suburban town centres designated for intensified development with the adoption of the first regional planning document in 1974 (Auckland Regional Council, 1999). The Auckland Plan is consistent with the earlier district plans and identifies Onehunga as an 'area of

change' able accommodate an additional 3,400 residential units and 5,500 new jobs by 2040 (Auckland Council, 2012). The town centre has a terminal railway station that links to Auckland's CBD, and is earmarked for extension to Auckland airport. The town centre offers a wide range of retail outlets, restaurants and public services and facilities such as parks and a library, and unlike Albany, Onehunga is pedestrian oriented. The case study development (Atrium on Main) is located to the north of the main shopping street, within easy walking distance of the railway station and bus connections (figure 4).

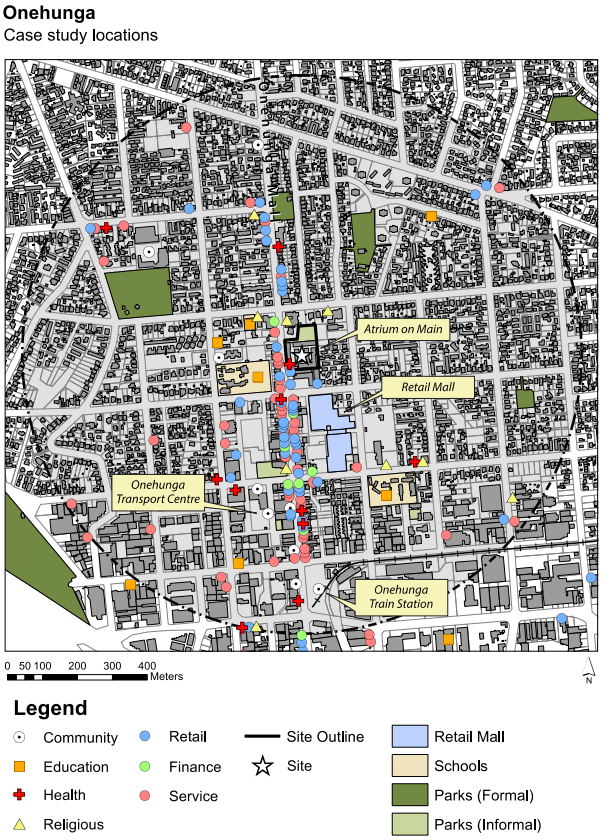

Figure 4. Auckland urban region showing the CBD (blue), and in red, Albany to the North and Onehunga to the south.

The case study developments comprise 112 residential units arranged in a perimeter block with a net density of 64 units per hectare, with units ranging in size from one to three bedrooms. There are also a few retail units at ground floor level facing the high street. The site is zoned Business 2 in the district plan and provides for a range of land use activities, including residential usage, subject to compliance with performance standards such as building height and car parking controls. An aerial view of the development is shown in figure 5.

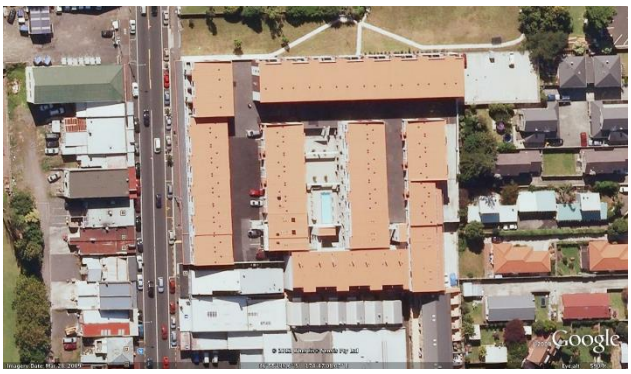

Figure 5. Aerial view of the Onehunga case study development.

4. Results: Albany Case Studies

It was difficult to define with any degree of certainty a clear policy picture from the North Shore district plan over its intended urban design policy outcomes for medium density housing. The policy direction given in the actual wording of the objectives and policies were judged to be unclear, poorly written and at times contradictory in different parts of the district plan. For example, conflicts exist between the transportation, residential and urban design sections of the district plan. Nonetheless, it appears at the strategic level that the North Shore district plan sought to facilitate the development of high-quality urban design. The relevant objective was to:

'effectively manage growth and change by achieving the maintenance and enhancement of a high quality built environment and enabling a wide choice of lifestyles, a range of types and affordability of housing and choice of employment opportunities by enabling development opportunities in and around sub-regional centres which demonstrates a high standard of design' (North Shore City Council, 2003, p 8).

This was supported by the Varied Residential zoning code's residential amenity objective seeking 'to ensure a high level of residential amenity by ensuring that layout and design achieves a high standard of security, visual and aural privacy and usable public and private open space' (North Shore City Council, 2003, p. 11). While it was difficult to gain a clear picture of the intended policy outcomes in the district plan for medium density housing, using these key objectives, it followed that the case-study developments should have been built to a high-quality design standard, especially in areas within 800 metres of the metropolitan centre. This interpretation was confirmed by the urban planning officers interviewed.

The Resource Management Act (RMA), New Zealand's urban planning legislation, is based on

a rational conformance approach where the district plan provides for a range of statutory methods and tools to achieve quality development outcomes through the development process. Thus, the relevant district plan included site density control (one residential unit per 150m2 of site area), parking requirements (two car parking spaces per unit over 50m2, or one if less), a maximum building height, and requirements for shared outdoor recreational areas within the development (North Shore City Council, 2003, pp. 30-33). While this provides potential developers with a guide to determine the residential unit yield, there was no control over residential type mix or unit size. The development was subject to resource consent where the application was assessed against these requirements and meeting quality urban design outcomes (North Shore City Council, 2003, pp. 16-83).

The independent assessment undertaken by the authors of these developments using the urban design criteria from table 1, indicated poor responses to all four areas: context and layout, form and appearance, street scene and internal configuration. Negative elements include the smallness of the two bedroom units (49.5 m2), poorly designed private open spaces, the domination of the internal courtyard by hard-paved parking and poorly located and designed shared spaces (figure 6). While the developments have some good points, including the solid construction and good street edge definition, these factors did not compensate for the other deficiencies. Perhaps the greatest deficiency in terms of meeting intended urban planning and design policy outcomes, was the poor pedestrian connection to the Albany town centre, and in particular, the rapid bus station, and thus not meeting policy requirements for quality developments within walking distances of transit centres.

Figure 6.Internal view of the Albany case study development. The photograph shows the extent of surface car parking and poorly positioned waste disposal facilities (source: authors).

From interviews with relevant council urban planning officers, it became apparent that the small size of the residential units was a direct result of the district plan requirement for residential unit over 50 m2 to be provided with at least two car parking spaces. This, coupled with the Council's traffic engineering advice seeking at least 0.5 visitor car parking spaces per residential unit, became, in the interviewees' opinions, one of the major determining design factors. Also, all respondents felt that the district plan had weak intended policy outcomes and methods that diluted their ability to achieve good built form outcomes through the consenting process.

Another strong theme that emerged from the interviews was the district plan's density control method and its influence on the design process. All were of the opinion that the applicant simply divided the gross site area by 150 m2 to produce the housing yield for the sites without considering other factors that may have led to a better design resolution. In their views, this approach is not uncommon, especially where district plans provide density standards for residential development. Consequently, it appears that car parking and the site density controls were the two major determining design factors for the developments, which contradicted the intended urban design policy outcomes described in the district plan. This is somewhat concerning given policies promoting more compact development and reduced car dependency, and the newer imperatives to deliver 'liveability' and quality urban design.

5. Results: Onehunga Case Study

Using the policy intended outcome technique, it was almost impossible to get a clear picture of the relevant district plan's intended policy outcomes for medium-density housing for the Onehunga case study. The Business 2 Zone on which this development occurs provided objectives and policies for business use and associated activities, but no policy direction for residential activity or any other non-business activity. However, there were regulatory rules that controlled residential development within the zone, including a requirement for approval of a resource consent (planning permission). It is unclear how this approach was achieved through the plan making process, as it is contrary to the RMA's rational conformance based urban planning approach, where the plan methods (rules) are designed to give effect to the district plan's policy intention. This situation left the district plan without any policy guidance to direct district plan users or the council staff administrating the district plan on how to address residential uses within the business zone.

While there were no policy intentions given, the district plan did provide a range of statutory rules

addressing residential development, including vehicle access and car parking controls (two per residential unit), a maximum building height of 12 metres and visual privacy controls to prevent residential unit outlook impacting adversely on neighbours (Auckland City Council 1999, p. 8). However, there was no residential density control limiting the number of residential units that could be developed on the site, nor restrictions on the residential mix or unit size.

The assessment of this development using the urban design criteria from table 1, was good on three of the criteria, namely, context and layout, form and appearance, and street scene. Internal configuration was judged to be poor. This assessment reflected on the following key characteristics: favourable location within the town centre; safe and easy access to public transport and a wide range of local and commercial services and facilities; and the perimeter block form is well conceived by creating a well-defined and potentially active street edge. Deficiencies related to the configuration arise from the insertion of additional units within the inner courtyard area that restrict internal outlook and result in narrow spaces between blocks, and the presence of driveways to lockup garages at the upper courtyard level that precludes better use.

Given this good assessed outcome, it was surprising to discover from the interviews that the relevant district plan did not express any urban design outcomes for medium intensity housing within the Business 2 Zone. The council urban planning officers were effectively left make their own professional judgements. Moreover, the better outcomes when compared to Albany, were achieved in spite of the fact that the relevant district plan provided little or no policy guidance. Consequently, the district had little impact on the actual design. This contrasts with Albany where more stringent rules and policy guides in fact led to a poorer outcome.

6. Conclusions and Discussion

Under the current neo-liberal economic context prevalent in New Zealand and elsewhere, quality urban place and space sought through development actions depends to a large extent on market investment with commercial goals (Goodman and Moloney, 2011). While acknowledging the potential contradiction between market-led goals in land development and the provision of quality urban space as a social benefit, Adams and Tiesdell (2013, p. 6) suggest that there is a potential alternative in what they call 'plan-shaped' markets. This defines a crucial role for urban planners and designers (and the urban planning process) as key mediators between market-driven imperatives and the delivery of public benefits through land development. Given the concern expressed about the weaknesses in the urban planning system from other research cited, and the outcomes to the research reported in this paper, delivering on the aspiration for good urban design will in part depend on effective urban planning tools and methods raising questions about the overall effectiveness of these approaches used.

In the context of cities that have rational conformance-based planning approaches, such as New Zealand, Australia and parts of North America, implementation of the regional strategies requires strong alignment with the local statutory land use plans and tools. These need to have appropriate policy responses, with the right mix of tools and methods to achieve the quality urban design outcomes sought. This paper has evaluated three medium density case study developments at two suburban locations in Auckland to assess this efficacy of the urban planning system to deliver quality urban design outcomes through the development process.

The independent assessment of the urban design qualities of the case study developments produced different, if not contradictory, results. In the Albany case studies, the development was judged to be poor on all of the urban design criteria used: context, building form and appearance, street scene and internal configuration. Yet the relevant district plan had clear policy tools and methods intended to direct good urban design outcomes, also well aligned with the regional strategy.

In the Onehunga case study, the development was assessed to be good in relation to three urban design criteria: context, building form and street scene, with shortcomings associated with the internal configurations. Notwithstanding the shortcomings, this development was assessed to be far better than the Albany developments. Yet in Onehunga, there is an absence of clear urban planning tools and methods specifically for residential development in what is a business zone: quality development notwithstanding of an absence of effective urban planning directives? Here the outcomes appear to have been largely the result of good discretionary decisions made by the responsible urban planning officers through the consenting process, in conjunction with good design on the part of the design professionals. Consequently, it is concluded that the relevant district plans and their tools and methods, have had limited impact on influencing and directing the

development outcome of the three case studies, despite the implicit intentions that this should be so.

This conclusion raises a number of observations and questions. While limited, it parallels questions being asked about the efficacy of urban planning systems and processes in Australian cities cited in this paper, concerning the perceived misalignment between actual development and urban planning directives to concentrate growth and development at transit centres (Woodcock et al, 2011). The results from this research show that for the three case studies, the relevant urban planning tools and methods currently deployed in Auckland appeared to have had little or no impact on the delivery of good urban design outcomes that the higher order regional policies seek. Accepting that the scope of this study is limited, nevertheless, along with other studies cited on this question, it does point to a potential problem for achieving the strategic policy goals of enhanced liveability. For this reason, there is concern about the current newly adopted unitary plan for Auckland. The unitary plan, having both regional and local urban planning functions, through its zoning proposal and associated rules and guides is intended to give effect to policies for quality intensified development set out as goals in the Auckland Plan (Auckland Council, 2013). The question asked is whether this new plan has sufficiently addressed perceived shortcomings in the existing district plans that it will replace? For example, will it address problems identified by urban planners interviewed that the existing district plans are considered to be too broad, loosely written, unquantifiable with a disconnection between the weak policy direction and the zoning code and rules.

The more positive outcome in the Onehunga development case study also raises questions about the need for any urban planning directives at all, given the absence of any specific urban planning tools and methods for residential development in this example? The good outcome seems to have been derived from both good design and good judgements made by the council urban planning officers through the consenting process. There is little doubt that good quality development relies to a large extent on good quality design and designers – the urban planners, urban designers, architects and other built environment professionals involved, especially where serving market-driven development imperatives. However, this works best on larger sites where there is an opportunity to plan and design more comprehensively (CABE, 2008; Adams & Tiesdell, 2013). To some extent, the kind of land development envisaged in the intensification of development around transit centres is predicated on the existence of large blocks of land or 'brownfield' sites opportunities. A good exemplar is a master-planned development on the urban periphery of Melbourne, at University Hill, in the City of Whittlesea. Here a large vacant site was master-planned to accommodate a mix of medium density housing, retail, commercial and light industrial activities, set in a well-designed public realm. The result has won awards for the excellent urban design, and the success attributed to an enlightened developer willing to take risks on the urban periphery, a cooperative local authority willing to bend planning rules to achieve strategic aims and quality outcomes, and skilled urban planners, urban designers and architects (Beattie and Haarhoff, 2014). There are many other examples of successful masterplanned developments where the effective stakeholders cooperation and focuss on shared goals achieves successful urban design outcomes.

However, land suitable for large-scale development of this kind is limited in most cities, including Auckland where areas in the vicinity of many suburban transit centres are located. Delivering on the goals for intensified development and quality urban design across most metropolitan regions relies on smaller scaled, site-by-site development opportunities spread across metropolitan regions. Moreover, smaller scale, incremental developments in these contexts do not necessarily involve the range of highly skilled built environment professional's more likely deployed in master planned developments. Nevertheless, it is in such areas and contexts that a greater number of future developments can be expected, and where the relevant urban planning methods and tools need to be far more effective to ensure quality urban design outcomes.

Meeting the goals for good urban design outcomes, urban 'liveability' and the necessary concentration of higher density development are largely dependent on the development process through the market, mediated by the urban planning system. In the case studies reported, the urban design outcome is shown to be both good and poor, and that the planning methods and tools themselves had little impact on this outcome. In the context of smaller scale, incremental development at higher density applied across the larger part of metropolitan regions, this shortcoming is a serious concern.

This study raises questions about the effective influence that statutory plans have had on achieving the desired quality urban design outcomes for the case studies at two suburban town centres in Auckland. This in turn raises more serious questions for implementation of the Auckland Council's new unitary plan, which also seeks to consolidate urban growth at such centres spread across the metropolitan region. Moreover, seen in the context of research in other cities where inefficiencies have been shown as obstacles to achieving the goals of urban intensification, there is sufficient reason to have more general concern on this issue. This paper is limited in scope to one city and three case studies. Nevertheless, it is argued that evaluating the effectiveness of the urban planning system to successfully deliver quality urban design outcomes that result in enhanced urban liveability and the associated social benefits, largely through market-driven land development processes, is a research area deserving more attention.

The opinions expressed and conclusions reached in this paper however are entirely those of the authors and do not necessarily reflect those of the funders nor persons interviewed.

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Residents' Social Interactions in Market Square and Its Impact on Community Well-Being

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ABSTRACT

This study aims at ameliorating the associated challenges emanated from the ineffective planning, management and design of market square as well as appraisal of the interactions among people of diverse ethnicity. Hence, the study explores users' interactions and activities within three markets square in rural neighborhoods of South-west, Nigeria. The significant relationship between resident's interactions and the community well-being was explored. Consequently, this study highlights the influence of the market square as a typical neighborhood open space on residents' well-being. The study's quantitative approach encircled the purposive structured survey questionnaire data obtained from Yorubas, Hausas, and Ibos respondents (n=382); and analyzed by SPSS statistical package (version 22). Meanwhile, the qualitative data included observation of various activity pattern among the three ethnic groups. The study's findings revealed that an improvement in the market square quality becomes necessary in order to increase residents' interactions and well-being. Also, the study elucidates the appropriate link between the built environment, residents' interactions, and well-being. It is concluded that residents' well-being is a reflection of an experience manifested within the interplay of individuals and groups' social interactions. This study of people and place relationships could better equip the professionals in the built environment on the importance of creating a sustainable open space towards improving residents' well-being and rural community revitalization efforts.

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1. Introduction

A considerable amount of literature has reinstated the economic significance of markets in rural development through exchange and distribution of commodities and services (Vagale,

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1972; Trager Lillian, 1979; Eben-Saleh and Alkalaf, 1999). Aside from the economic significance of markets, markets also encompass human social aspects. The social significance of market is exemplified by Omole, Lukman, & Baki, (2013) in that market acts as a gathering point for the protraction of cultural lineage obligations and responsibilities. Thus, market square acts as a social arena, where social activities, like courtship, visiting friends, and exchange of ideas occur. Other social activities in market square include dancing, dating, and recreational events (Anthonia, 1973). Recently, researchers have shown an increased interest in the exploration of varying degree of social interactions among market Square's users and community residents of both developed and developing countries. However, little efforts have been initiated in exploring the social interactions among diverse ethnic groups in the market square (which is also known as Oja in Yoruba parlance) of such a large and multicultural nation as Nigeria. A host of challenges often time associated with the use of the traditional rural market square, which has been established as an important typical rural neighborhood open space in Nigeria. These challenges as reinstated by Agboola, Rasidi, & Ismail (2016), include inadequate social interactions, contestation over the use, the need for improved facilities and amenities, security and environmental hazards amongst others. Meanwhile, the interactions among diverse ethnics within the markets are often threatened by indigene and settler's dichotomy and as such have negative impacts on the rural developments efforts.

Other constraints in people social interaction within the traditional rural market in Nigeria are traceable to improper developmental issues and inadequate facilities. For instance, the significance of social interaction attributed to non-availability and in some cases management of adequate market's facilities and amenities. Similarly, haphazard and uncoordinated physical planning has been a cog in the wheel of market's space utilization and management. A reflection of these could be seen from market's physical conditions traceable to poor accessibility, sanitary conveniences, inadequate water supply, electricity, and other community facilities. The planning challenges include encroachment on the market boundary, poor landscaping, inefficient refuse disposal system, and other services utilities (Uzuegbunam 2012).

This study aimed at proffering solution towards ameliorating the associated social interaction challenges in the market square. Establishing adequate social interactions among diverse market's users portray identifiable benefits. For instance, a well-equipped and planned market square will impact positively on the users' well-being and satisfaction. Other significance includes enhancement of peoples' togetherness and cordial relationship among the diverse ethnics. In this study's context, well-being is synonymous with a sense of community which refers to the feelings that community residents have towards each other. This depicts belongingness, shared loyalty and neighborliness (McMillan, David & Chavis, 1986). In recent time, enhancement of human well-being remains a vital issue that required attention among professionals in built environment. In view of this, there is a desirous need for proper open spaces' planning targeting improvement on peoples' interactions and movement (Southworth & Owens, 1993). It is evident that people's perception of social interaction has intertwined positively with residents' sense of community (Lund, 2002; Wood,Frank & Giles-Corti, 2010).

For proper understanding and clarity, this research is underpinned by social interactions, cohesion and attachment concepts. These variables are paramount towards achieving the following: (i) creation of enabling an environment for passive social contact among the users (ii) appropriate space for residents' interactions and community cohesion (Fleming, Baum, & Singer, 1985) and lastly (iii) residents' attachment to the market (Peters, Elands, & Buijs, 2010). Succinctly, the concepts captured the collective values of the processes and attachments that existed between people and their environment, which leads to community well-being (Davidson & Cotter, 1986 and Nasar & Julian 1995). This research work focused on the level of interactions among the diverse markets' users and the ability to facilitate the residents' well-being. Past studies have established that both the social interaction, place attachment can promote well-being (Maloutas & Pantelidou, 2004). Therefore, the creation of social interaction and well-being remain vital and should be regarded as an agent towards the enhancement of the built environment. Consequently, the affective bond between people and the environment in the rural community could further enhance social relationships, community experiences, and resident's well-being. This study's ethnics respondents are the Yoruba, Hausa, and Ibos who are patrons and vendors within three different markets in South-west, Nigeria. Holistically, the research findings appraise the

present condition of the market environments and the socio-cultural background of its users.

2. Concepts of Social Interaction, Social Cohesion, and Well-Being

Social interaction as coined as the associated communal contact between residents while involving in various daily activities (Hesham, Ismail & Hisyam 2014). Past literature affirm that social interactions among diverse ethnic's groups promote participatory drives within the community and subsequently lead to a feeling of acceptance of each other's live (Putnam, 2000). Past studies have shown in clear terms that a relationship exists between the people's social interaction, well-being, and the physical environment. It is noteworthy to state that; the physical aspects of the environment can contribute to the improvement of social interactions leading to general community residents' well–being as conceptualized in Figure 1. A good social interaction involves adequate social network upon which social capital is rooted. While on the other hand, social capital responds to diverse interpersonal factors such as belongingness, the opportunity for social interaction, social network, norms and mutual trust among ethnic groups (Peters, Elands, & Buijs, 2010).

Adequate interactions among ethnics are a panacea towards achieving social cohesion, between the individuals or groups (Potapchuk, Crocker & Schechter, 1997; Marshall & Stolle, 2004). It becomes evident that the associated significance of market square as a neighbourhood opens space relies on its affordance of human social contacts among diverse ethnics of cultural backgrounds (Lofland, 1998; Fainstein, 2005). The significance of interactions vested solely on the provision of reliefs perlatives from human daily struggles and tensions (Dines, & Cattell, 2006). In addition, appropriate design and managements of open space often attract greater percentage of resident's visitation and subjective place for human interactions (Dines, & Cattell, 2006; Uitermark, 2003). Similarly, open space such as market square could promote residents' satisfaction, dependence, and trust (Kim, 1997; Carmona, 2010). The higher the residential social interaction, the higher the community social development (Lalli,1992).

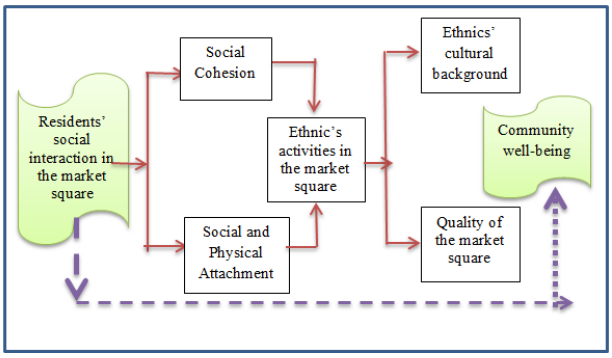

Figure 1.Conceptual frame work.

In another dimension, social interaction leads to neighbourliness and joint ownership prides. Neighbourliness involves a high level of friendly dispositions among residents, friends, and families, while it also promotes mutual respect, acceptance of diversities among ethnics' residents. Explicitly, neighbourliness is a relationship through which residents can communicate and share common ideas together. Pre- requisites for social bonding in market associates with people familiarity, regular use, and available facilities(Dines, & Cattell, 2006). Well-being according to Chen, (2006) refers to the totality of all residents' encounters, relationships, and experiences that emanated from harmonious relationships. On the other hand, community well-being could be categorized as socioeconomic, emotional, health and safety (Kil, et. al., 2012). This study's definition of well-being is the existence of the humans' neighbourliness; interpersonal relationship and joint involvement in community programs as equally reinstated (Butterworth, 2000). The author opined that the determinants of community well-being include social ties, sense of community, community cohesion and sense of place. Community well-being included safe and accessible environment, as well as joint participation in community activities by ethnics' groups.

3. Methodology: Quantitative and Qualitative Measurement of Items

In a view to properly comprehend the research findings, measurement items of the quantitative questionnaire were rated on a "1-5" Likert scale, targeting the respondents' responses on sharing perceptions. The "5" statement indices elicited includes (i) Sharing market square with other ethnic's groups is always good (SHA1), (ii) Sharing market square with other ethnic's groups is always helpful (SHA2), (iii) Sharing market square with other ethnic's groups is always cherished by me (SHA3), (iv) Sharing market square with other ethnic's groups is always enjoyable (SHA4), (v)

Sharing market square with other ethnic's groups brings mutual trust and understanding and gives me satisfaction (SHA5). The perception of the respondents on their well-being anytime they were in the market square was explored base on the following: (i) I am comfortable with the quality of the market anytime I found myself in the market square (QUA1), (ii) I am comfortable with the amenities and facilities provided in the market square (QUA2), (iii) I am comfortable with physical features of market square (QUA3), (iv) I am comfortable with the markets' security and safety (QUA4). Meanwhile, the "5-point" scale ranged from "Strongly agree" on "5" to "Strongly Disagree" on "1" with "Neither agree nor disagree" in the middle represented by "3". Thus, "2" stand for "Disagree", while "4" for "Agree". For the interpretation, the mean value of "3" was considered to be the midpoint. Hence, the values below "3" were considered "uncomfortable" while a mean value above "3" was considered "comfortable".

For the qualitative observation, checklist used in the previous study of Mack, etal., (2005) was adopted. Rating of the observation was based on the 4-point scale while the observation was conducted at the market square of three different neighborhoods. The checklist reflected users' duration of interactions, with no interaction rated on "0" scale, short interaction (less than 15 minutes) was rated on "+1" scale. Medium interaction (between 15 minutes to 20 minutes) was rated on "+2" scale, and lastly, the long interaction (between 21 minutes to 30 minutes) was rated on "+3" scale.

4. Case Study Areas

As depicted in Figure 2, the position occupied by the case study neighbourhoods. Ijebu-jesa, Ijeda, and Iloko towns are located under Oriade local government council, Osun State. Ijeda-Ijesa is located at latitude 70 401 North and longitude 40 501 East while Iloko is located at latitude 7º 381 North and longitude 4º 48¹ East. Meanwhile, Ijebu-jesa town has latitude of 70.451 and longitude 40 431 degree east. The three towns shared boundaries with Efon-Alaaye in Ekiti State, Eti-oni, Ilesha, Iwaraja, Iwoye, and Erinmo. The Figure 3 and 4 shows the sectional areas within the case study market. However, the markets have been in the existence for more than ten decades, serving as a socio-economic, cultural, religious and recreational environment for the teaming users.

Figure 2.Case study map. (Source: Oriade local government local authority board)

Figure 3.Case study market showing agricultural product display section. (Source: Field work, 2015)

Figure 4.A sectional part of the case study market square showing diverse interactions among the users. (Source: Field work 2015)

5. Results and Discussion

A total number of 382 respondents of three neighbourhoods of Ijebu-jesa, Iloko, and Ijeda participated in the completion of the study's structured survey questionnaires. They were selected through stratified random sampling taking into account their age, sex, ethnics and length of residency. A total number of 187 (49 %) were males, while 195 (51%) were females. As regards to the age distributions, 69 (18 %) of respondents' age falls between 12-18 years, 127 (33 %) having age ranged between 19 - 29 years, 105 (27 %) were within the age bracket 30-59 years. Lastly, 81 (21 %) were aged 60 years and above. In response to the respondents' ethnic's background, 231 (60.5 %) of respondents were Yorubas, 96 (25 %) were Igbos, and 55 (14 %) were Hausas. Respondents from Ijebu-jesa

totaling 180 (42 %), Ijeda had 84 (31 %), and Iloko with 101 (25 %).

In connection to the respondents' perception of well-being, Table 1 shows mean value of 2.91 (SD 1.52) and 2.3 (SD 1.48), that signified that the respondents were not comfortable with the quality of the market's surroundings (QUA1) as well as with the amenities and facilities provided in the market square (QUA2). Likewise, a mean value of 2.7 (SD 1.72), and 2.62 (SD 1.73) were recorded for respondents' perception of physical features of market square (QUA3), and markets' security and safety (QUA4) respectively. The values fall below benchmark value of "3" which signaled respondents' uncomfortable dispositions.

Table 1. Quantitative Result from the descriptive analysis

	Responses from Likert scale											***Statistics***	
Item codes	Strongly agree	Percentage	Agree	Percentage	Neither Agree nor Disagree	Percentage	Disagree	Percentage	Strongly disagree	Percentage	Total respondents	Average Mean score	SD
SHA1	160	41.9	124	32.5	13	3.40	43	**11.30**	42	11.0	382	3.80	**1.36**
SHA2	184	48.2	110	28.8	09	2.4	44	**11.50**	35	9.20	382	3.90	**1.33**
SHA3	174	45.5	119	31.1	05	1.30	61	**15.90**	23	6.02	382	3.52	**1.48**
SHA4	184	48.2	110	28.8	07	1.80	39	**10.20**	42	11.0	382	3.90	**1.37**
SHA5	171	44.8	82	21.5	11	2.9	10	**2.60**	108	28.3	382	3.50	**1.70**
QUA1	68	17.8	93	24.3	13	3.40	79	**20.70**	129	33.8	382	2.91	**1.52**
QUA2	52	13.6	64	16.8	20	5.20	94	**24.60**	152	39.8	382	2.30	**1.48**
QUA3	98	25.7	70	18.3	14	3.70	34	**8.90**	166	43.5	382	2.70	**1.72**
QUA4	102	26.7	51	13.4	05	1.30	53	**13.90**	171	44.8	382	2.62	**1.73**

The result from Table 1 revealed that the generality of the residents unanimously agreed that a very comfortable markets' status has not been attained. The results, therefore, suggest that improvements become necessary on the general condition and quality of the market. This becomes necessary in efforts to attain an ideal market standard that could be worthy of impacting positively on the residents' community well-being. Places that could be perceived beneficial to the residents' well-being must equally possess the basic standard requirements that could promote a very comfortable environment for the teaming users. In response to respondents' perception of social interaction, results indicated a mean value of 3.8 (SD 1.36) and 3.9 (SD 1.33) were exhibited for SHA1 and SHA2. In the same manner, the mean value of 3.52 (1.48), as well as 3.9 (SD 1.37), showcased the respondents' perception on SHA3 and SHA4 accordingly.

Lastly was the respondents' perception of sharing a market square with other ethnic's groups. The result of respondents' perception on sharing market brings mutual trust and understanding and gives satisfaction (SHA5) exhibited an average mean value of 3.50 (SD 1.70). Overall, the mean values exceeded the benchmark of "3", which affirmed a positive emotional connection towards residents' sharing the market with others. Despite the challenges associated with the qualities of the market, residents still consider it worthy to interact and integrate. This result affirmed the significance of the market in the lives of its users, as corroborated by the past market study of Dines, & Cattell, (2006) and Nasution & Zahrah (2014). Thus, improvements in the quality of the market surroundings could as well enhance the high level of interaction among the users. In view of this, urban designers are encouraged to achieve the strategic sustainable planning for long-term vision. This is considered as the important indicators to achieve the high level of human life and users' satisfaction (Nikoofam & Mobaraki, 2016).

For the quantitative analysis, a total number of 50 participants' observations were carried out within the three markets square. The qualitative observation results in Anthonia, (1973); Agboola , Rasidi, & Ismail (2016); Uzuegbunam, (2012); and

McMillan, David & Chavis, (1986) show the diverse interactions among the Yoruba, Hausa, and Ibo within the 3 major markets square in the area. The findings of quantitative result validate the quantitative result that established a fair sharing of the market among the ethnics.

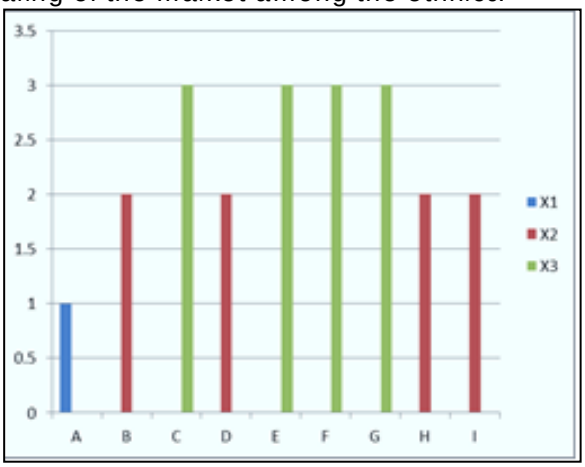

Figure 5.Residents' Interaction and duration in Ijebu-jesa market place. A=Hausa & Igbo, B=Hausa & Yoruba, C=Hausa & Hausa, D=Yoruba & Igbo, E=Yoruba & Hausa, F=Yoruba & Yoruba, G=Igbo & Hausa, H=Igbo & Yoruba, I=Igbo & Igbo. ×1=Less than 15 minutes (short interaction), ×2=between 15 to 20 minutes (medium interaction), ×3=between 20 to 30 minutes (long interaction)

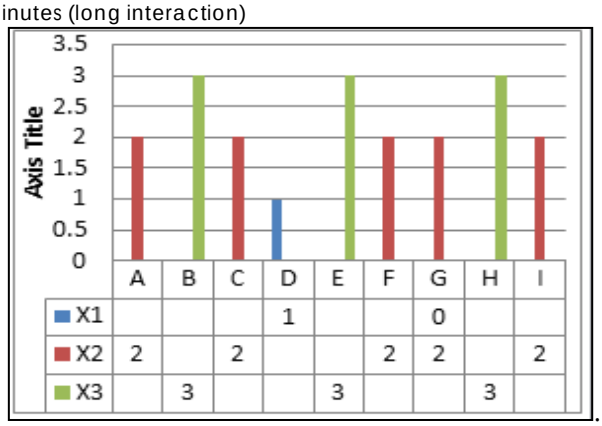

Figure 6.Residents'Interaction and duration in Iloko township market place. A=Hausa & Igbo, B=Hausa & Yoruba, C=Hausa & Hausa, D=Yoruba & Igbo, E=Yoruba & Hausa, F=Yoruba & Yoruba, G=Igbo & Hausa, H=Igbo & Yoruba, I=Igbo & Igbo. ×1=Less than 15 minutes (short interaction), ×2=between 15 to 20 minutes (medium interaction), ×3=between 20 to 30 minutes (long interaction)

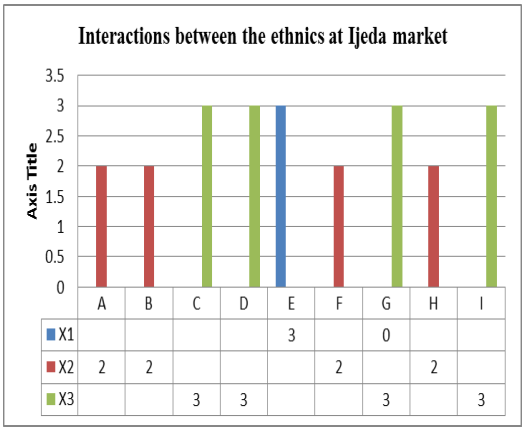

Figure 7.Residents' interaction and duration in Ijeda market place. A=Hausa & Igbo, B=Hausa & Yoruba, C=Hausa & Hausa, D=Yoruba & Igbo, E=Yoruba & Hausa, F=Yoruba & Yoruba, G=Igbo & Hausa, H=Igbo & Yoruba, I=Igbo & Igbo. ×1= Less than 15 minutes (short interaction), ×2=between 15 to 20 minutes (medium interaction), ×3=between 20 to 30 minutes (Long interaction)

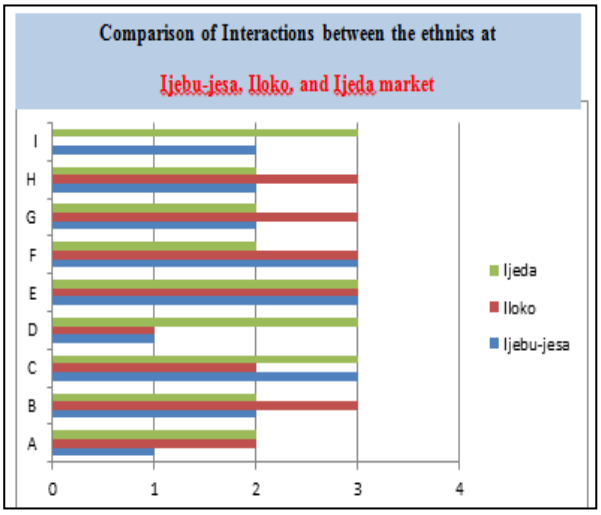

Figure 8.Comparison of residents' interaction and duration in the three-neighbourhood market place. A=Hausa & Igbo, B=Hausa & Yoruba, C=Hausa & Hausa, D=Yoruba & Igbo, E=Yoruba & Hausa, F=Yoruba & Yoruba, G=Igbo & Hausa, H=Igbo & Yoruba, I=Igbo & Igbo. ×1=Less than 15 minutes (short interaction), ×2= between 15 to 20 minutes (medium interaction), ×3=between 21 to 30 minutes (long interaction)

From Figure 5, it could be deduced that long interaction (20-30 minutes) was observed between Yoruba and Hausa, Igbo and Hausa in Ijebu-jesa market. Meanwhile, medium interaction (15-20 minutes) was established between Igbo and Yoruba. However, Figure 6, depicted the long interaction between the three ethnics at Iloko market, while short interaction (less than 15 minutes) only occurred between Yoruba and Igbos. The third observation in Ijeda market was shown in Figure 7, in which it revealed that short interaction (less than 15 minutes) existed between Yoruba and Hausa within the market. This was traceable to the greetings and charting as the purpose of

interaction. Meanwhile, the long interactions that existed among the ethnics were as a result of the diverse purpose of interactions such as trading, religious and cultural activities and social activities (playing games, deliberations etc). The comparison of the interaction among the ethnics in the three markets was presented in Figure 8.

An interaction existed among the three ethnics, while the purpose of interactions was traceable to different activities ranging from greetings, religion, and social discussion and economic. Long and short interactions occurred between the three ethnics groups, which demonstrated that in spite of the various challenges and iota of conflict, engaging in some activities such as trading, social-cultural activities build social interaction among the groups. An indication that markets' environment should be designed in a bid to facilitate various activities and joint participation. This target at meeting the needs, preferences, and intention of users(Carr, 1982). Similarly, peoples' sense of empathy and understanding plays a significant role in the interactions (Forouzande & Motaliebi, 2012).

Similarly, users' willingness to share the market with each other indicates encouragements for social interaction and sense of solidarity amongst them (Perkins, et al., 1996). Hence, meaningful encounters in market squares have a positive impact on the sustenance of residents' well-being as supported by (Dines, & Cattell, 2006). Also, social encounters among people create a sense of belonging, integration, and neighbourhood attachment. This was corroborated by the previous studies of Mutiara & Isami, 2012 and Ibrahim, Omar & Mohamad, 2013). The finding affirmed that the affordance of opportunities for social interaction in the market square would promote human needs which are essential to the psychological development of individuals and community sustainability (Berkowitz, 1996 and Agboola, Zango & Zakka, 2015). Likewise, the residents' urge to use the market square encourages being parts of the community and helps to develop and promoting residents' well-being, self-identity and communal activities (Bryne & Wolch, 2009 and Agboola, Rasidi & Said, 2015).

5. Conclusion and Recommendation

This paper focused on the people-place relationship, and thus established that public open space such as market square offers an opportunity for diverse ethnic's relationship despite the likelihood of conflict and rifts among users. This current study contributes substantially to the general understanding that the social interactions that take place among the ethnic groups in the market square. The findings would not only give sustenance to peoples' shared values but would also influence their well-being within the community. A good neighbourhood environment comprising market square as an integral part is noted to facilitate communal contact, well-being, and environmental sustainability when properly landscaped and equipped (Ahianba, Dimunna & Okogun, 2008 and Agboola, 2011).

In line with the aforementioned, this study suggests that in the quest of improving inter-ethnic relations and understanding, appropriate machinery should be put in place towards improving the role played by the markets' square. A well-equipped, landscaped, functional and conducive market will improve people's positive perception and invariably contributes to peoples' decision to remain in the specific area. Also, the establishment of a well-planned market would encourage peoples' participation in a diverse range of activities. Therefore, provision of facilities, features, amenities, landscape features, and general maintenance becomes essential and every potential opportunity should be harnessed. As a result, adequate attention is needed towards improving the rural market square in Nigeria.

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Gauging the Relationship between Contextual Growth and Structural Neglect

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ABSTRACT

Population and land use out-migrations from urban to peripheral areas can result in non-functional, unmaintained historic structures which deteriorate to the point where removal is cheaper than removal – or demolition by neglect. The increasing rate of neglected historic structures is a growing concern. There is a need for research investigating connections between urban growth management and its effect on neglect. This paper applies Newman's (2013) conceptual model of measuring neglect to Geographic Information Systems, comparing rates of neglect in historic Doylestown, Quakertown, and Bristol boroughs in Pennsylvania, USA utilizing different amounts of peripheral agricultural preservation. Comparisons are made examining descriptive statistics on existing conditions, a Polychoric correlation evaluating relationships between drivers of neglect, and a cross-comparative GIS spatial analysis. Results indicate as amounts of peripheral preserved farmlands increase, neglect can be lowered.

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1. Urban Dynamics and Heritage Neglect

Forrester (1969) theorizes that the city is a living organism whose form takes its shape as the result of a combination of external forces. Further, actions and interactions of cultures are a product of the desires, necessities, and values of a city's actors and give meaning to its form (Newman, 2015). This theory presupposes that comprehension of the built environment must be considered in conjunction with the understanding of both exogenous and endogenous factors and their causal relations(Ben-Hamouche, 2013).Listokin(1997) takes this theory a step further, positing that growth management and preservation of the built environment are fundamentally connected; he also states that these connections are, however, not fully understood. Local policies do not conserve built heritage fully (Pickerill & Pickard, 2007). For example, evidence from historic areas in Germany has shown that contextual economic and political changes significantly impact historically preserved buildings (Alberts & Brinda , 2005)

Historic preservation has a primary objective to protect structures and districts of historic prestige

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from alteration, degradation, and demolition (Ben-Hamouche, 2013). Historic urban areas require high levels of support to retain structural viability, safeguard the integrity of heritage structures, and stimulate local economies. Urban spatial change is largely tied to alterations in contextual land uses, threatening many elements within the historic built environment. Simultaneously, many urban fringe areas (such as farmlands), the settings of historic urban buildings, are also threatened. As such, regulations now go beyond local preservation policies and include larger scaled contextual approaches for heritage management (Collins, Waters, & Dotson, 1991).

Centrifugal development has effected many urban historic buildings, in many cases resulting in their removal. Urban sprawl can create a uniform spatial form across cities and destroy much structural heritage in its wake (Treib, 2008; Yahner & Nadenicek, 1997). Urban expansion can accelerate the loss of historic buildings because of a lack of utility, a process referred to as demolition by neglect (DBN). DBN is the removal of a historic building or structure due to prolonged vacancy and extreme maintenance issues (Leatherbarrow & Mostafavi, 1993).

The capabilities of historic preservation policies to assist in retaining historic character and function in heritage buildings is highly dependent on the examination of process and changes within urbanized areas and their surrounding contexts (Alderson, 2006; Cook, 1996). Since urban contexts are constantly in flux, form and function rarely coincide in any environment for an extended period of time (Jackson, 1997). Contemporary historic preservation theory gives priority to form through the pursuit of historic integrity. An unfortunate outcome of this position is that if a historic building loses its function in contemporary society, it can also eventually be removed. Luckily, adaptive reuse and rehabilitation efforts have increased recently, leading to small upsurges in historic structure retainance in some localities (Newman, 2015).

Many U.S. historic structures are policed on a unit-by-unit basis and are then analyzed based on whether or not they appear as they once did at a given historical time (or based on their historic integrity). Jigyasu (2002), notes that historic structures have two fundamental dimensions: historic integrity, and a relationship to the contextual environment with which they interact. A vital approach to the preservation of historic buildings lies with the ability to managing the individually with local policy (internally) and successful management of regional land use changes (externally). Therefore, the examination of the individual structure and its dynamic setting must occur if neglect can be fully understood. (Listokin, Listokin, & Lahr, 1998; Pickerill & Armitage, 2009).

The shift toward a more dynamic management of historic structures must focus on adaptive reuse, rehabilitation, and land use management. American historic preservation can differ from European approaches due to a stronger emphasis on local regulations in the U.S., while many European cities practice an area-based approach (Doratli, 2005). Area-based strategies can increase non-government funding, allow for greater expansions in historic districts, increase private sector investment in historic regeneration projects, and increase heritage rehabilitation in marginalized neighborhoods (Pickerill & Armitage, 2009). In the U.S., broader heritage management approaches are typically regulatory or incentive-based. Regulatory measures, such as state regulated monetary penalties, generally involve punishment for allowing neglect to occur or continue. South Dakota statutes makes willful neglect a misdemeanor; in West Virginia, local landmark commissions enforce standards for the maintenance of landmarks; San Francisco, California can assess a $500 per day penalty to owners who allow neglect to occur (National Trust for Historic Preservation, 2008).

Listokin (1997) theory suggests that local polices, when used in a singular approach, will not adequately result in conserved built heritage in the long-term(Alberts & Brinda, 2005; Pickerill & Pickard, 2007). Contemporary research reinforces this position, but shows a separation between historic preservation and external land use management (Avrami, 2012). Historic buildings are just one component within a larger, ever-changing system; if both aims are focused to align to one goal, only then will the system be mutually beneficial properly (Newman & Saginor,

2014). Cassar (2009) suggests that historic preservation requires new research to aid in the understanding of how traditional buildings behave in environmental systems, if structural performance is to be improved.

Newman's (2013) conceptual model for measuring neglect takes a systems approach to measuring areas of the historic built environment. It is a method to begin to compare neglect rates across cities and historic districts to initialize the exploration of the effects of strategies for managing contextual growth and techniques to preserve the historic built environment. It is a framework for measuring neglect, based on Listokin's(1997) theory of urban dynamics. The model is a means to begin to examine area based approaches for regulating historic areas through the surveyance and analysis of neglect of the built environment, specifically in regards to historic buildings. Newman's model (2013) uses dimensions of integrity and viability from Listokin's (1997) theory to measure the rate of demolition by neglect. It is the only model currently utilized to measure this phenomenon. A synergetic relationship between urbanization and historic preservation can be eventually realized through increased application of the model. While the original model was developed and assessed through qualitative analysis, newer methods of analysis using Geographic Information Systems (GIS) should also be employed for more thorough spatial analyses.

2. Geographic information Systems in Heritage Management

GIS are powerful spatial tools using computational technologies which allow for storing altering, creating,, displaying and overlaying spatial data (Limp, 1999). They offer the possibility to simultaneously store, organize, map and represent, manage, and analyze data concerning geographic locales and their context while. This allows for a much more thorough spatial analysis of an historic urban area (Burrough & McDonnell, 1988). While information obtained from surveyance or research can be applied to generate new databases, the innovative tools involved with the program have been used too sparingly in historic built environment studies, typically involving analyses involving chronological historical spatial data combined with statistical assessments (Kvamme, 1993).

The field of archaeology, studying human activities of the past and their resultant material culture, has dominated the used of GIS in regards to historic preservation based research (Kaimaris, Sylaiou, Georgoula, & Patias, 2011). While archaeologists globally have recognized the possibilities GIS can offer and applied its analytical tools in countries outside of America such as Scotland (Murray, 1995), France (Guillot & Leroy, 1995) and Holland (Roorda & Wiemer, 1992), preservationists applying GIS to solve the issues of current development patterns on neglected heritage structures are nearly non-existent. Remote sensing applications, satellite imagery set the stage for initial historic structure analysis (Doneus, 2001) but as data sources have grown, new statistical analysis and multi-scalar analyst tools have been created to move beyond traditional GIS based approaches. Cultural resource management professionals have relied upon these databases for years to ensure the protection and preservation of valuable historic information (Box, 2003). GIS data can also be used as a way of distilling priorities for management decisions. For example, the Almería Province in Spain utilizes its cultural and heritage inventory data to assess the rehabilitation potential of buildings and has established a priority order for their reuse for a 'decision index' which corresponds to the considerations of each building (Cano, Garzon, & Sanchez-Soto, 2013). This makes each management decision unique to its corresponding heritage structure.

In regards to the historic built environment, GIS have been primarily applied for landscape visualization, viewshed impact assessment, multi-scale synthesis, spatial sampling, and forecast modelling. GIS must become more common in urban heritage studies to help synthesize efforts land use planning, environmental management and a variety of historic analyses; a new set of methods needs to be developed which may require preservationists to alter the way asses the historic built environment through expanding its scope beyond individual built units (Limp, 1999).

3. Research Questions and Methodology

This research uses GIS to determine if contextual land use management helps deter neglect within the historic built environment. It seeks to answer the question, what relationship does farmland preservation have on neglect within historic urban areas? It is hypothesized that preserving fringe farmlands as a policy for external land use management can aid in increasing viable buildings within historic urbanized boroughs.

The urban boroughs analyzed – Bristol, Quakertown, and Doylestown – are all historic colonial cities in Bucks County, Pennsylvania, USA. Pennsylvania uses farmland preservation to aid in the conservation of the historic character of its boroughs and townships as a means of countering the effects of sprawl. Bucks County lost 70% of its agricultural properties from 1950-1997 (U.S. Department of Agriculture, 2005). The entire region was ranked second in the U.S when ranked according to areas with farmlands threatened to conversion (Olson & Lyson, 1999)(Bourke, Jacob, & Luloff, 1996). Bucks Count, is a contested landscape characterized by rapid land consumption and conversion. It is in southeast Pennsylvania within an area suffering from threatened farmland and concentrations of historic teardowns. From 1985 to 1995, Pennsylvania lost an area of farmland the size of Delaware to development while populations declined in many inner cities (Hylton, 1995). To counteract decentralization, the state enacted agricultural preservation as a primary means of managing growth

Each borough under investigation is listed on the National Register of Historic Places (National Trust for Historic Preservation, 2008) and is approximately two-square-miles in size; similar polices for preserving farmlands are also practiced (purchase of development rights). Evaluating units of analysis within an identical county with analogous geographic sizes, populations, and ages helps to control for other intervening variables. We utilized the central place theory (King, 1984) to outline an external boundary for each borough to determine the highest impacted areas for the context according to town centers with this particular size and population (Table 1). Within this boundary, we calculated the total quantity of preserved agricultural lands which encircled each borough.

Newman's model (2013) of calculating neglect is applied using (Figure 1) GIS based tools. It combines dimensions of integrity and viability using five factors: 1) timeframe of construction (when the building was built), 2) architectural modification (how much the building has been altered since construction), 3) land use change (how much the building's function has changed), 4) physical condition (the condition of each building), and 5) assessed value (the fair market value). A 95% confidence level was reached based on the sample size and clustered, multistage area random sampling was utilized to survey each building (Montello & Sutton, 2006). Each factor was then measured by scoring three characteristics.

Table 1. Similarities of Cases under Investigation

Variable	Doylestown	Quakertown	Bristol
Population	8227	8688	9923
Size	2.2m2	2.0 m2	1.9 m2
Date Founded	1745	1803	1720
# of Preserved Farms	46	13	1
Total Acreage of Preserved Farmland	3323.38	1057.27	99.9
Agricultural Preservation Strategy	Purchase of Development Rights	Purchase of Development Rights	Purchase of Development Rights
National Register Listing	Yes	Yes	Yes

The evaluation of conservation planning requires measurement on multiple scales for meaningful analysis (Nijkamp, 1991). The research utilized three scales of analysis: an inventory presenting descriptive statistics of the measures utilized to assess variables, a Polychoric correlation to assess relationships of variables, and GIS spatial analyses which combining geocoding, reclassification of attributes, Hot Spot Analysis, Inverse Distance Weighted (IDW) interpolation, Weighted Suitability overlays. The inventory describes conditions on a building by building scale; the correlation examined which variables impacted DBN significantly; and the comparison analyzed the relationship between DBN and amount of preserved agricultural lands. An ordinal scale was used in the inventory and GIS analyses to assign attributed to each building surveyed. Higher overall totals in summed scores indicated a lower occurrence of neglect. Characteristics accepted of each measure per variable were then evaluated using percentages as a means of inventorying conditions.

The scores for the five variables were then summed to evaluate structural neglect on a building scale. The total score of a given building could range from 5 to 15. Neglected buildings had point ranges from 5 to 8, transitory buildings had score ranges from 9 to 12, and viable structures had scores ranging from 13 to 15. The relationship with each factor contributing to DBN neglect was assumed to be (as sums were greater, DBN was lessened), a Polychoric correlation was utilized to test correlation. The variables utilized to assess neglect were correlated with their overall impact in a specific location within the sample frame.

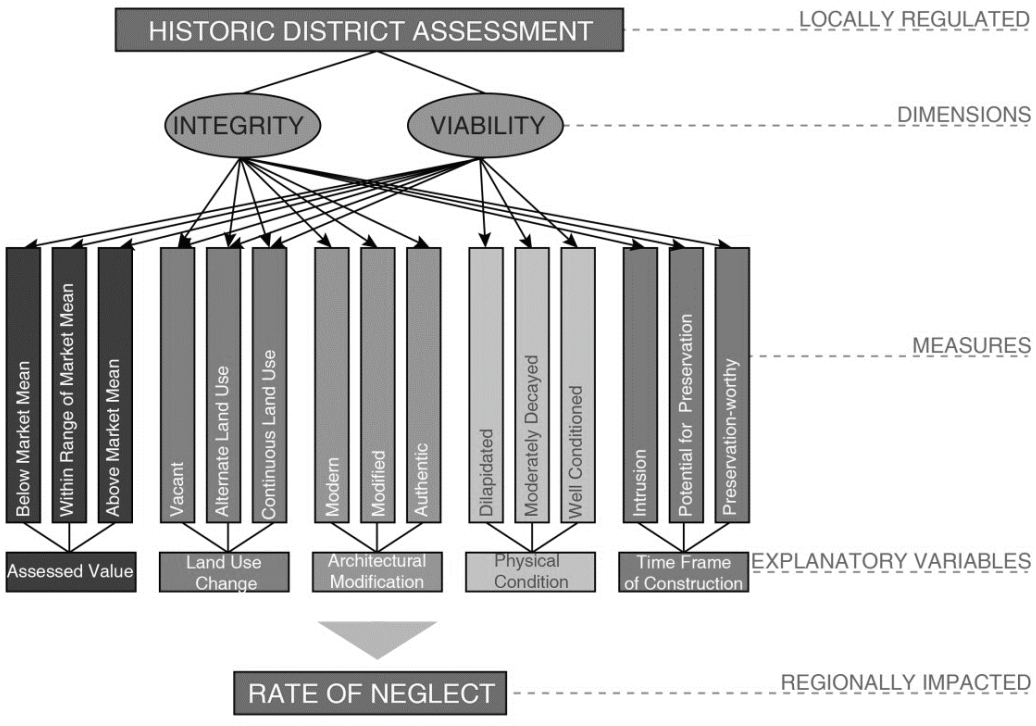

Figure 1. Newman's Model of Measuring Neglect.

After individual building totals were mapped as point values, the cross-case comparison used GIS analyses to identify and map larger-scaled areas of the built environment which were neglected. Hot spot analysis was performed for each spatially located variable and an IDW was performed from the hot spot analysis. Each hot spot analysis map was then overlaid using suitability modeling which was weighted to identify both neglected and viable spaces.

4. Findings

4.1. Inventory of Conditions

Each borough under investigation displayed analogous patterns during the building-scaled inventory (Table 2). The largest percentage of buildings built from 1971 to present was occupied by Doylestown (60%), but a large proportion of these buildings were also vacant (69%). Over one-half of the sampled buildings were provided new land uses through adaptive reuse (60%); simultaneously Doylestown has a large proportion of its buildings in good condition (86%). Quakertown had a large percentage of its buildings erected from 1940 to 1970 (36%) and also show a large degree of vacancy (64%). Relatedly, a large proportion of its built environment was also experiencing dilapidation (74%). The assessed value of structures with occupants was generally above market average (47%). Bristol, has the lowest proportion of newly erected buildings (44%) but the highest vacancy percentage (80%). While 65% were renovated, 67% were considered dilapidated. Bristol, on the other hand, had a relatively high amount of buildings above market mean value (93%). The lowest proportion of buildings that were neglected belonged to Doylestown (1.5%), Quakertown had 3.1% of its buildings neglected and Bristol had 9.1% (Table 3). The portion of transitory structures were all extremely similar across boroughs while Bristol had a low proportion of buildings that were viable (9.1%.)

4.2. Correlational Results

We performed polychoric correlation analyses for ordinal variables to measure the relationship between the five variables (Table 4). We notice an interesting result – the variables show positive and negative correlations. Specifically, land use change and building condition are negatively correlated with time frame of construction and architectural modification. This result is intuitive when we consider how the variables are measured. For example, this result means that newer buildings are more likely to have continuous land use and be well-composed. The only statistically significant correlations are between architectural medication and time frame of construction (0.697)—indicating that buildings that are modern are more likely to be newer buildings—and architectural modification and land use change (-0.094)—indicating buildings that are modern structures are more likely to have continuous land use.

Table 2. Inventory of measures accepted for structures sampled per town.

		Doylestown		Quakertown		Bristol		Overall	
		Count	Rate	Count	Rate	Count	Rate	Count	Rate
Time Frame of Construction	a1 = 1971-present	12	0.185	17	0.258	11	0.200	40	0.215
	a2 = 1941-1970	14	0.215	17	0.257	20	0.364	51	0.274
	a3 = 1900-1940	39	0.60	32	0.485	24	0.436	95	0.511
	Total	65	1	66	1	55	1	186	1
Land Use Change	b1 = Vacant	2	0.031	7	0.106	8	0.146	17	0.091
	b2 = Alternate Use	18	0.277	17	0.258	5	0.091	40	0.215
	b3 = Continuous	45	0.692	42	0.636	42	0.764	129	0.69.4
	Total	65	1	66	1	55	1	186	1
Architectural Modification	c1 = Modern	11	0.169	15	0.227	10	0.182	36	0.194
	c2 = Modified	39	0.600	43	0.652	35	0.636	117	0.629
	c3 = Authentic	15	0.231	8	0.121	10	0.182	33	0.177
	Total	65	1	66	1	55	1	186	1
Physical	d1 = Dilapidated	0	0	1	0.015	5	0.091	6	0.032

Condition	d2 = Moderate	8	0.123	13	0.197	14	0.255	35	0.188
	d3 = Well Composed	57	0.877	52	0.788	36	0.655	145	0.780
	Total	65	1	66	1	55	1	186	1
Assessed Value	e1 = $0 - 81,000	52	0.800	31	0.470	51	0.927	134	0.720
	e2 = $82,000 - 162,000	9	0.139	25	0.379	1	0.018	35	0.188
	e3 = $163,000 - 243,000	4	0.061	10	0.151	3	0.055	17	0.092
	Total	65	1	66	1	55	1	186	1

Table 3. Neglected and viable structures per town.

	Doylestown		Quakertown		Bristol	
	n	%	n	%	n	%
Neglected (5-8)	1	1.5	2	3.1	5	9.1
Transitory (9-12)	52	80	51	78.5	45	81.8
Viable (13-15)	12	18.5	12	18.5	5	9.1

Table 4. Polychoric Correlation Analysis Output.

		Land Use Change	Architectural Modification	Building Condition	Assessed Value
Time Frame of Construction	Polychoric Correlation	-0.016	0.697**	-0.014	0.126
	Sig. (2-tailed)	0.065	0.000	0.110	0.792
Land Use Change	Polychoric Correlation	1	-0.094**	0.241	-0.248
	Sig. (2-tailed)		0.000	0.019	0.969
Architectural Modification	Polychoric Correlation		1	-0.211	-0.047
	Sig. (2-tailed)			0.592	0.383
Building Condition	Polychoric Correlation			1	-0.026
	Sig. (2-tailed)				0.750

**α<0.01; *α<0.05

Table 5. Explanation of Variances.

Measure	Eigenvalue	Variance Explained	Cumulative Variance Explained
1	1.77	0.354	0.354
2	1.3	0.259	0.614
3	1.01	0.203	0.817

To understand how these five variables can be combined into, we ran polychoric principle component analysis. In Table 5, we notice that the selected variables explain three underlying aspects of neglect with Eigenvalues above 1 for three factors. These three factors together explain over 80 percent of the variance in the neglect scores among units. As expected from the correlation matrix, the variables Time Frame of Construction and Architectural Modification indicate one similar factor of neglect and load on the first factor. The other three variables, Land Use Change, Building Condition, and Assessed Value, load onto both factors 2 and 3.

Because all five variables relate to our conceptual understanding of neglect and the lack of one clear factor, we choose to combine them into one rate of neglect. There are various

methods to create a combined index score, including weighting variables based on the correlation matrix or polychoric factor analysis results. Because of the limited ordinal scaling of the variables (i.e., only values of 1, 2, and 3) and the smaller sample size (n=186), we are concerned about strongly interpreting these results. Thus, we chose simplicity in this exploratory analysis of neglect rating and sum the scores of the five variables. We reverse code timeframe of construction and architectural modification because of their negative correlations with the other variables. The scores could range from 5 (a building scored 1 on every variable) to 15 (a building scored 3 on every variable). Overall, our actual rate of neglect scores range from 6 to 15, with a mean of 11 and standard deviation of 1.61. In Table 6, we show the rates of average neglect for each town. All three towns have similar rates of neglect, but Bristol shows the highest rates with an average score per structure of 10.55. Only 1 building in our study scored the maximum of 15, and it is in Doylestown (Table 6).

Table 6. Output of IDW and Neglect Rate Comparisons.

Output of IDW and Neglect Rates		Doylestown	Quakertown	Bristol
Neglected (Black)	(<-2.58)			
	(-2.58 - 1.96)	22.21%	18.37%	37.58%
	(-1.96 - 1.65)			
Grey (Transitory)	(-1.65 - 1.65)	29.41%	57.45%	60.20%
Viable (White)	(1.65 - 1.96)			
	(1.96 - 2.58)	48.38%	24.18%	2.22%
	(> 2.58)			
Range		15-8	14-8	13-7
Mean per Structure (SD) Total Score/Sample Size		11.28 (1.57)	11.11 (1.54)	10.55 (1.68)
Rate of Avg. Neglect (Mean/15) – 100%		24.80%	25.90%	29.70%

4.3. Cross-Case GIS Analysis

Each building surveyed was geocoded using its address, new fields were created as attributes using the data obtained, maps were created according the attributed developed, and then Hotspot and IDW tools were applied. High z-scores, hot spots, designated areas which with clustered neglect. The IDW combined points created from each building surveyed and suitability models were then run with equal weighting. The suitability maps read where darker areas represent and lighter areas are less neglected (Figure 2, 3, and 4). Doylestown has nearly one half of its area as viable and a very low proportion of neglected area (48.38% and 22.21%, respectively) (Table 6). Quakertown has nearly one quarter of its space as viable and nearly one fifth neglected (24.18% and 18.37%, respectively) and Bristol has relatively no viable space and over one third of its area neglected (2.22% and 37.58%, respectively) (Table 6).

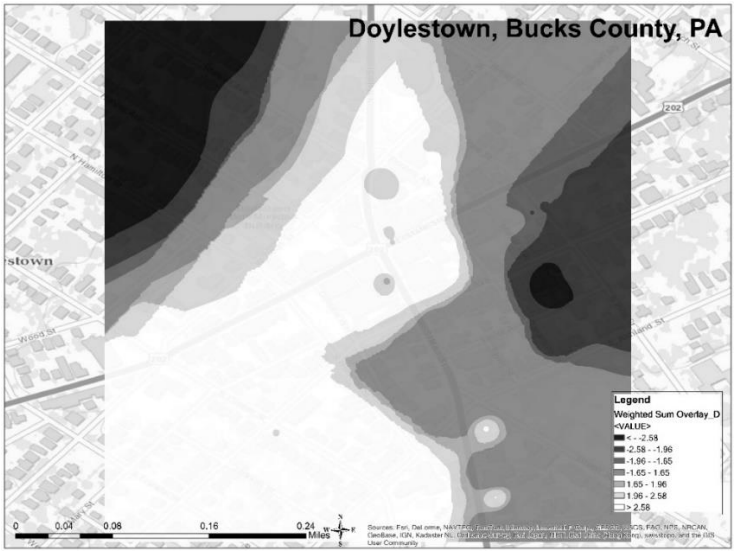

Figure 2. Doylestown Hot Spot Analysis.

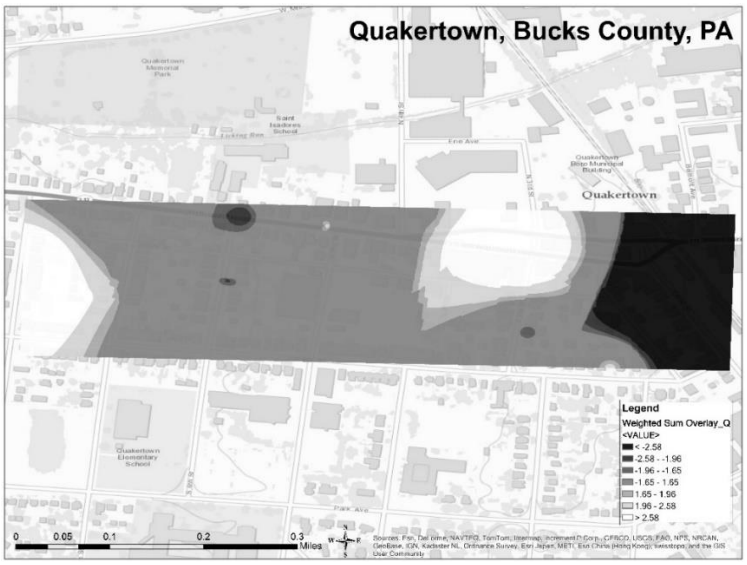

Figure3. Quakertown Hot Spot Analysis.

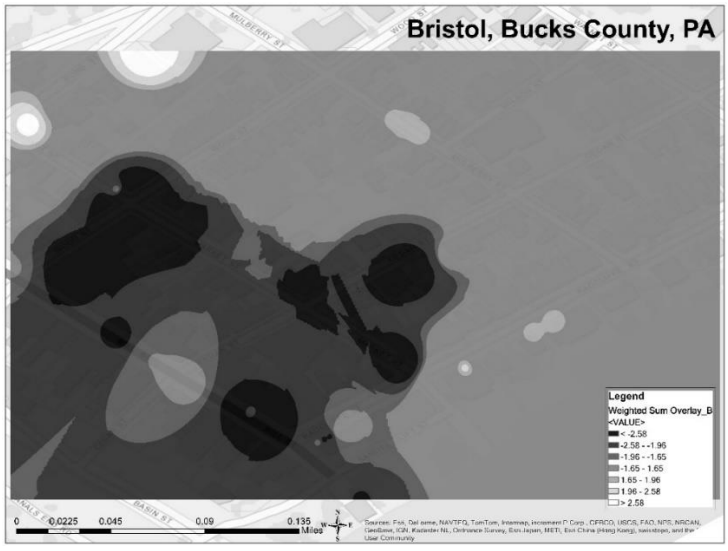

Figure 4. Bristol Hot Spot Analysis.

5. Conclusions and Outlook

This research sought to determine if external land use management could help deter the process of demolition by neglect in the historic built environment, specifically focusing on the alteration of viability rates and the characteristics of neglect as land preservation increased or decreased. Results indicate as amounts of peripheral preserved land increased, viable areas increase while rates of neglect decreased. As fringe farmland preserves increased by city, the overall ratio of viable structures increased, the amount of individual neglected structures structures had changed over time in an effort to keep them viable. However, each borough also displayed a high proportion of vacancies, with Bristol experiencing the highest. The relationship of timeframe of construction and architectural modification indicates if historic structures are present, modification of the area's structural integrity may be necessary to keep it vital through time. This presents preservationists with a tough predicament– a battle between integrity and viability.

Historic buildings and vacancy rates were relatively high across all cases. Also, while amount of retained historic buildings was larger as amount of farmland preserves increased, changes in function per retained building were also quite high, suggesting that if a town is to retain heritage structures, adaptive reuse could be a key factor in decreasing the neglect of these retained structures while contributing to their viability. This condition suggests that that while external land use management can help contain cities to retain historic buildings, population stability and land use consistency cannot be soundly proclaimed to be heavily affected.

For these reasons, it cannot be soundly stated that external land preservation has a direct influence on increasing viability in historic areas. However, exogenous approaches to managing the historic built environment are a necessary to deter the process of neglect, but need to be implemented as part of a multi-combinational approach involving adaptive reuse and land use and incentive policies. Studies linking heritage preservation to broader regional land use strategies need to be continually explored, and the current paradigm shift should be accepted as a pliable avenue of examination. Local preservation policies need to begin to determine which broad-scale practices fit best into their smaller scale preservation efforts to produce a multi-combinational/multi-scalar approach.

decreased, the rate of average neglect decreased, but the overall proportion of the area of the built environment in need of immediate regeneration was not necessarily smaller.

This suggests that external land use management strategies can have an indirect effect on neglect rates in historic areas. Hot Spot Analyses supported the hypothesis - as amount of agricultural preservation increased, there was an increase in viability. While all three towns had high ratios of historic structures, many of the land uses in these

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Evidence-Based Design of University Zoological Gardens: A Perception Study in South-west Nigeria

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ABSTRACT

Evidence-based design (EBD) has become an acceptable paradigm in environment-behaviourendeavours in recent years with documented benefits especially in healthcare facilities. However, little is known of its application to University Campus Open Spaces (UCOS) like University Zoological Gardens (UZGs) which accounts for the repetition of design mistakes. This study aims to assess the UZGs as a major component of UCOS in South-west Nigeria with a view to formulating EBD frameworks. It adopts a comparative post-occupancy evaluation (POE) approach through a Stratified Random Sampling protocol of users (n=3,016) of the gardens in Federal Universities in South-west Nigeria. Results of the quantitative data analyses suggest that while walk-ability is a primary satisfaction factor among thirty design considerations in the formulated model, legibility is the most primary cognitive factor for designing perceptible high quality UZGs. The study argues in favour of the developed framework as design tool-kit and recommends its application as a feed-back input into the design process of UZGs.

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1. Introduction

The university campus is the total physical environment, including all buildings, open spaces and landscape elements (Aydin and Ter, 2008). It is this combination of buildings and landscaped open spaces between buildings that functions as an organized whole with a distinctive identity (Gehl, 1987). Rapoport (2004) states that these environments are structured and composed of fixed (infrastructure and buildings), half-fixed (open spaces and their components) and non-fixed (users, user actions and vehicles) elements. Half-fixed open spaces and components are the important determinants of the environment's influence on user attitudes (Aydin and Ter, 2008; Lefebvre, 1991; Abu-Ghazzeh, 1999; Dober, 2000).

The design qualities of these open spaces are related to their spatial, social, cognitive and affective characteristics (Adedeji, Bello and Fadamiro, 2011; Adedeji and Fadamiro, 2012). The spatial characteristics are the design considerations and include accessibility in terms

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of circulation systems, opportunities for spatial preferences, way-finding and location qualities (Helsper, Johnson, Johnson, Rubba and Steiner, 1990; Arenibafo, 2016; Heitor, Nascimento, Tomé and Medeiros, 2013; Payne, 2007; Muñoz, 2009; Ambler, Webb, Hummell, Robertson, and Bailey, 2013) and disability (Asadi-Shekari, Moeinaddini and Shah, 2014). University campus open spaces (UCOS) are thus learning spaces, natural settings associated with strong public culture, the form and symbol of integrated social relationship, open air communal museums, spaces for social interactions and great public activities in their utilization (Lyndon, 2005; Mumford, 1938, 1969; McHarg, 1969; Geddes, 1906;Sahraiyanjahromi, 2017). From the utilization perspective, campus open spaces have also been described as being arenas that allow for different types of activities encompassing necessary, optional and social activities (Gehl, 1987; Woolley, 2003; Swensen and Stenbro, 2013; Nia, and Suleiman, 2017). UCOS include zoological and botanical gardens, recreation parks, pedestrian linear corridors, sports pitch, playgrounds, courtyards, parking, waterfronts, squares and plazas.

A zoological garden is a park containing plant material, but primarily designed for exhibiting wild animals (Alan, 2005). UZG functions as "a cultural showcase of animals and nature" and its design is "a consequence of human interpretations of the way in which the natural world should be perceived and presented" (Couper, 2013: 235). She posits that "zoological architecture is the physical embodiment of cultural understandings of scientific knowledge" and its interpretation exists within a cultural context of place and "the stages of zoological garden as a scientific endeavour had an interwoven relationship with architecture and place" (p. 235). UZGs focus on public education and nature conservation. Wolf and Tymitz (1979:17) argue that

> "education includes observation, perception, satisfying curiosity, making sense out of one's observation or experiences, accidental learning and, of course, direct efforts to collect or offer information"

According to Gewaily (2010), the five components of visitor experience in zoological gardens are "exploration, authenticity, aesthetics, education and recreation" (p. 45). UZGs are therefore of great academic significance while their recreational benefits as an opportunity for connection between their non-human nature and human nature. Fadamiro and Adedeji (2014) discovered that recreational benefits are contingent upon experiences of users and relies on the quality of the zoological gardens which depends on design considerations and parameters.

Although research concerns on UCOS include the design, designers, design decisions, materials and construction, maintenance and management, and the users, this research focuses on the users of university Zoological gardens (UZGs) which is a major category of UCOS. The users are at the receiving end of all the processes and are thus very central. It is therefore pertinent to carry out a study on UZGs with a prism of post-occupancy evaluation (POE) focussing on the users as a feedback into the design process towards developing framework for sustainable UZGs in South-west Nigeria.

2. Statement of the Research Problem

Designers of UCOS including UZGs are not fully acquainted with the performance of the spaces during their use. This leads to repetition of design mistakes and the university community using the spaces in ways that were only partially predicted (Watson and Thomson, 2005; Venkat, 2011; Cubukcu&Isitan, 2011). As a result, the satisfaction of the users that can enable the formulation of EBD framework as a feed-back process is grossly missing.

2.1 Research Questions, Objectives and Hypotheses

Enhancing the performance of UZGs is contingent on users' satisfaction. This study's concern about users' satisfaction is guided by the following questions:

i What is the perception of quality and factors that underpin the users' satisfaction with the UZGs?
ii. What aspects of user satisfaction can inform design frameworks for UZGs?

Accordingly, the study seeks to:

i. Examine the perception of quality and factors influencing users' satisfaction with the

UZGs; and

ii. Develop design policy framework for UZGs.

To guide the study, the following hypotheses were formulated:

H_o1 There is no significant difference in the perceptions of qualities of the UZGs among the Federal Universities in the study area.

H_{O2} Perception of quality is not contingent upon satisfaction of the users with the UZGs in the study area.

3. Research Methodology

The study area was the South-west region of Nigeria where the university campuses under study are located. The region comprises of the six states that make up the South-west Geopolitical zone of Nigeria (Figure 1).

Assessment of Zoological gardens of was carried out in the study. The study involved a survey research design with the use of questionnaires to evaluate the users' satisfaction with the Zoological gardens of the six Federal Universities in the study area. These include: University of Ibadan, Obafemi Awolowo University, Ile-Ife; University of Lagos; Federal University of Agriculture, Abeokuta; The Federal University of Technology, Akure and Federal University, Oye-Ekiti.

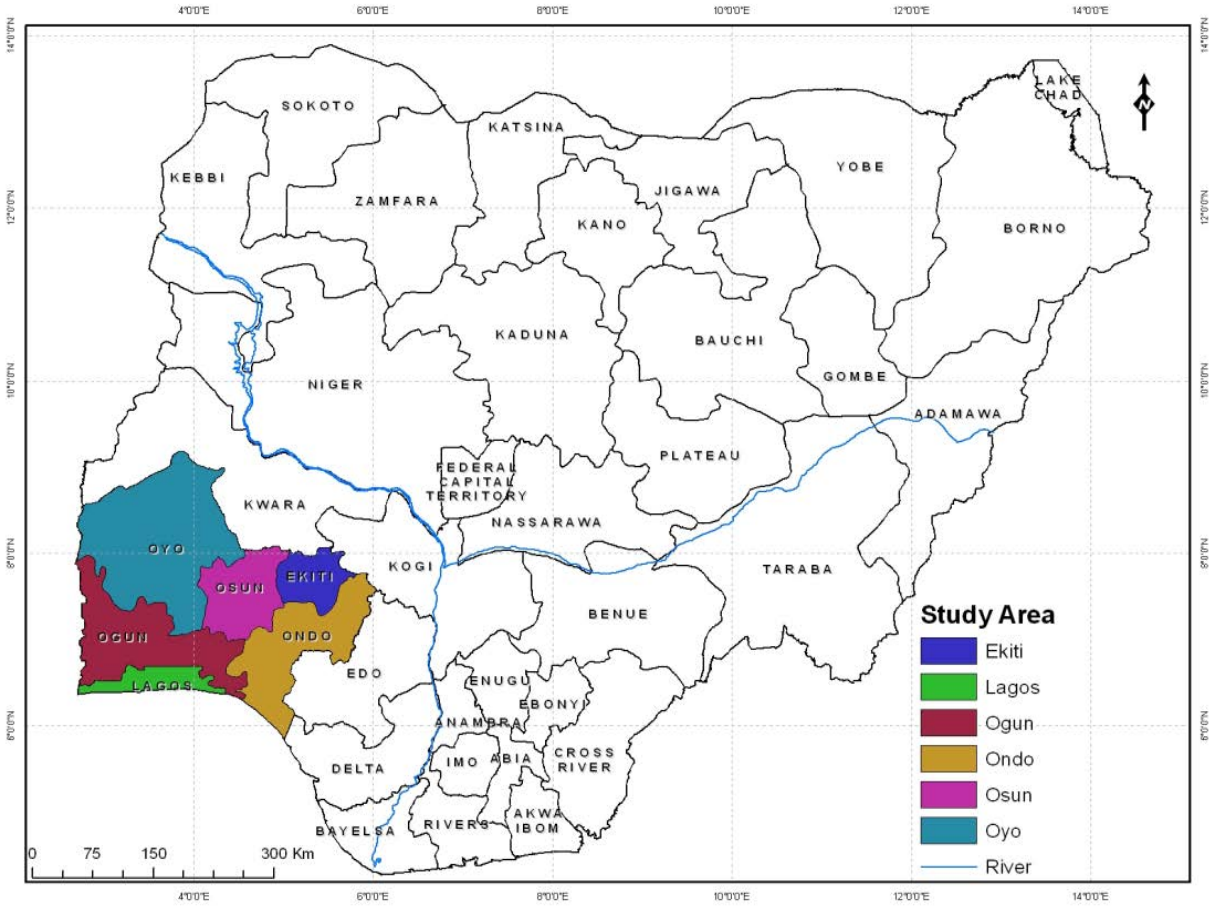


Figure 1. South West Map indicated on Map of Nigeria.
Source:Faleyimu&Agbeja(2012)

The choice of South-west was informed by the pioneering status of the region in university education in Nigeria hosting all typologies. Since formal lessons are sought, the Federal Universities are the most formally designed with the same proprietorship and source of funding. The target population for the study were the students and members of staff who are the formal users of the gardens.

Structured questionnaire designed in multiple choice and Likert-type scale were used to collect necessary information about the respondents and other issues in the research questions, objectives and hypotheses. The questionnaire was subjected to pilot study carried out in order to perfect the research instrument and from the exercise, necessary adjustments were made. The pilot survey served as the model and dummy run of the main survey. Responses were coded with values from 1, 2, 3, 4 and 5 (Likert-type scale). This gave opportunity for ease of understanding and rationalization for statistical analyses.

The data obtained were subjected to statistical analyses and interpretations by using descriptive (Frequency table, Percentages, Charts) and inferential (Chi square, Correlation tests, Regression analysis) statistics. The processed data was used to identify the statuses of the users, evaluate their perception of quality of the open spaces, analyse the relationship between their statuses and perception of qualities, examine the factors influencing their satisfaction and develop policy framework for Zoological gardens in Federal Universities in South-west Nigeria.

4. Data Presentation and Analysis

4.1 Status of the users and perception of quality of the UZGs

Table 1 reveals the status of the users of the UZGs. The users are disproportionately males (62.3%) than females (37.7%), mostly undergraduates (87.5%) in the active age bracket of 19-45years (91.5%). That all categories of users are adequately represented suggests the result should be adequate for generalization synthesis. Their perception of quality of the UZGs as shown in Table 2 are also reliable since they are well acquainted with the gardens and therefore their value-judgments can be upheld.

Table 1. Status of users of the UZGs in South-west Nigeria.

Status Variable	Categories	Frequency	Percentage
Gender	Male	1095	62.3
	Female	664	37.7
	Total	1759	100
Age	Below 18yrs	121	6.9
	18 - 45yrs	1610	91.5
	46 - 65yrs	18	1.0
	Above 65yrs	10	0.6
	Total	1759	100
Educational status	Primary	5	0.3
	Secondary	7	0.4
	Undergraduate	1539	87.5
	B.Sc/HND/NCE	112	6.4
	PGD/M.Sc/Ph.	96	5.5
	Total	1759	100
Discipline	Basic/Applied Sciences	721	41.0
	Engineering and Technology	381	21.7
	Social Sciences and Humanities	288	16.4
	Arts and Commercial	169	9.6
	Environmental Sciences	198	11.3
	Total	1759	100
Class level (Student)	100L	333	19.0
	200L	432	24.6
	300L	434	24.7
	400L	250	14.2
	500L	175	10.0
	Postgraduate	133	7.6
	Total	1759	100
Physical challenge	None	1755	99.8
	Blindness	3	0.2
	Walking stick assisted	1	0.1
	Crutches assisted	-	-
	Wheel chair assisted	-	-
	Total	1759	100
Car ownership	No	1667	94.8
	Yes	90	5.1
	Total	1759	100

Table 2. Perception of qualities of UZGs of Federal Universities in South-west Nigeria.

Perception of quality	Freq.	(%)
Poor	285	16.2
Scanty	186	10.6
Averagely set	433	24.6
Well set	433	24.6
Excellent	333	18.9
Total	1670	94.4

4.2Testing of Hypothesis

H_O1: There is no significant difference in the perceptions of qualities of the UZGs among the Federal Universities in the study area.

A Kruskal-Wallis H test was conducted to determine if the perceptions of qualities of the Zoological gardens is significantly different among the six Federal Universities and the results are as shown in Table 3. A Kruskal-Wallis H test showed that there was a statistically significant difference in the perceptions of qualities of the UZGs among the six Federal Universities. The results as shown in Figure 2 and explained with chart in Figure 3 indicate that Chi square, $\chi^2(df, 5) = 531.927$, $p = 0.000$, with a mean rank perception of quality score of 1207.46 for UI (Plate 1), 1022.45 for FUNAAB (Plate 2), 843.63 for OAU, 733.44 for FUTA (Plate 3), 604.23 for UNILAG (Plate 4) and 303.97 for FUOYE in descending order with UI having the best and FUOYE having the least. This implies the rejection of the Null Hypothesis H_O1 and implying that there is significant difference in the perceptions of qualities of the Zoological gardens among the Federal Universities in the study area.

To identify the pattern of the statistically significant differences in the perceptions of qualities of the Zoological gardens among the six Federal Universities, a Kruskal-Wallis post-hoc test was carried out. A Pairwise customised analysis result shows that all the Zoological gardens are perceived to be of different qualities except for OAU-FUTA (p= .070) as shown in Figures 3.

Plate 1. Entrance gate of University of Ibadan Zoological Garden, Ibadan, Nigeria
Source: Picture by authors, 2017

Plate 2. A pen in Federal University of Agriculture Abeokuta Zoological Garden, Nigeria

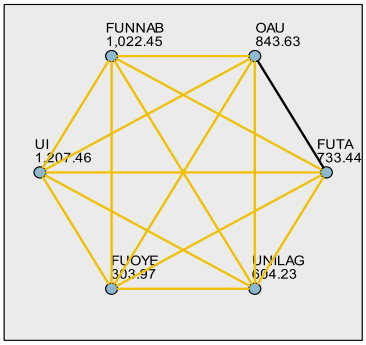
Plate 3. A pen in Federal University of Technology Akure Zoological Garden, Nigeria

Plate 4. A pen in University of Lagos Zoological Garden, Lagos, Nigeria
Source: Picture by authors, 2017

Table 3.Kruskal Wallis H Test of significant difference in the perceptions of qualities of theUniversity Zoological gardens in South-west Nigeria.

Null Hypothesis	Chi square	Asymp. Sig.	Decision	University	Mean Rank Perception of Quality Score
There is no significant difference in the perceptions of qualities of Zoological gardens among the Federal Universities in the study area.	531.927	0.000	Reject the null Hypothesis	FUTA	733.44
				OAU	843.63
				UI	1207.46
				FUOYE	303.97
				FUNNAB	1022.45
				UNILAG	604.23

Pairwise Comparisons of Universities



Each node shows the sample average rank of Universities.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
FUOYE-UNILAG	-300.259	46.637	-6.438	.000	.000
FUOYE-FUTA	429.475	47.366	9.067	.000	.000
FUOYE-OAU	539.666	46.510	11.603	.000	.000
FUOYE-FUNNAB	-718.481	46.535	-15.440	.000	.000
FUOYE-UI	903.497	46.173	19.568	.000	.000
UNILAG-FUTA	129.216	39.090	3.306	.001	.014
UNILAG-OAU	239.407	38.049	6.292	.000	.000
UNILAG-FUNNAB	418.222	38.079	10.983	.000	.000
UNILAG-UI	603.238	37.636	16.028	.000	.000
FUTA-OAU	-110.191	38.938	-2.830	.005	.070
FUTA-FUNNAB	-289.006	38.968	-7.416	.000	.000
FUTA-UI	-474.022	38.535	-12.301	.000	.000
OAU-FUNNAB	-178.815	37.923	-4.715	.000	.000
OAU-UI	-363.831	37.478	-9.708	.000	.000
FUNNAB-UI	185.016	37.510	4.933	.000	.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

Figure 2. Result of a Pairwise customisedKruskal-Wallis post-hoc test for the perception of Quality of Zoological gardens in the study area.

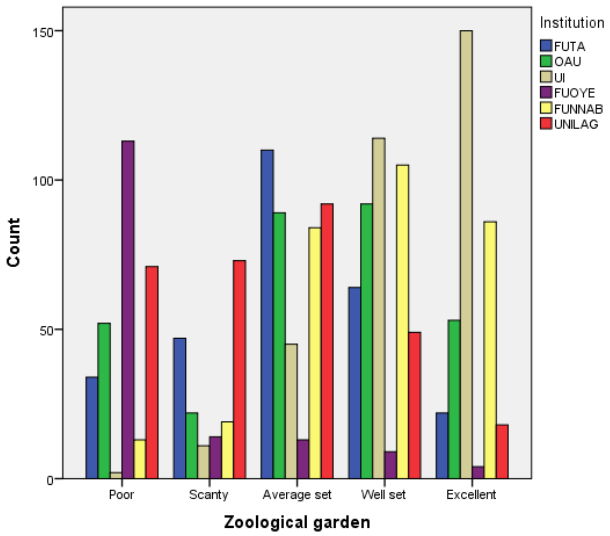


Figure 3. Differences in the perceptions of qualities of Zoological gardens among the six Federal Universities' campuses in South-west Nigeria.

3.3 Impact of Status of Users on Perception of Quality of Zoological gardens

Tables 4 and 5 show the result of the Cramer's V test between the status of the users and their perception of qualities of the Zoological gardens. Only discipline (Cramer's V=0.110, p=0.000<0.005) has significant impact at 95% confidence level.

Table 4. Relationship between status (nominal variables) of the users and their perception of qualities of the Zoological gardens.

Status of users	Cramer's V Value	Approx. Sig. (*p* value)
Gender	0.046	0464
Discipline	0.110	0.000
Impairment	0.049	0.447
Car ownership	0,065	0.135

Table 5. Relationship between status (ordinal variables) of the users and their perception of qualities of the Zoological gardens.

Status of users	Kendal tau Value	Approx. Sig. (*p* value)
Age	-0.007[c]	0.717
Educational status	-0.025[b]	0.240
Class level	-0.001[c]	0.948

b: Kendal tau b because of the square contingency table
c: Kendal tau c because of the rectangular contingency table

3.4 Factors Influencing Users' Satisfaction

3.4.1 Use Factors

Cramer's V test was carried out to examine the 'use factors' influencing the satisfaction of users with the UZGs. The use factors are extrinsic to the UZGs since they have to do with the users themselves on how they use the gardens. The four use factors are common period of use, common purpose of use, mode of pedestrian use and hindrances to use. Table 6 shows that common period of use and mode of pedestrian use do not have significance on the perception of quality of the UZG (Cramer's V=0.087, p=0.005). Figure 4 shows that those who use the Zoological gardens for academic purposes had higher perceptions of their qualities than other users.

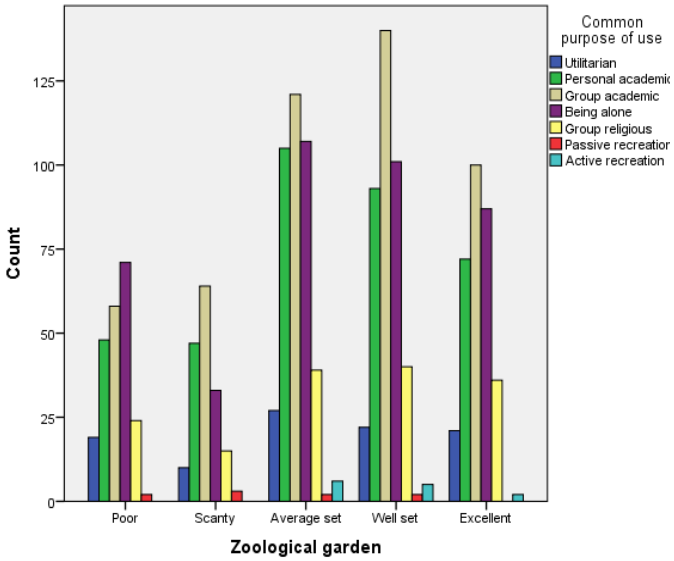


Figure 4. Influence of common purpose of use on the perception of quality of zoological gardens in federal universities in the South-west Nigeria.

Figure 5 shows that the perception of quality of Zoological gardens is influenced by the purpose of use. Those that use them for group academic, being alone and personal academic purpose perceive the gardens to be of higher quality than utilitarian and passive recreation.

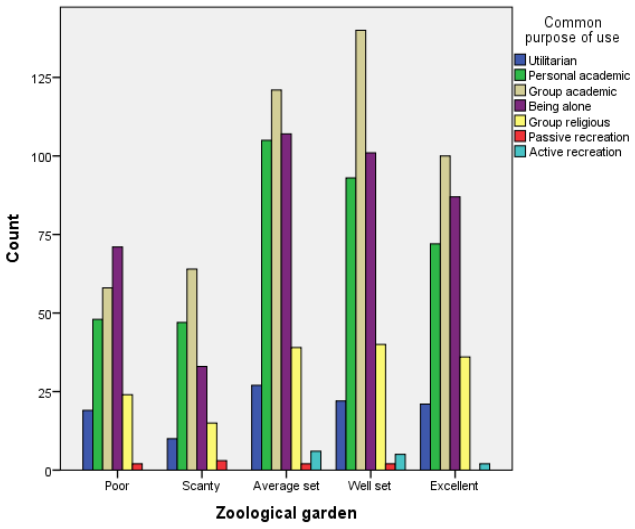


Figure 5. Influence of common purpose of use on the perception of quality of Zoological gardens in Federal Universities in South-west Nigeria.

Furthermore, hindrances to use significantly influenced the perceptions of qualities of the UZGs at 0.01 (99%) confidence level as shown in Table 6. Figure 6 shows that inclement weather and lack of visual privacy accounts for perception of qualities.

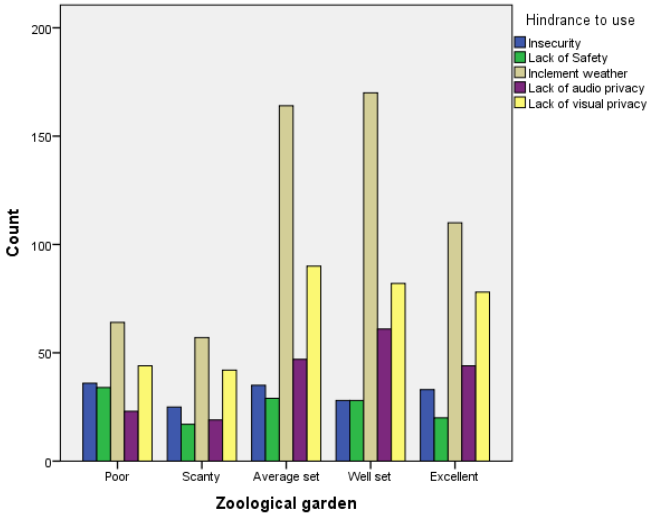


Figure 6. Influence of hindrances to use on the perception of quality of Zoological gardens in Federal Universities in the South-west Nigeria.

Table 6. Use factors influencing satisfaction of users with the university. Zoological gardens in the study area.

Use factors	Cramer's V	*p*-value
Common period of visit	0.058	0.421
Common purpose of visit	0.070	0.192
Mode of pedestrian use	0.058	0.181
Hindrances to use during visit	0.093	0.000

3.4.2 Cognitive Factors

Cognitive satisfaction factors are intrinsic to the UZGs since they have to do with the spaces. The other intrinsic factors are social, spatial and affective factors. A Spearman's rank-order correlation was run to determine the relationship between 1759 users' satisfaction with four cognitive factors (coherence, legibility, complexity and mystery) and perceptions of qualities of the UZGs, both measured in ordinal scales. There were strong, positive correlations between satisfaction with the cognitive factors and perceptions of qualities of the UZGs which was statistically significant as follow: coherence: r_s = .355, p = .000; complexity: r_s = .349, p = .000; mystery: r_s = .315, p = .000; and legibility: r_s = .314, p = .000, in descending order, as shown in Table 7 and Figure 7.

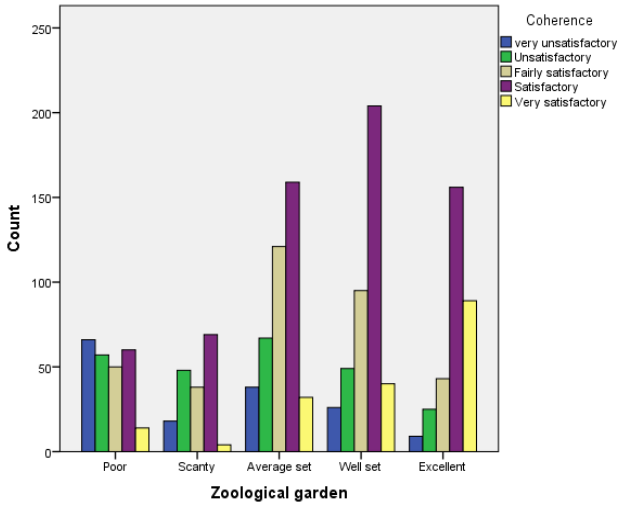


Figure 7. Influence of satisfaction with coherence on the perception of quality of Zoological gardens in Federal Universities in the South-west Nigeria

3.4.3 Social Factors

As shown in Table 7, in view of the high sample size, there were strong, positive correlations between satisfaction with the social factors and perceptions of qualities of the Zoological gardens which was statistically significant at 0.01 (99%) confidence level. Safety (r_s = .330, p = .000) has the highest correlation coefficient followed by social interaction spaces (r_s = .312, p = .000), security (r_s = .277, p = .000), conviviality and audio privacy (r_s = .273, p = .000), visual privacy (r_s = .268, p = .000), and open space for personal meditation (r_s = .252, p = .000) in descending order.

3.4.4 Spatial Factors

Six spatial satisfaction factors were investigated through Spearman's correlation as determinants of the perception of quality of the UZGs as shown in Table 7. Convenience (r_s = .314, p = .000) has the highest correlation coefficient and continuity (r_s = .265, p = .000) the least. Invariably, zoological gardens should be designed for convenience to enhance the movement of users from one section to another. However, they are not expected to be at continuity with other UCOS at the main activity areas but should be secluded since the proximity correlation coefficient is also low (r_s = .266, p = .000) compared with others. On the whole, the higher the satisfaction with the spatial factors, the higher the perception of quality of the UZGs.

3.4.5 Affective Factors

Table 7 shows the correlation coefficients between perceptions of qualities and affective satisfaction factors of UZGs. The results suggest that fascinating-ability (r_s = .346, p = .000) is the most important affective factor, followed by pleasantness (r_s = .323, p = .000) while recuperative-ability (r_s = .252, p = .000) is the least. This pattern suggests that satisfaction of users with the UZGs is premised upon specific affective factors which should be built into their designs.

Table 7. Factors influencing users' satisfaction with the University Zoological gardens in the study area.

	Factors	Spearman Correlation	p – value
Cognitive factors	Coherence	0.355	0.000
	Legibility	0.314	0.000
	Complexity	0.349	0.000
	Mystery	0.315	0.000
Social factors	Conviviality	0.273	0.000
	Social interaction spaces	0.312	0.000
	Visual privacy	0.268	0.000
	Audio privacy	0.273	0.000
	Open space for being alone	0.252	0.000
	Safety	0.330	0.000
	Security from crime/fear of crime	0.277	0.000
Spatial factors	Accessibility	0.285	0.000
	Proximity	0.266	0.000
	Walk-ability	0.261	0.000
	Connectedness	0.294	0.000
	Continuity	0.265	0.000
	Convenience	0.314	0.000
Affective factors	Relaxing-ability	0.297	0.000

Fascinating-ability	0.346	0.000
Enjoy-ableness	0.310	0.000
Restfulness	0.265	0.000
Inviting-ability	0.292	0.000
Inspiring-ability	0.293	0.000
Beautifulness	0.321	0.000
Exciting-ability	0.313	0.000
Recuperative-ability	0.252	0.000
Therapeutic-ability	0.229	0.000
Restorative-ability	0.261	0.000
Pleasantness	0.323	0.000
Comfortableness	0.283	0.000

3.5 Testing of Hypothesis Ho2:Influence of Satisfaction Factors on Perceptions of Quality

Ordinal regression analysis was carried out to estimate the 30 intrinsic satisfaction factors (cognitive, social, spatial and affective factors) influencing the perception of quality of the UZGs. Accordingly, model fitting information and Pseudo R-Square were generated as shown in Table 8. The dependent variable which measures the perception of quality is the *UZGs*. *UZGs* is equal 1 if the respondent perceives the garden as poor, 2 as scanty, 3 as averagely set, 4 as well set and 5 as excellent. Since dependent/outcome variable is ordinal, and the satisfaction factors, SF (independent/predictors) are measured as ordinal variables (SF is equal 1 if the respondent is very unsatisfied with the performance of the open space based on the SF under consideration, 2 for unsatisfactory, 3 for fairly satisfactory, 4 for satisfactory and 5 for very satisfactory) the ordinal regression model is used to estimate the factors which influence satisfaction of the users. Only the 30 satisfaction factors that are intrinsic to the UZGs were included in the model. Use factors were excluded since they are extrinsic to the UZGs.

The results in the Model indicate that as the ratings of the satisfaction factors increase, the perception of quality increases and the model is significant at the .01 level (99% confidence level). This is for Cox and Snell (theoretical maximum value of less than 1), Nagelkerke (adjusted version of the Cox and Snell R^2 to cover the full range from 0 to 1) and McFadden's (based on the log-likelihood kernels for the intercept-only model and the full estimated model) Pseudo R^2, since it is not possible to compute a single R^2 statistic that has all of the characteristics in the linear regression model for regression models based on ordinal data (Tjur, 2009). According to Cox and Snell Pseudo R^2, Table 8 shows that the model predicts that the satisfaction factors, SF [Chi-square=3866.018, df=245, p=0.000, 2 Log Likelihood final=102.613] accounts for 95.0% of the variance in the perception of quality of UZGs.

Table 9 shows the Parameter estimates (beta coefficients) of the intrinsic factors influencing users' satisfaction. The estimates are based on scale models which depend on the main and interaction effects. Three intrinsic satisfaction factors are the best predictors of perception of quality as highlighted. Table 9 suggests that satisfaction with legibility (0.574) is the best predictor of perception of quality of Zoological gardens. This is followed consecutively by beautifulness (0.331) and walk-ability (0.325). Furthermore, satisfaction with social interaction space (0.434) is a better predictor of perception of quality, being the highest, than restfulness (0.423) and walk-ability (0.356) consecutively.

Table 8. Ordinal regressions of perception of quality of open spaces (dependent/outcome) and factors determining the satisfaction of the users (independent/predictors) in Federal Universities in South-west Nigeria

University Zoological gardens.	Model Fitting Information					Pseudo R-Square		
	Model	-2 Log Likelihood	Chi-Square	Df	Sig.	Cox & Snell	Nagelkerke	McFadden
Zoological gardens	Intercept Only	3968.631						
	Final	102.613	3866.018	245	.000	.949	.992	.950

Link function: Logit.

Table 9. Parameter estimates of the factors influencing users' satisfaction with the Federal Universities campus open spaces in the study area.

Satisfaction factors	Components	Parameter estimates
Cognitive factors	Coherence	-0.558
	Legibility	0.574
	Complexity	-0.342
	Mystery	0.060
Social factors	Conviviality	0.165
	Social interaction spaces	0.255
	Visual privacy	0.052
	Audio privacy	-0.214
	Open space for being alone	0.158
	Safety	-0.224
	Security from crime/fear of crime	0.112
Spatial factors	Accessibility	0.156
	Proximity	-0.286
	Walk-ability	0.325
	Connectedness	-0.542
	Continuity	0.186
	Convenience	-0.137
Affective factors	Relaxing-ability	-1.442
	Fascinating-ability	-0.316
	Enjoy-ableness	0.147
	Restfulness	0.280
	Inviting-ability	0.096
	Inspiring-ability	-0.219
	Beautifulness	0.331
	Exciting-ability	0.043
	Recuperative-ability	0.093
	Therapeutic-ability	-0.262
	Restorative-ability	-0.098
	Pleasantness	0.095
	Comfortableness	0.062

3.6 Evidence-based Design Framework for University Zoological Gardens

Figure 8 shows the framework developed for the design of UZGs. While all the satisfaction factors are important to the perception of quality, satisfaction with legibility is the most crucial, followed by beautifulness, walk-ability and hindrances to use.

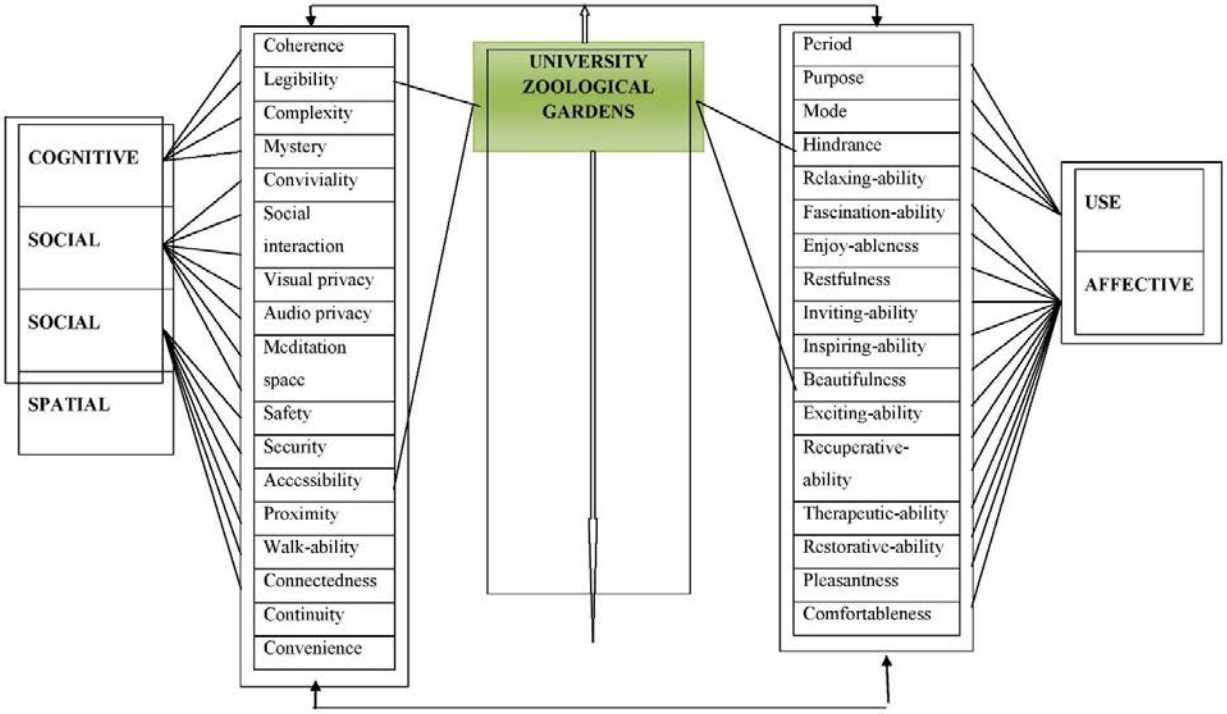


Figure 8. EBD framework for UZGs.

4. Discussion of Findings

An assessment of the UZGs in all the six Federal Universities in South-west Nigeria towards the formulation of EBD framework was carried out in this study. According to the findings of this study, the distributions of the users' status suggest both peculiarities and generalisations. The peculiar needs of the genders, impairment groups, disciplines and age groups are central to the successful provision of UZGs on the campuses. UZGs are discovered to be primarily used for academic activities and also for recreation and these differ from one discipline to another. This suggests that the UZGs are learning spaces and constellation arenas for psychological wellbeing in high disproportion compared with other uses.

The UI Zoological garden was perceived to be of the best quality possibly due to the Zoology programme in the university, the garden being a vital learning space. Also, the UI Zoological garden doubles as a vital recreation facility of the city's and region's teaming urban populations and therefore may be admirable as the minimum standard for the design of UZGs in the study area. Those who use the Zoological gardens in the study area for academic purposes had higher perceptions of quality than other users. Furthermore, satisfaction factors are important to successful UZG delivery. While safety is a primary satisfaction factor, result implies that legibility is the most primary cognitive factor for designing perceptible high quality Zoological gardens. This confirms the Kaplan and Kaplan's (1989) information processing matrix of landscapes. The framework suggests that legibility, beautifulness, walkability and hindrances to use are 'hot spots' satisfaction factors of UZGs.

5. Conclusion and Recommendation

This work has established that UZGs are important to the effective functional activities on the campuses. Their design should therefore be evidence-based. Evidence-based design can only be carried out through the instrument of post-occupancy evaluation (POE) for long-term benefit to serve as a feedback into the design process. For POE to produce this desired goal and wider-relevance application, geographical spread is germane. Accordingly, the set aim of this study on the Federal Universities campuses in South-west Nigeria can be appraised to have been achieved. However, the operational quality of the formulated framework can be appraised by engaging it as design tool-kit generally for all formally designable campuses of institutions of higher learning but primarily for university campuses in the study area. Also, medium term benefit can be achieved by applying the policy framework for minor adjustments of existing UZGs for better users' satisfaction.

Contextually, the study was limited in scope to Federal Universities. Further work can be carried

out inclusively and exclusively with other proprietorships of universities within and outside the South-west Nigeria. Such can be for comparative purposes or case studies and can include considerations like maintenance and management of UZGs. In term of methodological approach, since this work is limited to quantitative research design on cross-sectional basis, qualitative and/or mixed method paradigms that can also be longitudinal can be further engaged on different spatial scales.

On the whole, the perception of quality is related to the satisfaction factors such that as the ratings of the satisfaction factors increase, the perception of quality increases. The satisfaction factors therefore account for the significant differences in the perceptions of qualities of the UZGs among the six Federal Universities in the study area. The satisfaction factors that account for the perceptions of qualities of UI Zoological should be programmed into the design of UCOS to avoid the misuse of spaces and best decisions to be taken during the design process.

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The Impact of Peri-Urbanisation on Housing Development: Environmental Quality and Residents' Productivity in Ibeju-Lekki, Lagos

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ABSTRACT

This paper assesses the impact of peri-urbanisation on housing, environmental quality and residents' socio-demography in Ibeju-Lekkiperi-urban in Lagos, Nigeria. Primary data was collected through administration of 370 questionnaires to household heads in purposively selected sixteen settlements in the study area while secondary data was sourced from spatial images, land use maps and satellite images of the study area. Quantitative data was analysed using descriptive statistics while qualitative data was analysed using time series and satellite image analysis. The result shows a spatial expansion due mainly to increased housing development, a multi-dimensional environmental and socio-cultural challenges that impacts negatively on the quality of living and a literate, high income group dominance in the selected peri-urban settlements in Ibeju-Lekki. The study recommends a creation of a database to capture the pattern of housing development, residents' socio-economic demography and infrastructure needs for intervention in policy design for a sustainable development.

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1. Introduction

Housing development in Lagos State peri-urban settlements is mostly characterised by a high level of informal development, poor quality housing and confronted with a multi-dimensional environmental and socio-cultural challenges. Prompted either by forced relocation or voluntary relocation from the central urban area due to housing affordability in the peri-urban, the migrants constituting mainly the low income group and middle income group, and guided by limited economic resources, see the peri-urban, a transition zone between the rural and urban as the ideal place for personal housing development or rental housing (Allen, 2010). Among many challenges experienced by the migrants are conflict-ridden tenure, neo-customary land rights and arbitrary increase in land prices due to land speculation activities (Pradoto, 2012).

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Housing deficits in the city centre are a prominent negative effect of urbanisation in the third world (McGranaham and Satterthwaite, 2014), thus greatly influencing housing development in the peri-urban settlements of Lagos. Most housing under the self-help housing development and mostly owner-occupied developments creates a distortion to the master plan because of lack of effective monitoring and limited economic capacity of the low-income group. Disparity in the socio-economic attributes of the residents aided by institutional policy creates a socio-cultural and residential segregation in most peri-urban settlements (Fitra and Pradoto, 2014). Also, housing development in Lagos peri-urban exhibits various characteristics that are not in conformity with existing building regulation in the state. Policy response to the pattern of growth does not correspond to the pace of rapid housing development in Lagos peri-urban settlements.

Although there exists good housing development led by government initiatives and private developers' initiatives, self-help housing in Lagos peri-urban housing developments is generally known to be poor in term of quality (Lawanson et al., 2012). Borne out of terms the varying socio-economic composition of the residents and poor institutional responses, most self-help housing developments in Lagos peri-urban are total deviation from acceptable housing quality standard. In addition, there is an institutional failure which translates to additional challenges in Lagos peri-urban housing developments and ultimately impairs the characteristics of housing in Lagos peri-urban. Contributing also to the chaotic development pattern is the lack of adequate monitoring of the continuous development by the building regulation authority and lack of proper documentation of the pattern of growth as seen in most peri-urban developments in developing countries (Puttal and Ravadi, 2014).

In Lagos peri-urban settlements, government-led housing settlements and private-led housing settlements are better developed in terms of infrastructure than settlements constituting self-help housing in the low-income group. Armed for inadequate knowledge of the socio-economic composition of the migrants, most housing initiatives led by institutional and corporate bodies are not meeting the needs of the majority of low income and middle-income group because of affordability issues. Therefore, most exclusive gated housing developments in the peri-urban area are not occupied. The various environmental and socio-economic challenges in Lagos peri-urban settlement ultimately affect the quality of living and productivity of the residents.

With these characteristics associated with peri-urban settlements in Lagos, there needs to be a case study approach to study the trend of spatial demographic expansion as it relates to residents' quality of life, housing and environmental quality. Though there have been prior works on peri-urban study in Nigeria, none has adequately addressed the characteristics of housing development in Lagos as it should. An analysis of the characteristics of housing development in Lagos peri-urban settlements is vital because the peripheral locations in Lagos accommodate a large share of the urban population. This study focuses therefore on the assessment of spatial expansion and the policy implication on the environmental sustainability and residents' productivity in selected peri-urban settlements in Lagos State.

2. Literature Review

Pacione (2009) stated in his research work that one of the attendant problems of contemporary urbanisation in developing countries is the spatial demand for housing in the high population and the increasing globalization-induced socio-economic activities. Urbanisation is the product of movement of people from rural areas to urban areas with population growth not equating urban infrastructuresize (McGranahamand Satterthwaite, 2014). Spatial development in the peri-urban is a product of peri-urbanisation which is a direct consequence of unmanaged urbanisation, the process of agglomeration of multifunctional settlements of relatively substantial size. The level of urbanisation is the ratio of total population living in towns and cities. The rate of urbanisation is the rate of growth of urban population. It is the movement of people from rural areas to urban areas with population growth equating to urban migration (Satterthwaite, 2014).

Investigation by Law *et al*. (2008) indicates that residential land comprised over 50 percent of all major urban land uses in peri-urban settlements, noting that one of the key factors driving peri-urban spatial development is the availability of cheap housing for urban middle class and low-income groups. In addition to the quest for land for housing development, improved transport infrastructure has aided the emergence, development and growth of most peri-urban area settlements (Wu and Zhang, 2012; Lawanson*et al*., 2012). Major driving forces of the high rate of growth of peri-urban settlements are rapid urban population growth and the need for individuals and households to acquire land for residential development (Opoko and Oluwatayo, 2014). The challenge of housing in the city centre has influenced housing development in the peri-urban. The concept of spatial and demographic change in peri-urban cannot be fully appreciated without capturing the link between peri-urbanisation and urbanisation. The rural-urban linkage theory was adopted by Lawanson et al. (2012) in supporting the cause of residential development in their investigation of rural-urban linkages of the Lagos mega city. This theory sufficiently anchors the push and pulls factors in development of Lagos peri-urban settlement.

The failure of government intervention in housing and poor planning policy and programmes in Nigeria has manifested in a high rate of self-help housing especially among the low income group in the peri-urban adjoining metropolitan areas. Lagos State is spatially the smallest state in Nigeria with approximately 3, 577 kilometres square out of which 39% are wetlands (Dekolo and Oduwaye, 2011). Lagos land constitutes 0.4% of Nigeria's total land mass (Opoko and Oluwatayo, 2014). Between 1994 and 2008, the built up area of Lagos increased from 397 kilometres square to 610 kilometres square and most of this expansion have been in the peri-urban (Nwokoro and Dekolo, 2012). It was further asserted that Lagos has one of the highest urban growth rates in the world (Jiboye, 2011; United Nations, 2016) and thus is one of the cities most impacted by urbanisation in term of housing. The attraction of immigrants to Lagos is because the state remains the industrial and commercial hub. Hence expansion in Lagos is not only demographically but also spatially. Going by the claim of LASG Economic Intelligence Unit (2012), an estimate of 2.55 million new homes is required for the next five years to meet housing needs of Lagos State.

In the face of limited land supply, housing demand as a result of population increase has led to the creation of satellite towns in the peri-urban of Lagos. The creation of satellite towns in Lagos peri-urban is the existing means of mitigating the unabated housing challenge and spatial demand in Lagos State (Towry-Coker, 2002). Metropolitan Lagos is built up in terms of housing development. It has been suggested that most recent expansion in Lagos has been in peri-urban settlements (Nwokoro and Dekolo, 2012). Housing challenge is dominant in Lagos because of high population growth rate and poor government intervention in housing development for the low-income group (Jiboye, 2011).

Dutta (2012) observed that peri-urban areas are usually subjected to diverse physical, socio demographic, morphological, cultural, economic and functional transformations. Housing development in most peri-urban usually exist under three initiatives, government-led housing development, private company-led development and self-help housing development. Each housing initiative varies in building typologies, mode of construction, target users and conformity to standard (Wu, *et al*., 2013; McGranaham and Satterthwaite, 2014). Housing development in the peri-urban calls for consideration of the socio-economic attributes of the different income groups of the migrants but this is not the case in most peri-urban housing developments (Shen and Wu, 2013). Socio-cultural diversity and the socio-economic characteristics of the residents greatly influence the physical characteristics of housing development in the peri-urban. The socio-demography of the residents in the peri-urban greatly influence the housing typology, quality of housing, and household size.

There are challenges to the management of housing development in most peri-urban settlements in developing countries. These challenges can be viewed in three perspectives, institutional challenges, environmental challenges

and socio-economic challenges. Institutional challenges are related to the regional government in rising to the governance of the peri-urban. Notable among many institutional challenges are poor zoning, lack of effective planning office and personnel, conflicting land tenure and lack of an updated master plan as shown by Salem (2015). Environmental challenges in the peri-urban include poor infrastructure development, traffic congestion, flooding and poor waste management (Lawanson, *et al*., 2012). Socio-economic challenges in the peri-urban housing developments manifest in form of land speculation, residential segregation and increasing cost of commodities because of increasing population growth. Occurring challenges can further be supported by the Alonso Access Trade off model which posits that despite land affordability in the peri-urban interface, some benefits to be traded off include high commuting hours because of the distance from the metropolitan areas and likewise the poor infrastructural development pose a problem for the residents.

Nwokoro and Dekolo (2012) worked extensively on peri-urban land use changes in the Lagos Megacity and the policy response to the change in land use. Further work on agricultural land use in Nigerian peri-urban was carried out by Binns et al. (2003). A study of rural-urban linkages in Nigeria peri-urban was done by Lawanson et al. (2012). Another study on housing quality in Akureperi-urban was also carried out by Olotuah (2006). Other relevant investigation on peri-urban development was done by Dung-Gwom (2008) and Emankhu and Ubangari (2015). Supplementary work on peri-urban development by Lawanson et al. (2012) is limited to environmental quality, little was done on characteristics of housing development. All these prior works have references to the general growth in the peri-urban, none of these scholars have addressed housing development in Lagos peri-urban in terms of residents' perception housing characteristics, quality of housing and the locational challenges. There is a gap in knowledge about the performance of the emerging peri-urban settlements, the characteristics of housing, the attributes of the residents and its influence on the quality of housing and environment in Lagos peri-urban.

This study is imperative owing to scanty attention paid to peri-urban housing development in Nigeria. The impact of urban transformation taking place in Lagos peri-urban has not been captured adequately. Therefore, to fill this research gap, this study examines the impact of peri-urban expansion on housing development and the accompanying environmental and socio-cultural challenges in the selected peri-urban settlements for empirical data based on residents' perceptions and observations, to be used for policy design in managing the uncontrolled continuous expansion in Lagos State peri-urban areas.

3. The context and scope of the study

The selected case study is Ibeju-Lekki, a Local Government Area of Lagos State, which is one of six South-Western states in the Federal Republic of Nigeria. It is approximately 75 kilometres long and about 20 kilometres wide. Ibeju- Lekki Local Government land area is about 646 kilometres square, equals one quarter of the total land mass of Lagos state. Ibeju-Lekki is located at approximately latitude 40 15'north latitude 40 17' north and longitude 13015' east and 13020' east. The provincial government is part of the four created in Lagos State in 1990, out of the old Epe Local Government, with headquarters at Akodo. According to the National Population Commission (2006) census, Ibeju-Lekki had a population of 117,481 out of Lagos State's total of 9,113,605. The spatial scope of this research is limited to the identified peri-urban settlements recognised by Lagos State Government in Ibeju-Lekki Local Government which covers 646 kilometres square. The temporal scope covers a period from 2006 to 2016. 2006 is selected as a base line because there is an accompanying data on population and housing units by the National Population Commission.

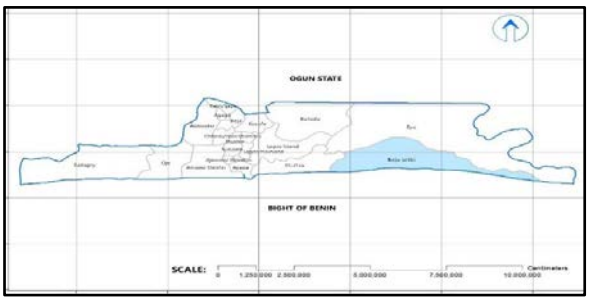

Figure 1. Map of Lagos State showing Ibeju-Lekki (study area highlighted in blue). Source: Field Survey, 2016

4. Material and Methods

This study employs a case study methodology in the field survey. Citing Webster et al. (2003) adopting the case study strategy makes it possible to show the distinct phenomena of the area under study especially with regard to the spatial and temporal changes in the region. The case study approach was applied by conducting field research covering the three tiers of housing that is, self-help housing, private developer-led housing development and government-led housing development. Data for this study were extracted from the responses in the questionnaire instrument, the analysis of observation chart and the analysis of the spatial data. Quantitative data were obtained through a questionnaire survey of purposively selected 16 settlements in Ibeju-Lekki and the survey was carried out between August and October 2016 in the study area. A total of 366 good and complete questionnaires were retrieved from Ibeju-Lekki. Badly completed questionnaires were regarded as missing system in the analysis. The questionnaires were administered mostly during the weekend to ensure high response rate. Data processing and analysis for this study were carried out using the Statistical Package for Social Sciences (SPSS) 22 for windows for statistical analysis of the quantitative data. Two types of analysis were performed on the data. Firstly, descriptive statistics were used to generate percentages and frequencies of respondents' socio-economic characteristics, characteristics of migrants in the study area, environmental and socio-cultural challenges in the study area and development timeline and land price dynamics. Secondly, spatial data like satellite images of different years were acquired from Google Earth. The sets of satellite images used in this study were obtained from Google Earth archive between 2006 and 2016 respectively. This was done through Geographic Information Systems applications namely QGIS, Elshayal Smart Web online Software and ArcGIS. Analogue maps were subjected to spatial data conversion from analogue to digital to enhance spatial analysis operation. Converted maps in digital format were further brought into ArcGIS environment by geo-referencing to aid in assigning datum to the maps appropriately. The datum assigned to these sets of maps reads WGS_84_Zone 31.

5. Results and discussion

5.1 Development trend in the study area between 2006 and 2016

The spatial expansion of the peri-urban is a direct encroachment into areas originally marked for agricultural land use, thus lacking in infrastructure development and often embroiled in informality. A greater percentage of Ibeju-Lekki is still undeveloped (Figure 2), though there has been a surge in spatial demography development within the study timeline. Findings show a departure from the primary settlement pattern in the study area. Noted emerging settlement patterns in the study area are linear, cluster, leapfrog the pioneering development, dispersed settlements and massive mixed- use development settlements. Linear settlements in the study area are pioneer settlements. They were limited to housing development along the highways having been limited by poor infrastructure development. Linear settlements also came to be because of the marshy vegetation in the study area. Housing development was restricted by the thick mangroves in early settlements. These settlements are inhabited mostly by the natives and are also along the coastline where the indigenous residents fishing activities thrive. Some of these settlements developed as a result of the development of Lekki-Epe expressway while other linear settlements mentioned earlier grew in line with secondary roads in the study area. Dispersed settlements in the study area are not compact. They are dispersed away from the highways and do not comply with development patterns. Most of these settlements in Ibeju-Lekki are characterised by low income migrants. They have

poor infrastructure development and are a high level of informal developments. Massive mixed-use development shows a continuous development by government, private developers and wealthy individuals. There exist a development of mixed-use development usually in enclaves and segregated from other peri-urban settlements. Such settlements are well serviced and designed primarily for high middle income and high income class. Cluster settlements in the study area are organised around public facilities and commercial activities. Most are usually inhabited by the middle income class and by migrants. Corroborating prior studies by Binns et al. (2003) and Lawanson et al. (2012), Lagos State like other rapidly urbanizing metropolitan regions have areas periphery usually experiencing expansion due to direct impact of population growth and housing challenges in the urban areas.

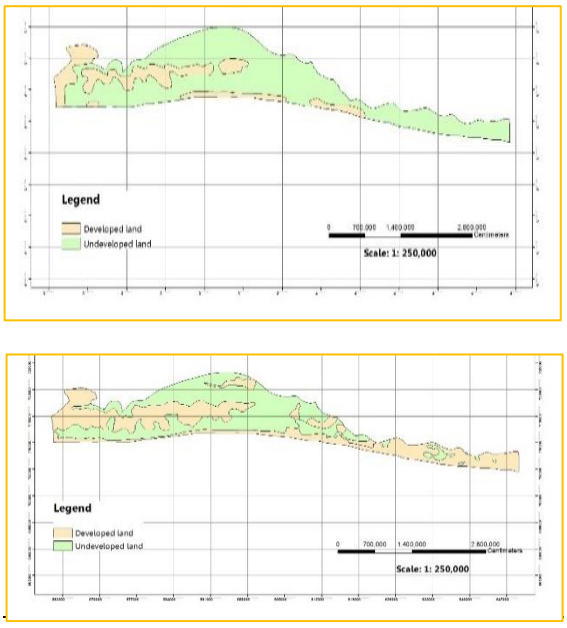

Figure 2. Extent of housing development in Ibeju-Lekki in 2006 and 2016 respectively. Source: Field Survey, 2016.

5.2 Housing development and population trends in the study area from 2006-2016.

Data from the National Population Commission (2006) census as analysed in Table 1 shows a huge leap in housing development in the study area by the year 1991. A total of 1,635 units of housing was recorded in 1991, a sum of 7,701 was captured by the 2006 national census and 10,128 residential developments were identified in year 2012 according to LASG Ministry of Economic Planning and Budget (2013). A surface counting of residential developments during the field work in September, 2016 shows a total of 11,746 units of housing in the selected sixteen peri-urban settlements in the study area. Alsolbeju-Lekki grew from a sleeping settlement of 24,937 populations in 1991 to 117,481 and 179,187 in year 2006 and 2016 respectively.

Figure 3. Mixed-type government-led housing scheme in the study area.

Figure 4. Self-help housing development and Private developer-led housing.

Table 1. Housing population in the study area between years 1991- 2016.

Year	Population	Identified properties
1991	*24,937	1,635
2006	*117,481	7,701
2012	**154,507	10,128
2016	***179,187	11,746

Sources: *National population commission
** LASG Ministry Of Economic Planning And Budget
*** Field Survey, 2016.

5.3 Development timeline and land price dynamics in the study area.

The development timeline as presented in Table 2 and Figure 5 indicates that in Ibeju-Lekki, 44.3%, the highest of development has been between 5-10 years, 30.9% of the development has been less than five years and 24.9 %, the least of development have been over ten years ago. It can be deduced from this analysis that the greater part of housing development in the study area has been within the past ten years. The land

price dynamics (Figure 6) also show the highest at 5-10% annual increase which was claimed by 65.6% of the respondents. 16.4% of the respondents' population identified 1-5% yearly increase, 18% identified with above 10% yearly increase, 0.3% noted unidentified price increases and 3.4% were missing system.

Table 2. Development timeline and land price dynamics.

	N=366	%
Development Timeline		
Less than 5 years	113	30.9
5years-10years	162	44.3
Over 10 years	91	24.9
others	0	0
Land Price dynamics		
1-5%yearly increase	60	16.4
5-10%yearly increase	240	65.6
10% above yearly increase	66	18
Others	1	0.3
Missing System	13	3.4

Source: Field survey, 2016.

5.4 Socio-economic characteristics of the respondents.

Through the field survey presented in Table 3, there are five recognised household sizes in the study area. Household size of 1-2 persons constitutes 13.1% of the households, more than 13 persons (3.3%) and 10-12 persons (2.2%). Household sizes of 3-5 persons are the commonest, having 55.2% of the respondents' population. Trading and commercial enterprises are the commonest occupation of the peri-urban residents. 36.6% of the population is engaged in this category of occupation. 19.1% of the population is in civil service because of the location of many government parastatals in the peri-urban. Professional practices and artisan work constitute the third of the population having 16.7% and 15.3% respectively. Students comprise 5.7% and retirees 3.6%. Unemployed (0.5%) and farmers (0.3%) have almost insignificant contribution in the occupational capacity in the peri-urban. Illiteracy level in Ibeju-Lekki is very low. The total is 2.2% of the respondents. People with secondary school education are 30.1% and constitute the highest. Highest level of literacy is the first degree, diploma and secondary school certificate having 32.7%, 20.8% and 34.3% respectively. Predominant monthly income of household heads as captured by the survey instrument is above N150, 000 monthly. This constitutes 44.6% of the entire population. The low-income group with monthly earnings of N25, 000-N50, 000 is 36.3% and the middleincome earning N50, 000-N150, 000 constitute 19.1%. Tenure analysis reveals that 37.1% of the respondents have lived in Ibeju-Lekki for more than ten years. This trend shows that rapid development has been primarily within the past ten years in the study area.

Table 3. Socio-economic characteristics of the residents.

		N=366	%
Household size	1-2 persons	48	13.1
	3-5persons	202	55.2
	6-9persons	96	26.2
	10-12persons	8	2.2
	More than 13 persons	12	3.3
Occupation of head of household	Civil service	70	19.1
	Trading/business	134	36.6
	Professional practice	61	16.7
	Unemployed	2	0.5
	Retired/pensioner	13	3.6
	Artisan	56	15.3
	Student	21	5.7
	Farming	1	0.3
	others	8	2.1
Literacy level of head of household	Postgraduate	56	15.3
	BSc/Higher diploma	105	28.7
	National diploma	62	16.9
	High School	110	30.1
	Primary	25	6.8
	None	8	2.2
Monthly income of head of household in naira(N)	Low income N25,000-N50,000	133	36.3
	Middle income N50,001-N150,000	70	19.1
	High income N150,001-Above	163	44.6
Tenure	Less than 5 years	114	31.1
	5-10years	116	31.7
	More than 10 years	134	36.6
	Others	2	0.5

Source: Field survey, 2016.

5.5 Characteristics of migrants and linkage pattern in the study area

The immigration pattern as shown in Table 4 shows that the greater portion of residents are drawn from central Lagos and surrounding urban areas around Ibeju-Lekki. 42.3% are drawn from central Lagos and 39.9% are from surrounding urban areas. Immigration from other states constitutes about 9.3% while people from neighbouring rural areas constitute 8.5%. Most of the residents in Ibeju-Lekki were home owners, to 74.6%, while 22.7% and 2.5% were tenants and enterprise owners respectively. Few people also were pulled to the peri-urban for commercial purpose (5.8%). Housing initiatives were primarily of three types in peri-urban settlements of Ibeju-Lekki. Self-help housing is the commonest housing initiative in the study area constituting 81.7% of the housing development. Among the household heads, 34.2% of the respondents travel to the urban centres daily, 33.3% commute to the city centre weekly and 31.4% travel as the needs arise. 42.6% of the respondents travel for work related purpose, 30.3% travel to either the city centre and neighbouring peri-urban for groceries while 27% travel to the city centre for supply of materials for their enterprises(Table 4). The highest commuting time to and from places of work daily in the peri-urban is three hours while the least commuting time is thirty minutes. 35.2 % spends an average of sixty minutes (one hour) daily commuting, 24.6 % spend ninety minutes, 15.6 % spends less than 30 minutes, 14.2 % spends almost 180 minutes(three hours) while 10.4 % spend an average of 120 minutes(two hours) commuting daily. This commuting trend indicates the linkages between the city centre, peri-urban and the rural areas. The peri-urban cannot function in isolation. There are strong dependencies on the urban centres for socio-economic purposes. Findings on the linkages consolidates the investigation by Lawanson*et al.* (2012), showing the dependency of the peri-urban on the neighbouring metropolitan regions.

Table 4. Characteristics of migrants in the study area.

	N=366	%
Source of migration		
Central Lagos	155	42.3
Surrounding Ibeju-Lekki	146	39.9
Neighbouring village	31	8.5
Another state in Nigeria	34	9.3
Ownership status		
Home owner	273	74.6
Tenant	83	22.7
Business owner	9	2.5
Others	19	0.3
Housing Initiative		
Self-help housing	309	84.4
Private developer/Cooperative	53	14.5
Government allocation	4	1.1
Car ownership		
Yes	169	46.2
No	197	53.8
Neither	0	0
Average Time of commuting		
Daily	125	34.2
Weekly	122	33.3
Others(specify)	115	31.4
Not applicable	1	0.3
Purpose of commuting(Linkage)		
Work	156	42.6
Groceries	111	30.3
Supply for business	99	27
Others	0	0
Average daily commuting time		
Less than 30 minutes	57	15.6
31-60mins(1hr)	129	35.2
61-90min (1&half hrs.)	90	24.6
91-120mins(2hrs)	38	10.4
121-180mins(3hrs)	51	13.9
Others	1	0.3

Source: Field survey, 2016

5.6 Environmental and socio-cultural challenges in the study area

Analysis of the research instrument in Table 5, provides evidence of the environmental and socio-cultural challenges in the study area. As stated by Alonso access trade off model, there are benefits to trade off by virtue of residential location in the peri-urban which is primarily driven

by economical cost of land for housing development. The major environmental challenge in Ibeju-Lekki is poor infrastructure development. This constitutes about 33.1%. Observation through field survey shows that the areas under the control of self-help housing development are lacking in infrastructure. Poor environmental condition is another noted challenges by the respondents (13.7%), attached to this particular challenge are poor drainage facilities and poor waste management (3.0%).

Waste management is carried out illegally and it involves indiscriminate discharge to water bodies and open dumps are commonplace in the study area. Locational related challenges are the absence of health facility (2.5%) and lack of good schools for children (2.2%). Health facilities are sparsely situated in the peri-urban. Other challenge come in form of water scarcity (0.8%). Most residents' rely on borehole and wells as their source of water because of lack of a central water system. Due to the closeness of Ibeju-Lekki to the coastal areas, the quality of water is salty and mostly contaminated by illegal sewage disposal. Further notable challenges are poor road condition comprising 21.9%. Most feeder roads in the study area are earth roads and sandy roads. The only areas with good roads are government reserved areas and all private developers estates in Ibeju-Lekki. What is typically obtainable in the study area is selective infrastructural development. Only the primary major link road of Lekki-Epe expressway is well maintained.

High cost of daily transportation is also another challenge in Ibeju-Lekkiperi-urban and this constitutes 12.3%. Settlements are located far from one another thus causing arbitrary transport fare charges by the transport operators in the peri-urban. Daily commuting is a herculean task for residents having no car ownership. Also mono-directional primary roads coupled with high possession of automobiles contribute to high traffic congestion (3.0%) in Ibeju-Lekkiperi-urban. Finally, the major socio-cultural challenge connected to living in the peri-urban is residential segregation creating a forced disparity between one economic group and the other. This constitute about 3.6% and is notably evidenced through gated housing and exclusivity of the government-led and developer-led housing initiatives in Ibeju-Lekkiperi-urban. Other socio-cultural challenges are poor security of lives and properties, constituting 0.8% and limitation by traditional livelihood or religion (0.3%) which often bring about restriction in movement in the affected areas in the peri-urban.

Table 5. Environmental and socio-cultural challenges in the study area.

Challenges	N= 366	
Poor environmental condition	50	13.7
Poor infrastructure	121	33.1
Poor waste management	11	3
High cost of daily transportation	45	12.3
High traffic congestion	11	3
Poor health facility	9	2.5
Water scarcity	3	0.8
Lack of good schools for children	8	2.2
Security problems	3	0.8
Poor road condition	80	21.9
Segregation by the middle class	13	3.6
Traditional Livelihood/religion	1	0.3
Others	11	3
Total	366	100

Source: Field survey, 2016.

Figure 5. Flooded road due to lack of drainage

Figure 6. Unregulated waste disposal.

6. Conclusion and recommendation

Peri-urban expansion in the study area which has been mainly for housing development, has given rise to the creation of diverse housing schemes to serve the heterogeneous population of migrants to the peri-urban of Ibeju-Lekki. The dominance of the high-income group in the study area has led to the increase in development of exclusive gated residential estates often segregated from the low income group housing and in turn encouraging disparity in infrastructural development. However, the pace of development outweighs the regional development thus creating a multi-dimensional challenge expressed in form of poor environmental quality, poor access to infrastructural services and locational limitation which impact negatively on the productivity of the residents. The high commuting time is as a result of dispersed locations of settlements, lack of public transport which confers right on informal service providers that operate in the peri-urban without price control. Linkages has established that most peri-urban settlements are not self-sustaining with extreme reliance on the neighbouring metropolitan regions for services and resources. It can thus be concluded from the findings that peri-urban expansion has not only altered the spatial demography of the study area, but it is accompanied with a pace and pattern of development that is not matched with the available regional planning control and socio-economic development, thus creating environmental vulnerability and reduced residents' productivity.

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The effect of the binary space and social interaction in creating an actual context of understanding the traditional urban space

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Diachronic.

ABSTRACT

Urban Space is not just a simple, physical configuration. Instead, it is a transformation of human experiences with the differentsynchronicarchitectural characteristic that needs a critical examination to segregate discrete layers of structural elements. As a result, the traditional urban space is a unique existence of reality; it is a product of prolonged interaction between society and architecture. The association is so prevailing that each portion has a significant role in creating a combination of mental prototypes of interpretation between the different factors that gives the urban space its final form. Neglecting any part in the public space perception process is leading to crash the binary equation letting the meaning paralyzed without being able to represent any society or potentially keep the sense. There are many examples of worn-out urban space some of them was a result of ignorance and absent of realization of the interaction between Society and architecture. Al-Kadhimiya, a city north of Baghdad, the capital of Iraq, is a crucial example of this type. The Iraqi municipality demolished that relationship by importing different layers that are not compatible with the original one or as a result of inserting new means of technology in the heart of the historic cities. The other example from Erbil, a city north of Iraq, where the municipality determinable removed the old fabric to insert a well-defined rectangle space, somehow to create an urban public space, that procedure juxtaposed by form a barrier to isolate the old Souk from the other part of the old city. Both cities suffered from a misunderstanding of the urban binary equation between space and architecture as a tool to understand the context.

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1. Introduction

There are many ways for communication, but the Spaces is the interactive one. According to Lawson the very phrase 'face to face' is implicitly refers to space(Lawson,2001). There is a hidden language between the different part of the societies, the urban space as a component of the urban fabric plays its role in that language as a Part of the whole, the part has a phenomenological dimension in addition to its relational structure with the system as a whole.

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Social science support that the "'personal space' and 'human territoriality' also tie space to the human agent, and do not acknowledge its existence independently of the human agent.

2. Communication through urban fabric

Harold Proshansky said, «The physical environment that we construct is as much a social phenomenon» (Lawson, 2001). If any urban fabric has its internal system, then those «descriptions of space can be related both to the everyday buildings that make up the system and to the various»(Hlillier &Hanson , 2009) kinds of public building that exist within the urban fabric. Space is medium for interaction understanding as well as understand the message behind the urban fabric. There are different layers of combinations to transfer the meaning or as a way of shifting the meaning. In another word, there is continuous changes and modifications in the fabric from diachronic point view. So, there is a need to understand the underlying structure which regulates the spaces within the entire urban fabric. For Space gets its meaning through its direct connections with human consciousness.

3. Society and Urban Fabrics binary interaction.

3.1 Introduction

Both Space and Society have a particular structure which is modified and molded in almost complete compatibility with the other with all its intrinsic values. The understanding of the reality through a binary interaction and understand the meaning of the context, text, and urban fabric is a vast field, its root goes back to some other artistic field. In linguistics, Saussure insisted «that our ability to discern phonemic structures requires that we recognize units of meaning such that they are reiterable.» (Winters, 2007). Saussure did not consider it necessary to distinguish between a language where that consists in the mastery of concepts and grasping content on the one hand and investing insight with connotation on the other.

3.2 Structuralism binary interpretation.

In its simplest form, structuralism is an analytical approach to consider phenomena as a complex system of variables operating under the certain universal rule. The urban space plays a significant role in understanding the essential meaning of any urban fabric. The undistinguishable world comprises of the structures that inspire and establish all of these phenomena is the underlying phenomena, which is «consists of the structures that underlie and organize all of these phenomena so that wecan make sense of them.» (Tyson, 2006). The first one related to the physical world. Architecture and urban design are similar to the internal relationships between the different spaces and architectural masses to create some pattern or order or Deep Structure (Hlillier &Hanson , 2009).Although the meaning has a structure, that meaning is not alone and related to different layers with a different period. As a result, there are different layers of structures that stacked above each other, the combination of those layers composes the final sign of the urban form

3.3 Phenomenological view

Phenomenology role is to probe for the deeper structure of human reality and thereby to articulate the «language of metaphors that can be identified with our existence.» (Hlillier &Hanson , 2009) Phenomenology further emphasizes the fact that architecture is first and foremost a multi-sensory experience as opposed to a purely visual or conceptual exercise. There is a focus on the human place «the structure of place becomes manifest as environmental totalities which comprise the aspects of character and space.» (Schulz, 1991). The theory focused on experiences and its interpretation by a human. It is crucial to get that the skills play a prominent role in understanding the space, but then what remains is how to transfer those feeling or experience accordingly. This method is well determined and identified for a single area where spectator could record his own experiences, but the question remained about the relationship of that space with the other related spaces! How could be so sure about the interconnection with other spaces? Although the phenomenological offer a useful tool to recognize places and its internal structures, it is suffering from indications that connect spaces with each other. It is worth to say that the Structuralists offer a better method for understanding the connection between the elements.

3.4 Post-Structuralism and Deconstructionism approach.

The post-structuralism focused on time and Changing of the meaning accordingly

there is no fixed connection between the signifiers and the signified or between the urban fabric or space as well as the context with interpretationbeing created by the subconscious or the spectator so it

Sought to redress the universalizing tendencies of structuralism by introducing a particular specificity into the discourse. Thus against the static and universal models of structuralism, post-structuralism introduced notions of time and difference (Leach, 1997).

In its most exciting form, deconstruction saw as a way of undermining «all statements about the world, leaving us both silent and stricken with the acute condition of undesirability a fatal malady in most academic and political circles.» (Mallgrave & Goodman, 2011). The instability of the meaning is the purpose coherent in the post and deconstruction it leads to «emphasize the aspect of a difference it which is differentiation over that which is a deferral.» (Massey, 2008). Here we have the concept of (Time/Space) as a tool to affect the different structures of the meaning accordingly. The research believes that the understanding of the final meaning through various layers is more reliable and acceptable in the urban space. Consequently, it is possible to combine the different structure of meaning.

3.5 Conclusion from meaning theories

The physical existence of the urban fabric is the realistic thing to start from with its existed Structure and Phenomena. The problem is that both elements have a dynamic identity and influence that has an unremitting change, this is important when the case of discussing is related to the traditional are in cities, it will be more complicated if it has some historical monuments or religious shrines. From this point of view, there is a need to understand the urban fabric through:

1-Direct involvement in the studying the urban space, this provides direct interaction with space with all its features and manipulations, it is exploring the Part of the Wholeness of the urban structure which is a real understanding for the Phenomena.

2-The study of the Relations between parts, these could be varied from different and varied structures and influences (inside/outside), (Down/Up), (Focus/Diffusion), (Toward/backward),...etc. The effects of this principle will be very evident in the case study of Erbil City.

3-Combine the different structure in such a way that each structure could be distinguishedconsciously from the whole overlapped structure in the urban Form.

Just in combining those (Figure 1) three points there will be an acceptable approach to understanding the urban form.

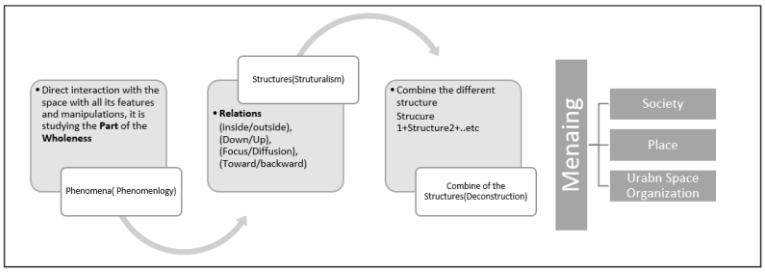

Figure 1.Methodology. Source: Developed by the Author.

4. Traditional Urban fabric as a product of the interaction between the social, culture and the physical existence.

Most of the values in cities located in the traditional area where the physical form and the spatial distribution of activities in the city partly contained in the traditional fabric.

4.1 Centrality / Exteriority

This element is more related to the whole understanding of the urban space from one side and the urban fabric as a whole phenomenon. The human being could understand the city or a part of the urban fabric when there is the point of interactions or social gravity to guide the people to those points. This principle reached its maximum in the traditional cities and historical towns and lost that importance on behalf of the Exteriority in the gridded system where space has a fluent continuous dimension. According to this element, all the direction could lead to something more important or a place where all these points collected together or leading to some other place that has more gradient power or performance. This type of movement has its own internal rules as centrality has its own morphological rules.

4.2 Exposure / Enclosure

Raymond Unwin declared that «we should secure some orderly line up to which the country and town may each extend and stop definitely.» (Samuels, 2004). The principle related to the enclosure of the space and feeling of the

human that he is in a definite way. A type of interaction between the people and building around them. Unwin (1909) confirmed the previous point by saying that « the designer of the buildings, much may be done to produce interest and variety in the street pictures, while at the same time maintaining the general sense of unity which is usually so wanting in modern suburban roads.» (Unwin, 1909). Feeling to be inside is an influential factor to encourage social activities it is thus tempting to correlate the particular morphology of the close with these types of common practice.

4.3 Concentration/ Separation

The mental image of cities depends on some point as landmarks to create a comprehensive mental image for the city. Lynch described it as nodes that according to him «Nodes are points, the strategic spots in a city into which an observer can enter, and which are the intensive foci to and from which he istraveling. They may be primarily junctions, places of a break in Transportation, a crossing or convergence of paths, moments of shift from one structure to another» (Lynch, 1960).

However, it is «an outstanding feature of the visual cityscape, a marker that helps anchor the individual's mental map of the city.» (Williams, 2010). Without these landmarks or focus point, the observer loses the ability to build an image or description of the layout that he is trying to decipher. This concept changed according to the modern development and transportation requirements "Due to dynamic of urban growth the city expanded itself to the exterior part of the city" (NIA & SULEIMAN, 2017).

4.4 Continuity/Discontinuity

The continuity of the space was one of the aesthetic value of the modern space, accordingly "The Aesthetic Values based on creating simple, straight Shapes and forms, the whole Compositions stand on square forms" (Amen,2017) This structure is related to the continues urban language in the traditional area, «In ordinary daily life people need more continuity and predictability in their surroundings» (Williams, 2010). People inside any space need enough mystery and complexity to keep their interest in looking around them. Discontinuity in the language or the structure lead to misconception and fragility of the meaning, some cities suffered from this kind of discontinuity when some elements inserted which is far from the existed structure or which is in the total discord with it. That why there should be guidelines and structures assuring continuity both regarding physical form and cultural context.

4.5 Variations/ uniformity

The principle is related to the dynamic change of the space and place simultaneously with the movement of the pedestrian. Space focus on internal elements inside the traditional cities which are similar to the human scale and the limit of the definition of the space, these variations can drive by personality, status, and culture. Most of the traditional cities built compactly for some or other reason that reason ranged from religious, social and environmental issues and manifestations. The Variation is a reflection of two factors, the scale, and movement. The variations of the area depend on the magnitude and power of connectivity and disconnected perceptual image.

5. Erbil City Center /Kurdistan Region/ Iraq

Abril is ancient town, in Kurdistan Region, in the foothills of the mountains that rise to the east. Abril is one of the oldest continuously inhabited cities in the world according to the UNESCO. The current city inhabits the top of a hill formed by consecutive building over an extended period), rising about 100 feet. Ongoing efforts to revitalize the Citadel and the close relationship that the people of Erbil have will be determining factors in returning the Citadel to the role and position it has always held in its history, and as an urban landscape of importance for all humanity.

5.1. Centrality / Exteriority

The traditional old city concentrated on the existence of the old castle; there is no other element could contest the monumentality of that part, the language of the centrality was unambiguous where the spectator used to keep in the unconscious that there is something important to concentrate. The concept of centrality represented in the existence of the castle and the spaces and the pedestrians all around it. The idea of centrality suffered from the development when the developer decided to locate a gigantic commercial mall in opposite direction of the Citadel (Figure 2). The procedure followed the location of the new mall is a sharp contrast with the old castle, this difference enforced and increased by creating removing the area between the two ports Creating a sharp slicing with the old fabric. Here

we find the new language stand on creating more nodes instead in the old structure node stranded on the only one prime existence.

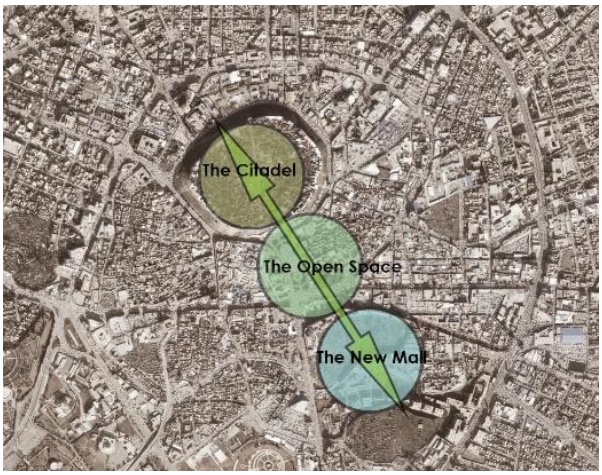

Figure 2. New Centers near the citadel pushing out Source Developed by the author.

5.2. Exposure / Enclosure

This structure has reversed in the center by creating the open space in the primary is that cause the changed the direction of looking from inside that was looking to the castle to outside, which is the developed Open Space. In the first case, space was secondary in position to the castle while the development made the castle walls worked as an envelope to the new Space (Figure 3). The whole philosophy of the urbanform and space organization changed according to the new term.

5.3. Concentration/ Separation

According to this mental structure, there is a particular thing that we have to concentrate. More dominant points in the same area result in a competition between the forces and distort the internal structure of the mental images in the area; the more concentrated the points, the more distracted the people with the area. That is evident in the old city of Erbil where the Old castle which once was the focal point of the whole town lost its power in favor of the New open space built on demolishing the old fabric and the giant mall -Nishtiman Mall-(Figure 4).

5.4. Continuity/Discontinuity.

This principle related to the atmosphere of the space all around the citadel, there was a direct visual interaction between the citadel before the development. The continuity disrupted when the developer suggested building a barrier between the fence and the old souq, from another side the deliberate use of the brick material forced the old citadel to lose its specialty in favor of the new design. The main languages used in the new development, as well as the between the Citadel, features proposed by the new developers. The second point continuity of the space created a direct visualization with the new mall that made the Citadel work as a barrier for the newly developed open space.

5.5. Variety / Uniformity

The transformation from the ambiguity to uniformity in the form of new space in the central area lead to loss of the diversity of the space and make something similar to an international space in the old central area. At the same time using the same material in all around the old citadel create a feeling of repetitive with enforced rapture with the old skin.

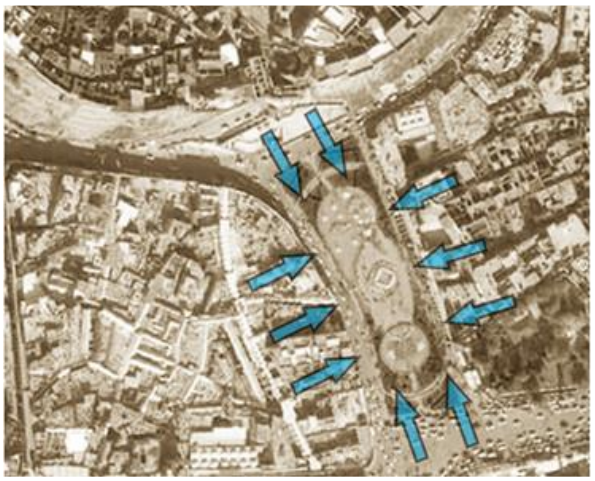

Figure 3. New Centers near the citadel pushing out Source Developed by the author.

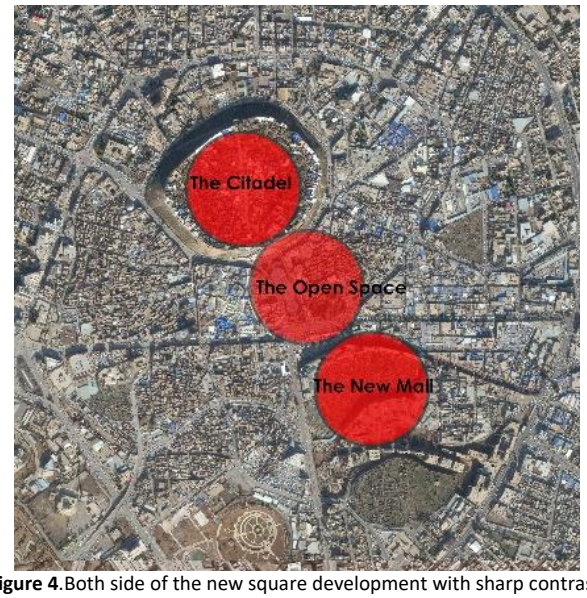

Figure 4.Both side of the new square development with sharp contrast.

6. Al-Kadhimiya /Baghdad/ Iraq

Kadhimiya is one of the suburbs of Baghdad and its holiest place; it is 5 km to the north of the center of Baghdad. The urban fabric of the city organized around the sacred shrine; the municipality developed the area in 1980, the area around the main shrine demolished with roads crossing the area all the way to the main shrine (Figure5). The new project has characteristics with sharp discord with the structural view of the area. In comparison with the five fundamental points, we will find that the language is transformed according to as it cleared below.

6.1. Centrality / Exteriority.

Here we could conclude that the creating of the giant space all around the shrine made the shrine wall works as a barrier for space (Figure 5), which competes in power with the existence of the shrine itself. It is as two centers of authority in the same area power of shrine and the spaces all around it and competing with the first one.

6.2. Exposure / Enclosure.

Here the whole procedure change as space worked as a magnet to expose the entire shrine while it was enclosing it the first stage.

6.3. Concentration/ Separation

Almost the newly created space is diffusing the power of the old shrine.

6.4. Continuity/Discontinuity.

The right axis and isolation all together worked as one combination to increase the segregation with the other part of the city.

6.5. Variety / Uniformity.

The unique material and design of the shrine forced to sharp repetition that all these elements created in s diverse way that affected the urban fabric, and most of the solution run opposite to the old City structure.

Conclusion

The urban fabric is the final product of the prolonged process between human activities and the architectural space; each part contains a compatible structure with the other part. It is good to comprehend that many layers of meaning and transformation live implicitly in any urban fabric, that why there is a difficulty to understand the urban fabric through one layer of interpretation.

As we have seen through the paper, there was a sharp conflict in the internal structure of Erbil old city, and the developed one. The most important part of the city (the Citadel) has lost its power and gravity influence in favor of the newly developed space and the giant mall just in the opposite direction. Also, the using of traditional material around the Citadel worked to reduce the impression of the Citadel old walls and features. All these elements worked in large part to crash the old structure and create conflict with the old one and create a language based on diffusion, marginality, and exposure which in all combinations are in far contrast with enclosure, centrality, and variety that the old fabric had adopted. There is a sharp atmosphere between the existing fabric and the developed models, some new element (the new open space) has started to share the centrality with existed dominant elements (the Citadel).

Baghdad city suffered from the same differentiations and points. The approved design by the municipality focused on the negative space that decreases the dominance part of the shrine. That why any urban fabric should keep multi-layers of interpretation extracted from the diachronic period of city life that is the main point to start with to build a real image for cities that based on cultural and social activities.

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The Socio-cultural and ecological perspectives on landscape and gardening in Urban Environment: A narrative review

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ABSTRACT

This review offers a perspective on the role landscape and gardening play in urban settings from a socio-cultural, and ecological dimension. The practice of cultivating in gardens, parks and vacant lots, creates community spaces, and are increasingly becoming important to peoples' experience of social and cultural wellbeing. In recent times, this has become a major focus of research in ecology, agriculture, urban design, landscape architecture, human geography, and sociology. Community gardening is one of the avenues toward revitalizing urban environments, and it provides a way of addressing multi-faceted urban problems ranging from limited food access to safety and community cohesion. That being said, it is necessary to continually evaluate the roles which society, ecology, and culture play in cities and landscape planning due to the dynamic nature of culture. This article aims to bring to the fore, the various factors of landscape and gardening practices in cities and the dynamics of cultural and ecological effects they have in building communities, reclaiming communities or engendering a personal place to thrive. A narrative review of the literature on peer-reviewed articles within the scope of the study was adopted as the research method.

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1. Introduction

As the world becomes more urbanized, the practice of cultivating in gardens, parks and in vacant lots, creates community spaces, and are becoming increasingly important to peoples' experience of social and cultural wellbeing. This increase in world population continues to reveal, the fact that our ecosystems and landscapes will be more domesticated and designed to suit human needs. In 1939, Carl Troll, a renowned German physical geographer coined the term 'landscape ecology,' while studying the Miombo savanna in southeastern Africa, discovered a repeated patchwork or pattern composed of grassland, termite mounds, shrubs, and tree

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groups, which he called landscapes (Haber, 2004). The term landscape was combined with ecology by Troll due to his understanding of the interrelationship between landscape and environmental science introduced by Ernst Haeckel in 1866. Although, Several authors have classified it as follows: (i) landscape as regional visual designation of the environment, and an industrial or urban landscape; (ii) landscape as evidence of history and cultural achievements, to be cherished, preserved, and recognized as a national identity; (iii) landscape as gestalt or picture, as object of art and design, as symbol conveying wellbeing and comfort, (iv) landscape as part of everyday life, as a fabric of social, economic or political activities, and medium of advert (Haber, 2004; Meier, 2001; Winiwarter, 2001).

Ample scientific evidence suggests that landscape assessment have extended various fields and theories and techniques such as internet survey technique (Roth, 2006), Fuzzy set theory (Steinhardt, 1998), landscape ecological assessment (Mörtberg, et al., 2007), and psychophysical landscape assessment approach (Daniel, 2001). Furthermore, local stakeholders now take into consideration, the benefits of evaluating visual and non-visual aspects of different landscape settings (Soliva&Hunziker 2009).

A growing body of evidence has documented the huge interest, shown by City dwellers, civil-society organizations, and policymakers in food-producing community gardens for their potential to improve nutrition and public health, enhance urban environmental quality, and provide opportunities for urban residents to experience the natural world (Alaimo, et al., 2008; Drake & Lawson 2015; Gregory, et al., 2016). Community gardens, also regarded as urban agriculture, are public spaces managed by member-volunteers who grow food crops and or flowers, shrubs, and trees in individual plots and communal growing spaces (Cohen, et al., 2012). Community gardens can transform under-utilized land into vibrant, productive public space, engender a sense of security in neighborhoods, and a strong connection with the larger community (Poulsen, et al., 2014).

Home gardens are an under-researched part of the agricultural stocks of smallholders in many parts of the world. Until recently, urban home gardens have not received much attention despite their critical importance to urban livelihoods. Home gardens offer a perspective on understanding rural-urban linkages since they are frequently a landscape feature in both settings and the exchanges of their products link the two (WinklerPrins, 2002). Similarly, home gardens help the preservation of tangible cultural heritage such as food – traditional cuisine, enhance cultural sustainability, conservation and cultural vitality (Mazumdar, &Mazumdar, 2012). More recently, community gardens, have become a very important urban planning tool to provide green space in urban environments, improve access to healthy foods, (Gregory, et al., 2016; Poulsen, et al., 2014) and encourage local food production and distribution (Pottinger, 2013).

There have been concerns on the aspect of biodiversity in landscape research, due to the global influx of diverse ornamental and non-native plant species in landscape practice (van Kleunen, et al., 2015), as well as how wild and cultivated biodiversity in all forms is related to healthy diets and nutrition (Powell et al., 2015). Consequently, major challenges are arising in landscape design in countries where the fastest global urbanization is predicted for future decades, such as: India, China, and South America (Elmqvist et al. 2013). Therefore, the combination of native biodiversity and regional native plant material, into new and existing parks and landscape designs can engender a holistic approach to creating sustainable green infrastructure, preserving and supporting native biodiversity, and preventing further plant invasions (Müller, &Sukopp, 2016). Developing and maintaining sustainable landscapes remains a challenging and vital task for scientists and numerous stakeholders. Thus, landscape architecture and landscape ecology must be fully involved in the crucial processes employed towards accomplishing this task. However, landscape architecture or landscape ecology may not achieve its expected goal without strategic intra and interdisciplinary collaborations with other disciplines as well as the art and

science of studying the relationship between spatial pattern and ecological processes, which influence the production of sustainable landscape architecture (Chen, & Wu, 2009).

Studies have shown that there are several benefits and services provided by urban agriculture, which can be observed through a framework of "landscape multi-functionality," which entails the production of food resources, ecological services, and socio-ecological functions, each of which benefits the health of the surrounding community (Lovell, 2010). Therefore, supporting and expanding community gardens could benefit many urban dwellers in neighborhoods where people lack access to affordable healthy foods and opportunities for interactions with nature (Larson, et al. 2009; Miller, 2005). Research findings from local distributions of cultivated vegetation suggest that the social environment may significantly influence these distributions. Cultivated floras within settlements, vary with social factors (Kendal, et al., 2012). These factors include, land use (gardens, parks or streetscapes) (Welch, 1994; Jim & Liu 2001; Martin, et al. 2004), socioeconomic and lifestyle gradients (Martin et al. 2004; Hope, et al. 2003; Luz de la Maza, et al. 2002) and with historical patterns of physical and social development (Lubbe, et al. 2010; Jim & Liu 2001). People from different cultural backgrounds cultivate different kinds of plants, suggesting that places with very different cultures will have different cultivated floras. This implies that as people migrate to settlements around the world, the cultivated floras of those settlements will become more similar (Head, et al., 2004; Fraser, & Kenney, 2000) and affords immigrants the opportunity to re-create the natural environment, history and culture left behind (Mazumdar, &Mazumdar, 2012). Community gardening is one of the avenues toward revitalizing urban environments, and it provides a way of addressing multi-faceted urban problems ranging from limited food access, safety, community cohesion, preservation of tangible cultural heritage (food- traditional cuisine), to enhancing cultural sustainability. That being said, it is necessary to continually evaluate the roles which society, ecology, and culture play in cities and landscape planning due to the dynamic nature of culture.

1.1. Methodology

A narrative review of literature on peer reviewed articles within the scope of study was adopted as the research method. The criteria for the cities selected in the reviewed articles were random. However, it was paramount that all included articles documented important finding related to the social, cultural and ergonomic dimensions of gardening and landscape practices in cities.

1.2. Aim and objectives

The aim of this article is to bring to the fore, the various factors of landscape and gardening practices in cities and the dynamics of cultural and ecological effects they have in building, and reclaiming communities or engendering a personal place to thrive. The objective of this review paper is to create a better knowledge of the implications of the socio-cultural, and ecological factors of landscape and gardens on patterns of cultivated vegetation. This will contribute to the understanding of how people experience nature in an urban context and help ecologists, sociologist, and professionals in urban design towards better city planning, revitalization as well as gentrification.

In order to understand the scope in which landscape and gardens are discussed in this article, an understanding of the definitions of landscape, gardens, gardening and an associated term such as farming within the scope of study is clearly described.

1.2.1 Landscape

In recent years, Landscape has been holistically defined in human geography as a term, which seeks to unite the material and visible environment as well as the immaterial and invisible mental structures of the environment (Lindström, 2010). While earlier studies on the landscape have focused on the visual aspects, to the extent that Daniels and Cosgrove, stated in The Iconography of Landscape that "landscape is a cultural image, a visual representation, structuring or symbolizing of our environments" (Daniels & Cosgrove 1988). However, it is important to note that, contrary to a common

misconception, landscape is not limited to the visual aspects of the surrounding environment, and neither can landscape be equated to physical environment or "nature." (Lindström, 2010). Thus, viewing landscape employs a rhythmic movement of the eyes, which is also a code to reconstitute oneself, such that, a person who beholds a landscape does not leave it as the same person.

1.2.2 Gardens

A garden is a planned space, typically outdoors, set aside for the display, cultivation, and enjoyment of plants which also serves as a supplementary food production system that is managed and controlled by household members. The most common form today is known as home garden, which include both natural and man-made materials. Nevertheless, the term garden has traditionally been more generalized to include those used to display wild animals in simulated natural habitats, called zoological gardens. (Klindienst, 2006; Turner, 2005). A household garden can be consumption-or market-oriented, but at least some of the produce will be consumed by the household. As a supplementary production system, the household garden is secondary to both the primary source of household food, whether from field production or purchase and to household income, whether from sales of field produce, wage labour or other sources. (Soleri, et al., 1991). Gardening can sometimes be misconceived as farming. That being said, studies posit that there is no standard definition for 'a home garden', and summarize the shared perception by referring to it as 'an intimate, multi-story combinations of various trees and crops, sometimes in association with domestic animals, around homesteads', as well as for the partially cultivation of vegetables, fruits, and herbs chiefly for domestic consumption (Galhena, et al., 2013; Kumar& Nair, 2004).Therefore, home gardens can be characterized by the following factors; (1) it's close proximity to the residence; (2) high plant diversity; (3) food production is supplementary rather than a main source of family consumption and income; (4) it occupies a small area; and (5) it is a production system that can be practiced by the impoverished minority; (Galhena, et al., 2013; Brownrigg, 1985; Marsh, 1998).

Gardens for food producing purpose, can be distinguished from farming, mainly by scale and intent. Gardening is done on a smaller scale, chiefly for the production of goods for the gardener's own family or community and sometimes pleasure. While farming takes place on a larger scale, with a major motivation to produce goods for profit. The overlap between these terms, is due to the fact that some moderate-sized farms, often called market gardening, can fit in either category. Therefore, the main distinctions between gardening and farming are as follows:

1. Scale.
2. Gardening can be a hobby or an income supplement, but farming is generally understood as a full-time or commercial activity, usually involving more land and quite different practices.
3. Gardening is labor-intensive and requires little infrastructural capital, sometimes no more than a few tools, while farming is large-scale, often involves irrigation systems, chemical fertilizers and machines. However, this distinction is becoming blurred with the increasing use of power tools even in small gardens.

2. Socio-cultural Perspectives on landscape and Gardening

Studies have shown that the use of historical, archaeological, ethnographic, and geophysical methods to document the cultural landscapes of cities can discover the complex social meanings of the built environments (Nassaney, et al., 2001). Humans build their cultural environments and organized space in ways that helped declare their identities, whether wealthy or impoverished, native and immigrant, (Nassaney, et al., 2001; Yamin, &Metheny, 1996; Paynter et al., 1994). The reciprocal relationship of Culture, its social aspects and its connection with landscape ecology, flesh several important principles in landscape ecosystems. Expanding on this dynamic,it can be argued that culture is embedded in landscape as such can change a landscape, and are both encompassed by

landscape ecology. Four broad cultural principles, proposed by Nassauer, (1995), which can serve as a principle for landscape ecology include:

1. Human landscape perception, cognition, and values directly affect the landscape and are affected by the landscape.
2. Cultural concepts of nature are different from scientific concepts of ecological function.
3. The appearance of landscapes communicates cultural values.
4. Cultural conventions powerfully influence landscape pattern in both inhabited and apparently natural landscapes.

Immense urban development, extreme competition for metropolitan space, modernization, changing institutions and laws, and the global industrialization of food has threatened several pockets of gardens within cities with extinction. With the emergence of the environmental movements and the availability of open space as a result of unsuccessful urban renewal, community gardens have resurged in many American cities (Schmelzkopf 1995). Many of the gardens are in low-income areas and have been known as safe havens that provide residents with a sense of nature, community (Schmelzkopf, 1995). Conversely, Paul Kaldian elucidates further on garden extinctions with his study on Istanbul's bostans (market gardens). In his comments, he emphasized from a historical perspective, the contribution of bostans in the cities landscape and garden practice, the value attached to them by the people and their contribution to the food and employment needs of Istanbul (Kaldjian, 2004). As such, there is a relationship between urban design, food systems, and the ways in which the new ''food-related'' developments can contribute to changing perceptions of the city (Pourias, et al., 2016; Irvine, 2012).

Several studies have documented the cultural influence of plant species in garden practice and layouts (Davoren, et al., 2016; Nemudzudzanyi et al. 2010; Graham & Connell 2006; Head et al. 2004). A study in Southern Africa revealed that domestic gardens are influenced by culture, consisting of indigenous knowledge structured systems and processes, used in managing of plant species with similar uses or functions (Nemudzudzanyi et al. 2010). Similarly, immigrants in Southern California designed their backyard gardens to create distinctive cultural spaces, while their front yard mostly mirrored typical Southern Californian garden landscapes (Mazumdar&Mazumdar 2012). However, Chinese migrants settling in Melbourne, Australia prefer to maintain the existing Australian garden as is to better fit in with societal preferences (Levin, 2012).

3. Biodiversity in home Gardening

Biodiversity has been a hot topic for research in garden ecology. Home gardens have been recognized as sources of agricultural biodiversity's, maintained and enriched by farmers' practices, particularly for their plant and seed exchange across the world (Aguilar-Støen, et al., 2009; Clarke, et al., 2014). Also, home gardens are complex multi-layer systems of trees, shrubs, and annual vegetation around homesteads (Kumar & Nair 2004; Mitchell, &Hanstad, 2004), designated as universal landscapes across the world, with an estimated 15–36 % of residential land in the UK, India, Africa, and China occupied by home gardens (Huai, et al., 2011; Jaganmohan, et al., 2012; Cilliers, et al., 2012). The variations in garden biodiversity can be high, within a single urbanized region, due to the socioeconomic or cultural status of residents (Clarke, et al., 2014; Lubbe et al. 2011; Cilliers et al. 2012; Jaganmohan et al. 2012). As such, these ecosystems are gradually becoming a key research focus in human-natural systems (Kirkpatrick, et al., 2007), with an increased scientific mandate for the classification of home garden plant species abundance, plant diversity in community, and ecosystem factors such as functioning, and services (Huai, & Hamilton, 2009). This is consistent with findings in home garden research which focus on plant species composition and diversity (Coomes, & Ban, 2004), socioeconomic importance and contribution to income generation (Méndez, et al., 2001), plant uses and their role in subsistence economy and natural resource management as in the case of Mexico (Blanckaert, et al., 2004; Del Angel-Pérez, & Mendoza, 2004), household food supply (Wezel

and Bender 2003), sustainability of food systems and the natural environment (Powell et al., 2015) as well as increased demand for food abundance and biodiversity (Clarke, &Jenerette, 2015). By integrating ecological and cultural factors related to garden biodiversity, Beumer, & Martens, (2015) proposed a framework that aims to engage citizens in experiencing and exploring biodiversity and ecosystem services in their own domestic outdoor spaces. In the same vain, studies have suggested that, experiencing urban biodiversity can potentially stop the loss of global biodiversity, if people have direct contact with nature (Müller, &Kelcey, 2010). It is easier to find space in urban landscapes within private or semi-private outdoor spaces such as gardens, patios, courtyards, balconies and roof terraces. As such, a lot of citizens may perhaps have their main experiences with urban biodiversity in their own gardens (Beumer,& Martens, 2015; Cilliers 2010).

4. Ecological Perspectives on Landscape

Globally, a striking result of human population increase, is the domestication of landscapes and its ecosystems (Kareiva, et al., 2007). As urban centers increasingly become the primary habitat for humans, so does our landscapes become more designed to suite human needs (Wu, 2008). It is important to further develop Landscape ecology, enough to be well integrated into other disciplines (Chen, & Wu, 2009). Similarly, several studies posit that landscape ecology should play a critically important role in developing and maintaining sustainable landscapes and different regions (Forman, 1990; Musacchio, & Wu, 2004; Wu, 2006; Naveh, 2007; Nassauer, &Opdam, 2008; Chen, & Wu, 2009). Several researchers have proposed conceptual frameworks towards landscape ecology. For example, Laura Musacchios', conceptual framework which outlines the scope and boundaries of cultivating deep care as a key concept and ties it to scholarly research concepts such as landscape perception, landscape sustainability, resilience science, and ecosystem services (Musacchio, 2013). In the same vein, a study suggests four basic models of ideal landscapes, for ecological planning in Mount Lushan National Park as: (a) model of fairyland, (b) model of artist, (c) model of statistic psychology and (d) model of Feng-shui. The study further iterated sub-models as follows: Kunlunshan model, Penglai model, Pot Sky model, Xumishan model, Peach Blossom Land model, and Endocentric Settlements model, etc., due to the influence of cultural dynamics, era change, geographical environment, as well as other external factors (Xu, et al., 2009). They further document that to achieve a sustainable landscape architecture in china, a proposed framework built on the philosophy of Unity of Man with Nature and Chinese landscape and architectural traditions as well as integrating the principles and methods of landscape ecology and sustainability science must be adopted. See (Fig.1). Likewise, a design strategy for the biological core of Perth in southwestern Australia by Catharina Sack, provides a relevant example of how novel ecosystems can be designed. She suggested a new approach to transforming current development practices, using neo-baroque design strategies, and how it can be used to structure, create resilient and productive novel ecosystems grounded in a critical and indigenous aesthetic of botanical complexity (Sack, 2013).

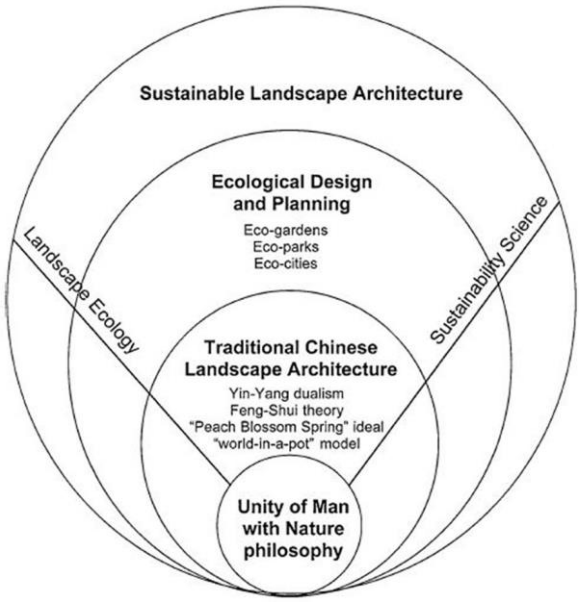

Figure. 1. Conceptual framework for a sustainable Chinese landscape architecture.Source (Xu, et al., 2009).

Table 1 presents the literature review findings from selected studies on the landscape ecology in most countries.

Table 1.Summary of the literature review and findings from selected studies on the socio-cultural and ecological perspectives in landscape and gardens.

Socio-Cultural perspectives in landscape and Gardens		
Author	country	Findings
Kaldjian, (2004).	Istanbul.	• Market gardeners and the locals in Istanbul's landscape and garden practice, attached great value to the bostans and their contribution to the food and employment needs of Istanbul. • The bostans are part of Istanbul's identity. • Different neighborhoods were famous for the unique crops grown in their gardens. • The bostans in Istanbul face serious treats of extinction due to urbanisation, and mordenisation.
Pourias, et al., (2016).	France.	• Source of food is the most significant function of the gardens in Paris and Montreal.
Davoren, et al., (2016).	North South Africa.	• Two types of gardens typologies were predominant in Batswana home gardens – the*tshimo* and colonial gardens. • Batswana *tshimo* gardens are models of indigenous knowledge systems, while colonial gardens are of European origin reflecting esthetic preferences. • Socioeconomic status of residents in Batswana, increases the garden design changes from *tshimo* to colonial.
WinklerPrins, (2002).	Brazil.	• Garden products help sustain critical social networks that subsidize urban life and are important for household subsistence, and product exchanges between rural and urban kin households. • Gardens are a link between urban and rural settings as people are urban and rural at the same time which demonstrates that households can be multi-local.
Saldivar-Tanaka, &Krasny, (2004).	New York City.	• Latino community gardens in New York, offers a place for social interactions in neighborhoods devoid of social gathering places. • Community gardens provide leadership, landscape design, and organizing experience for community members–experiences that sometimes spill over into other aspects of civic life.
Ecological perspectives in landscape and Gardens		
Author	country	Findings
Xu, et al., (2009).	China.	• Ideal landscape in the Mount Lushan National Park was the product of the interaction between human and nature. • The park inherits the essence of Chinese traditional culture with a history of more than 1000 years. • It adopts certain western culture, as well as the exchanges between nature and humanities together with the conflict and adaptation among different cultures. • Natural landscape can be gratified with the survival demand and cultural taste of humans through ecological planning.
Chen, & Wu, (2009)	China.	• Landscape architecture plays a unique role in developing and maintaining sustainability on local, regional, and global scales. • Landscape theories and practice are significantly influenced by the philosophies of human relationship between themselves and nature. • The unity of man with nature and its derivative design ideals can help facilitate the development of a sustainable landscape architecture.
Müller, &Sukopp, (2016)	Central Europe.	• There is a correlation between the frequency of plant invasions and changes in landscape-design styles. • Plant invasions through horticulture and landscape design on native biodiversity, is significantly lower in Central Europe than in other parts of the world.
Lindström, (2010)	Japan.	• Perceptual landscape markers such as ephemera, human everyday rhythms, cosmological and seasonal rhythms, perceptual stimuli can be considered as a secondary code leading to auto communication in the person who encounters the landscape. • Viewing landscape employs a rhythmic movements of the eyes which is also a code to reconstitute oneself.
Musacchio, (2013)	USA.	• Cultivating deep care can potentially become one of the key concepts used to advance certain aspects of landscape ecological research from the cultural dimension of ecosystem services.
Seburanga, & Zhang, (2013).	Rwanda.	• Proper placement of trees around buildings played a decorative role and also served as windbreaks, and shade providers. • Trees in the neighborhood had more substantial role, especially for the majority of the population living in cluster villages away from the immediate environs of forested lands.
Sayers, (2003)	USA.	• The Antebellum landscape in agrarian Michigan, United States has a complex dialectic interdependencies between gender, class, progressive philosophies, and the nucleated and alienating farmscape. • A model of agrarian transition was developed, compared and contrasted with primary documentary, landscape, and archaeological data, which serves as a tool for locating historic agrarian sites.

5. Conclusion

It is important to further develop Landscape ecology, enough to be well integrated into other disciplines, as cities increasingly become the primary habitat for humans, and landscapes become more designed to suit human needs. Therefore, the investigations into Landscape ecology can broaden and consolidate its transdisciplinary basis. Despite the strong public interest in urban community gardens as sources of healthy food, diverse ornamental plant species, and sites for environmental stewardship, there is minimal research on the ecological characteristics affecting food production in these

gardens and gardeners planting and management practices, especially in developing countries. Gardens can help to reintroduce nature into the city and participation in urban gardening experiences can allow urban dwellers to reconnect emotionally, spiritually and psychologically with plants, and soil.

Asides the potentials community gardens have, to breathe life into vacant urban lots, and the provision of healthy local food, they can also transform the community itself through ecological, educational, social, and economic opportunities. Thus, community gardens contribute to a biologically diverse urban ecosystem and provide valued ecosystem services in food insecure regions. A bridge from ecosystem research will serve as suitable starting point for landscape research, to human ecology and the humanities in general, by approximation of selected facts and findings. Due to years of adaption by plant species to landscapes, altering their features, a biocultural approach is probably best suited to understand and manage most of the biodiversity today existing at the landscape level. Furthermore, it is imperative that garden planning and placement by local government authorities should favor ethnic food production for impoverished minority communities. Finally, it is very important to continually evaluate the roles which society, ecology, and culture play in cities and landscape planning due to the dynamic nature of culture.

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Property and Thomas Piketty: **Casting the Lens of Thomas Piketty's Capital in** the Twenty-first Century on Inequality in the Urban Built Environment

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ABSTRACT

Currently, there exists a disturbing urban problem exemplified by the excessive luxury apartments and glamorous office towers being built in cities around the world in the face of the increasing unaffordability of housing and low-cost work, trade or craft space. Seeking to address this complex problem, this paper proposes a theoretical framework that uniquely addresses both the capitalist economic structure that drives the development process and the Marxist-based urban theory by which the socio-economic outcomes are currently evaluated. This framework takes as its meta-theory, the approach of Thomas Piketty in his recent treatise, "Capital in the Twenty-First Century", since he deftly employs the Marxist dialectic of labor/capital while investigating the persistent inequality in the history of capitalism by interrogating that system itself. This bifurcated framework of economic analysis affords a new format for examining real estate returns, how they are represented in the market place, who benefits from them, and how resultant inequalities might be avoided in urban development.

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1. Inequalities in the Urban Built Environment

For the delivery of the urban built environment, the business model derived from neoclassical economics has provided a working framework that harnesses the productivity potential of scale and of skill specialization through the process of private real estate development. More specifically, within this framework, the growing predominance of the production of buildings in most metropolises globally is being performed as a speculative economic activity: that is, by definition, when the developer provides the necessary resources – funding, expertise, and management – to create built forms for utilization by other urban participants in return for rental or

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purchase payments. This overtly transactional or commercial purpose of the development process, being in contrast to that historic venture of building for one's own use either for production or consumption, is that which substantially drives the economic activity by which most of the urban environment is created in today's rapidly growing cities, and is accepted as a normative component of the evolution of towns and cities.

While the rapid urbanization currently underway and facilitated by this private economic mechanism is often acclaimed as progress, there is also extensive evidence that better living conditions are not being provided equitably for all urbanites: rather, there has evolved a striking contrast in the surfeit of excessively-priced residences, workplaces and recreational opportunities against the severe lack of affordable housing for the average worker, the displacement of lower income residents and artistic entities requiring moderately priced workspace, the removal of public open space and amenities, and the rising community dissatisfaction with these consequences. Perhaps this pervasively used model of delivering the built environment needs to be re-examined?

2. Urban Real Estate Development Literature Review

As an area of scholarly investigation, the intrinsic dynamic of the real estate development process – in its comprehensive inclusion of society's land use, physical form of the "improvements", the financial and economic drivers, the community impact, and the symbiotic relationships between these disparate aspects – is remarkably neglected, with most related research occurring within the effectively quarantined, methodological frameworks of various disciplines focused on urban theory, the design form, economic geographies, urban policy, housing economics, or the very specific financial objectives of real estate investment.

The dominant body of current scholarship in the area of real estate deals with the urban development activity as a mechanistic, rational process by which the "utility-maximizers" undertake the production of the asset in response to the supply/demand dynamics formulated by neo-classical economics and, in the detailed analysis of the outcome, as an investment asset. It specifically applies the tools of property financial analysis as derived from the Capital Asset Pricing Model (CAPM)[1] utilized by corporate finance. Excellent theoretical evolution within this paradigm has provided the (almost) globally adopted form of investment return analysis that supports the transactions related to the $27 trillion of real estate investment properties worldwide, and also delivered the core textbooks utilized within real estate educational programs of the highest levels (for example, Brueggeman and Fisher 1977; Geltner and Miller 2000).

In earlier days of scholarship, specifically focusing on the development process within this conceptual framework, Kaiser and Weiss (1970) had initially proposed that the fundamental laws of supply and demand drove the development process and developers were seen to make their most important decisions based on perceiving and interpreting market signals with the actual development process, once begun, proceeding in a relatively self-organized manner. By this process real estate development was seen to achieve a suitable built form bringing with it the accepted and underwritten status of an investment asset. However, after a couple of decades, this analytical approach was beginning to be seen as flawed by Guy and Henneberry (2000) for its inability to consider, include, or analyze any set of coherent socio-spatial imperatives arising as a result of that Capitalist-system-based process.

Attention to the topic, however, from the field of urban theory with its ontological inclusion of the social dimension has proceeded haltingly, perhaps as it wrestled with the pervasive neo-classical framework just described, and how such an analytical methodology might be incorporated, or should be, within its own complex theoretical framework, even as its

[1]The CAPM was introduced by Jack Treynor (1962), William F. Sharpe (1964), John Lintner (1965) and Jan Mossin (1966) independently, building on the earlier work of Harry Markowitzon diversification and modern portfolio theory.

conceptual structure transformed substantially over the past few decades. Initially, addressing the rapid development activity of the mid-twentieth century in Britain and the USA (and also Canada and Australia), some significant progress was made to establish structural theories and institutional models to guide, evaluate and professionalize the development process and relate it to the urban context. An early pathway was insightfully laid out by Fraser (1984) and Soja (1989) who both took the neo-classical economic model as the main object of criticism and contention and proposed a more socialist-based framework for urban development.

More focused on the motivations of the actors within urban society, though also utilizing the lens of macroeconomic analysis, have been the models that are described as either "Structure Models" by Healey (1991: 232) or "Production-based Approaches" by Gore and Nicholson (1991:721), but which typically emerge from the application of Marxist principles to the process of production, that is, positing that the very construction of the built environment is similar in its politico-economic fundamentals to any commodity production. These models of the development process referenced emerging paradigms of urban theory such the urban land nexus (Scott 1980), followed by assemblage theory (DeLanda 2002, Latour 2005) as it sought to encapsulate the sequence-based approach of development activity within a structured framework that observed the dynamics and activities of the participants and markets with respect to their relationships of power, or influence in decision-making, thereby adding a much welcomed socio-economic assessment to the descriptions of the process.

Proceeding in parallel and dispensing with neo-classical economics and fully pursuing the application of the Marxist thesis with direct reference to the struggles between the landowner, production capital and labor, Boddy (1981) devolved the real estate development process into three "circuits of capital" – "industrial capital", "commercial capital", and "interest-bearing capital" – and by imposing the dynamics between these three forms of capital on the event-sequence model of the development process (Healey 1991), he established a theoretical construct that facilitated observation of the outcome for the built environment of the development process as being directly consequential to the capital-based relationships that exist within, evolve throughout, and ultimately dominate the delivery of developed property.

However, the scholarship that approached urban development within the most comprehensive dimensionality comprising the economic, the social and, adding in detail, concern with the spatial is most probably best exemplified by David Harvey (1978, 1985). As with Boddy (1981), he examined the process through the Marxian lens of economic production, but also exposed the significant politico-economic conflicts at the heart of the socially and spatially dysfunctional outcomes that had been frequently occurring during the accelerated urban expansion of the 1970s and 1980s. Significant in his model is Harvey's emphasis on the capital flows with their potential for substantial variation in the timing and quantum, and the effects of this on the economic and spatial structure. An approach that adopted this production meta-theory but sought to examine the details of the workings of the various entities in the development process is that of Ball (1986:158), who presented both the production and consumption of housing as activities of what he termed "provision" which, by definition, goes beyond the mere physical delivery and basic transaction to include social actions and consequences which may be partially connected with the economic aspect, such as in terms of affordability, or even with the physical nature in terms of the aesthetic quality or societal symbolism of the buildings created.

Further advancement of this development theory within the urban context was made by Beauregard (1994, 2005) who challenged the "reductionist and functionalist approach to property markets that collapses all property sectors – housing, office, hotel, industrial, retail and so on – into a market logic of supply-demand relationships", and also presented the inadequacy of the neo-classical economic

model of demand, supply and market signals as utilized by the most prominent researchers in urban economics over the prior two decades (Bateman, 1985; DiPasquale and Wheaton 1996; Thrall 2002). Beauregard (2005:2432) further describes such a "market logic" model as "thin" in their abstraction of the behavioral responses by various agents in the urban development process and general application across the different property types and locations, and he advocates for the model of development or redevelopment to be "thick" in its incorporation of the actual variations in the behavior of developers, financiers, local authorities, local communities and business interests.

However, as this new model was emerging, a significant change was occurring in the dynamics of the capital at the core of the urban development process. In addition to the flow of capital into real estate that provided for the housing, workspace, retail, social or recreational needs of an urban community, the early part of the twenty-first century saw an acceleration in the more highly speculative form of developments, such as luxury apartments, soaring iconic office buildings, etc. that were neither needed nor, in many cases, desired by the local inhabitants. The speculative capital driving these developments did not follow the same rules of allocation, timing and returns with respect to supply and demand analysis as the regular investment capital that had been mostly responsible for building contemporary urban environments during the twentieth century: this new development funding was rationalized as "seeking a safe harbor", serving the purpose of global diversification, and various other newly-popular investment objectives.

Additionally, with the arrival of the twenty-first century, the impact of property development activities on urban environments has been noted as a global concern. While needing the formation of cities to provide the centers of scientific, cultural, economic and social innovation (Glaeser 2011), the surge in urban growth has also resulted in concentrated poverty, ethnic and social conflict, ecological crises, the unaffordability of housing, and homelessness (Storper and Scott, 2016), and thereby increasing the challenge for effective urban theory. Within the resultant debate of urban theorists, the attention to the development process itself has been loosely attached to the various formulations of assemblage theory (Latour 2005; Farias and Bender 2010; Simone 2011), followed by postcolonial theory (Roy 2009; Sheppard, 2014), and more recently adding a predominant attention to gentrification by Mukhija and Loukaitou-Sideris (2014), and Haila (2017).

These more comprehensive, social-context-including models have been successful in presenting the development process as relevant and even critical to the socio-economic construction of urban areas, with some flexibility and adaptation for global application. However, in strengthening that dimension, it might seem that they have moved even further away from constructive engagement with the underlying neo-classical economic context that continues to dominate the critical financial decisions almost universally inherent in urban development. However, and perhaps being equally problematic methodologically, as mainstream financial structuring in support of the real estate developer and investor has become more sophisticated and extensive in its analytical underpinnings, it still fails to provide a framework for assessing the outcome from the perspective of an urban community, its residents, workers and visitors, and their interest in equal access to all aspects of the built environment.

The reasons for this startling and increasing dissociation between consideration of the process of property development with its long-lasting and extensive consequences for urban environments and the short-term, transactional focus of the underlying financial dynamic are many and varied: ranging from the relatively recent dominance (globally) of the private real estate development business model and the apparently attractive reliability of the advancing financial structures of the capitalist system, to the age-old problem of silos of academic disciplines with varying theoretical underpinnings and purposes. However, the consequences of this lack of a comprehensive, critical investigation of

the real estate development process, particularly as a private sector business activity within the very vulnerable socio-economic context of the city, are now rudely confronting contemporary societies from political levels through to the average urban worker's struggle for economic survival, with the inequality of access to shelter being a sizable, urgent and socially dangerous representation of such injustice.

3. Reframing the Problem of Inequality in the Urban Built Environment

The discussion of the stark inequalities found so consistently in urban communities currently occupies scholars from many fields including health and welfare, justice and criminality, employment and wages, and others of social and economic dimensions, but also the built environment and urban planning. Most influentially, John Plender (2016) addresses the socio-economic inequality pervasive in urban environments and places the problem within a wider historical context of moralizing about markets, reviving Marx's predictions and those justifications of capitalism's decent, in addition to commencing a discussion of the evolution of entrepreneurship within this broader framework.

Amongst the urban theorists, various perspectives have been adopted ranging from Haila (2017) in developing economies to that of Florida's (2017) exposition of the "New Urban Crisis" in the USA. Typical of many, this latter dissertation provides extensive and very informative quantitative and comparative descriptions of the unequal development of urban environments in the U.S. and he posits that the fundamental urban principle of agglomeration (Glaser 2011) as mixed with the innovative industries of his identified 'creative class' has led to exacerbating income inequality and 'winner-take-all' urban consequences such as residential unaffordability and spatial segregation. As pointed out by Beauregard (2017), Florida's argument, although purportedly to be about 'contradictions' follows the typical narrative of 'how economic and political power divides the spoils of growth and decline' and calls upon the (assumedly responsive and efficient) patrons of policy to overcome inequality with the usual tools of more infrastructure, affordable housing, increased minimum wages, and building resilient cities, which Beauregard terms 'recommendations to no one'. Nor does it address the actual process of real estate development in building the physical representations of this inequality, reinforcing the politico-economic structures favoring such an outcome, and harnessing the tidal flows of capital pertaining to this economic inequality.

The challenge therefore remains to take the mainstream economic model that supports the real estate development activity and synthesize it with the emerging investigations of the socio-economic consequences of urban development currently undertaken by urban theorists structured within the Marxist framework. Overcoming the historically held perception that these two paradigms of economic analysis are irretrievably conflicted and opposed – they each generally blame the other structure for the adverse consequences – would not be easily achieved but is fundamentally necessary because of the shortcomings in interrogative coverage by each.

4. **Piketty's Proposition**

Arising outside of the arena of urban theory but serendipitously addressing this challenging gap in urban economic analysis, the French economist, Thomas Piketty (2015), delivers a striking proposition: that socio-economic inequality is a consequence of the fundamental principle of capitalism whereby, barring catastrophic events, accumulated wealth invested for the return on capital achieves an ever-rising share of the broader economic benefits than that represented by income obtained through the contribution of labor or skills.

He commences his construction of such an argument by noting that in the earlier, historic times, especially for hundreds of years in Europe, a fundamental economic contrast existed between those who owned the land that was the basis for agrarian production, and therefore were in an advantaged position, and those who labored in that production but were without ownership of any other resources (often even

their tools) and were therefore disadvantaged economically. Subsequently, as he points out, with the more capital-intensive modes of production of the industrial era, this economic dissonance was exacerbated, eventually giving rise to specific attempts for redress through revolutions, workers' unions, and Marxist political theory.

Playing the most simple and transparent role in the persistent direction of increased income to capital rather than to labor, Piketty proposes, is a fundamental dynamic whereby, when the general rate of economic growth is low, it is exceeded in magnitude by the rate of return on invested capital. He expresses this as:

> *r > g where r represents the rate of return on capital and g represents the rate of growth of the broad economy. (Piketty 2015:25)*

When this occurs, as it has done through much of the history of western capitalism until the 20th century, and more recently in the period since the Global Financial Crisis, the inequality rises, favoring with higher returns on their respective resources those with the capital to invest over those with only labor to offer. He underscores this by demonstrating that, in contrast, when economic growth is above historically average levels such as in the middle part of the 20th century, the inequality of returns was reduced, though he also credits the loss of wealth through wars, economic crashes, etc. as components of that rebalancing. This divergence of growth rates with respect to rates of return on capital throughout history is shown in Figure 1.

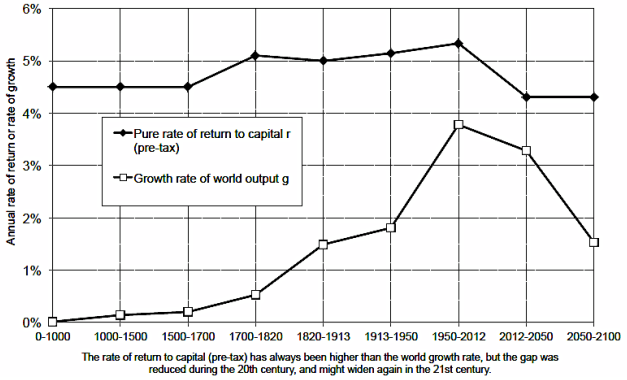

Figure 1. Rate of Return versus growth rate at the world level, from Antiquity until 2100 (Piketty 2015: 354).

Through this expose, Piketty's consideration of socio-economic inequality, also being a concern of many anti-capitalist urban theorists (Harvey 1985; Beauregard 1994; Haila 2017), is most unusually approached by an interrogation of the capitalist system itself, which he accepts as solidly in place, and proceeds with an evaluation largely though its own structural framework. Unusually, he does not adopt an external construct such as Marxism, which has been typically utilized for socially focused analysis, though he does borrow some conceptual formats which most clearly define the socio-economic conditions. By this more complicated methodology, he believes that he will be more effective in adjusting for the better, potentially by policy, some of the constructions within the capitalist system that can be identified as associated with unequal socio-economic outcomes. And, therefore, with an application of Piketty's theory to real estate, it is suggested that the mainstream economic analysis pervasive in the industry might be reviewed for its structures or contradictions that have subversively generated the inequalities represented in urban built form today.

4.1. Bifurcated Returns

In considering the long history of inequality, Piketty introduces the construct of bifurcation of economic returns of production directed to the ownership, or investor of capital, and those directed to the labor providing the output. This presents distinctly different economic distributions relative to the respective production activities of capital and labor despite that the two activities typically work in combination for the majority of economic production today.

In terms of a theoretical methodology, Piketty's bifurcated description of the economic contest is purposefully resonant of Marx: a specific paradigm of economic production with the inherent dynamic of dividing the economic returns from production into the income that is directed to the ownership of the land or the industrial, business, or entrepreneurial structures – collectively represented by the *capital* required for such ownership – and the income directed to the *labor,* or those providing the output. This

derivation of Marx's *capital* and *labor* dichotomy he defines as the "factorial" economic distribution where capital and labor are the two specific "factors of production" in an economy; and, furthermore, he points out that even within these two categories there are additional inequalities in terms of the levels of wealth – between that which is inherited and that which is accumulated – and in the quantum of income earned by labor, for example, the difference in salaries between CEOs and average workers (Piketty 2015:40).

This adoption of the Marxist structure of economic production by Piketty provides for real estate analysis a conceptual framework within which to assume the rigorous and comprehensive models of urban theorists, such as Boddy (1981) and Harvey (1985), which differentiate the capital flows associated with the transactional activities of renting or buying land or completed buildings to utilize in economic production with that capital which is inherent in the investment purpose of real estate. Additionally, as a methodology for real estate analysis, the use of the capital/labor conflict facilitates the incorporation of strong frameworks of city-scale dissertations (Beauregard 2005; Weber 2015; Haila 2017) as an important context for the further, more granular considerations of real estate development projects and their role in urban inequality.

Equally effective in the application of Piketty's construct to the discussion of real estate is his utilization of the analytical structures of the mainstream, neoclassical economic system since such a financial paradigm continues to drive most real estate activity globally today and for the foreseeable future. While Piketty makes use of concepts such as return on capital, passive investment assets, and real wage growth in discussing macroeconomic dynamics, the analysis of real estate normally uses similar notions of capitalization rates, price appreciation and net operating income to review and evaluate investment activities (DiPasquale and Wheaton 1996; Geltner and Miller 2000; Brueggeman and Fisher 2015). Therefore, the continued application of these commonly accepted tools should prove most efficient in the examination and exposition in decipherable terms of the financial factors that might be associated with inequitable urban outcomes.

However, Piketty's unique achievement is that he meshes or interweaves these typically opposing analytical methodologies. Although in doing so, he attracts criticism from both theoretical camps, he is able to produce a cohesive and compelling approach that seeks to address the problem of inequality without discarding the omnipresent, neoclassical economic theorem. For real estate, it can be considered that this methodology might also provide a channel of communication that bridges the previously discussed historical conflict between the two predominant paradigms of urban development theory, essentially derived from those overarching macroeconomic methodologies, that has bedeviled any discussion of real estate and the socio-economic consequences. Piketty's construct provides a useful meta-theory within which real estate can be evaluated with respect to its urban socio-economic impact as framed by current urban theory with its fundamental capital/labor dialectic, but also enables this to be done through a detailed examination of its specific economic dynamics described within the mainstream, neoclassical construct.

4.2. Detailed Real Estate Analysis in accordance **with Piketty's Construct**

In viewing real estate analysis and its urban impact in this way, the overarching objective is to interrogate the dynamics of real estate investment analysis in order to uncover where and how certain economic decisions have an impact on the urban context. However, for the purpose of urban impact evaluation, the analysis should also be directed towards the labor/capital dichotomy. Therefore, the mainstream analysis of real estate is used to parse the financial components with respect to returns related to the labor actions within a macroeconomic situation versus those related to the capital investment actions.

While the actual construction of property would seem to be an obvious situation for the discernment of income due to labor (construction

workers) and the income due to capital investment (investors and lenders), and this would neatly follow Boddy's (1981) tripartite "circuits of capital", this component of real estate, the construction phase, is quite short-lived, mostly occurring at the outset, and therefore represents a minor contribution to the economic production value in comparison with the provision of space for various activities of economic activities, such as those performed by tenants and workers, over the life of the building. Therefore, in seeking to establish the labor/capital dialectic within the analysis of real estate as it operates long-term within an urban economy, it is necessary to interrogate the typical real estate investment return analysis applied to properties over the complete lifecycle, though it effectively minimizes the labor of construction.

Within this methodological perspective, it is perhaps surprisingly found that the existing, neoclassical economic concept of long-term, commercial (non-residential) real estate investment is such that it is fundamentally structured on a certain duality of capital flows: divided into the portion of the whole economic benefit that is attributable to the actual utilization of the property in spatially accommodating production activities by tenants such as manufacturing, office work, retail, etc.,,as distinct from that portion of benefit which is due the storing (and desired increase) of investment asset value which is derived predominantly from the sale of the property.

More explicitly, this bifurcation of economic benefits might be seen to resonate somewhat with a labor/capital dichotomy, if the utilization for productive activity is regarded as the "labor" of the commercial building. Since this provision of space to accommodate activities of economic production by the inhabitants (tenants) is effectively the contribution of a resource (well-located and operational space) to that production, and it is rewarded for this resource by rent payments ("wages"). The economic benefits, on the other hand, that are associated with the "passive asset"investmentare those achieved predominantly by the increase in price, or appreciation, in the property between the time it is acquired and that at which it is sold. (Although some excess annual return might be achieved that could be regarded as above and beyond the justifiable reward for the provision of space in the production process, in practice, this excess income is generally forsaken to annual debt service in leveraging the returns on appreciation, or market forces of supply and demand operate to eliminate this arbitrage.)

Therefore, proposing that the framework of the labor/capital bifurcation be applied, slightly obliquely in terminology but still valid economically, to an analysis of urban real estate, the duality can be defined as follows:

- The **"labor"** is the utilization of the space, with its attributes of shelter, security, location, environmental performance, etc., for economic production, that being not merely factories but also including the "creative workspaces", the Class A offices, the lesser quality offices, the studios, the retail, the industrial, and the medical offices that are the settings for today's productive activities. Additionally, it can be posited that residential properties also have a "labor" purpose in so much as they provide the resource of shelter for workers to revive themselves in preparation for productive activities; however, this purpose is only included to the extent necessary to achieve that functional objective of shelter and does not incorporate the aim of building household wealth (a capital investment purpose) as assigned to it mistakenly with great gusto in recent decades.
- The **"capital"** comprises the invested or loaned funds that achieve or support the ownership of the property and the economic returns are in the appreciation in price that is achieved over the investment period. Furthermore, in clarification of the differentiation of these returns from the utilitarian returns on "labor", although it might seem that such price appreciation would specifically correspond to the resource contribution of the building to economic production,

> numerous real estate studies demonstrate that the changes in the transactional pricing of properties are disassociated from utilization, or even underlying rental rates, and correlate significantly with capital flows, speculative intentions of the investors' strategies (Derrington 2018), or even whether or not the investor is foreign (Devaney & Scofield 2017).

This bifurcated role of real estate and the respective economic returns is represented diagrammatically in Figure 2.

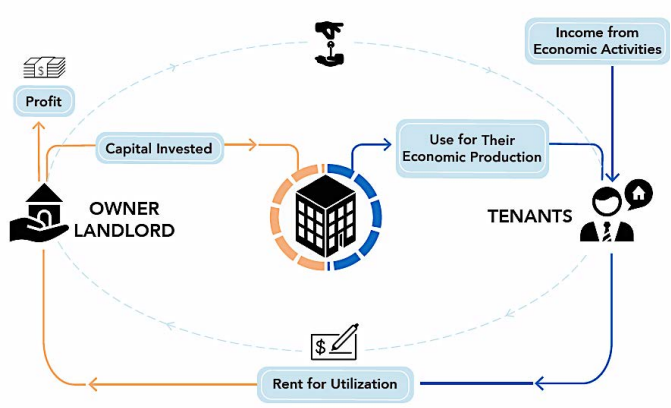

Figure 2. The Bifurcated Functions of Real Estate.

In proceeding with Piketty's useful meta-theory, it is necessary however to adjust Piketty's definition of the rate of return on capital. As is typically perceived of real estate, he considers it solely as an investment asset, providing a return on capital and effectively acting as a "passive" asset subject to market valuations for its return on investment: "the rate of return on capital [my underlining] measures the yield on capital over the course of a year regardless of its legal form (profits, rents, dividends, interest, royalties, capital gains, etc.), expressed as a percentage of the value of capital invested" (Piketty 2015:52). However, addressing real estate from within its traditional analytical construct as presented earlier, the income streams and economic benefits can be parsed more finely with respect to the categories of labor and capital.

Although Piketty does miss this distinctionwith respect to urban property, he does make the case for a more nuanced understanding of the capital that plays the utilitarian or "labor" role in real estate. In discussing the notion of the marginal productivity of capital, he is certainly wary of the potential confusion in defining the capital-labor split: "[f]or example, if an owner of land and tools [and home] exploits his own capital [to pay for said land, tools and home], he probably does not account separately for the return on the capital that he invests in himself. Yet this capital is nevertheless useful [in supplying these functional necessities], and his marginal productivity [as applied as his labor, or output] is the same as if the return [or cost of provision and use of these necessities] were paid to an outside investor [or "rentier", external owner, etc.]" (Piketty 2015:215). However, a discussion of these detailed economics of what is termed "owner-occupied" real estate is not pursued at this time, but is the subject of a subsequent, focused application of Piketty's theory.

4.2.1. The Bifurcated Income Streams

With respect to these bifurcated roles of real estate, it should also be noted that the capital flows that occur "*over the course of a year*" (as Piketty describes) are actually associated with its utilitarian contribution to broad economic production and therefore more closely aligns with the function of **"labor"**, than that of "capital":

- The capital that the building owner receives in return for providing the space for utilization in the economic production activities of its tenants is derived from the "legal form of capital" known as *rents*. This capital flow, after paying operating expenses on the property, is reduced to an income stream known as the annual Net Operating Income (NOI) and serves as compensation for the Opportunity Cost of Capital (OCC) to the owner of the capital invested in the property (for its utility purpose) over the associated annual period.
- Such compensation might be paid in the legal form of *dividends* to beneficiaries if the property is owned through a corporate structure.
- Additionally, real estate acquisitions are most generally leveraged by borrowing

under a mortgage loan, with the result that out of the NOI, the lender is paid the *interest* on that mortgage.

- Furthermore, if the property is a branded hotel or utilizes some specific intellectual property, it might be subject to paying *royalties* out of the NOI.

By contrast, in identifying within real estate the more nuanced components of Piketty's **"income** from capital", these are, according to traditional return analysis, as derived largely from the appreciation in the market price of the property that occurs between when it was acquired and when it is sold and are not received annually, and must be, by definition of its calculation, monetarily crystallized in a disposition of the asset.

4.2.2. The Bifurcated Returns Provided by the Respective Income Streams

Having parsed the income streams on real estate into Piketty's labor/capital categories, a further dissection is required of that which he refers to as "returns". With respect to the proportional economic benefits achieved by invested capital, that is not the actual monetary amount but rather the comparison of that amount to the capital invested and represented metrically as a percentage, he uses the term "return on capital". However, in his discussion of the economics of labor, he refers only to income levels, that is the compensation or wages in monetary terms, and does not refer to a return on labor; though he does discuss in detail the divergence in wages between workers and executives over the past century. In attempting to compare wages to capital returns, he does proceed to incorporate the notion of increasing wages within the rate of economic growth (as it is handled with respect to the macroeconomic metrics of GDP and inflation), and it is here that he makes his most compelling point with respect to the divergence over time between that growth (in wage levels) and the return on capital investment, with the latter persistently outpacing the former.

It is however within the Marxist conceptual framework that an evaluation is made of the levels of wage compensation for labor with the assessment of being "unfair" indicating a poor "return" on effort expended by the worker. Therefore, in terms of neoclassical economic analysis, although Piketty does not discuss a "return on labor", in real estate, given the bifurcation of income streams into those "earned" *annually* by the utilization of the property versus those achieved by the passive investment, a proportional measurement can be made of the former with respect to the funds necessary to provide this utilitarian resource – that is, a "return on labor" is calculated. In evaluating this return due to utilization over a year, the Yield in real estate analysis provides a comparison of the annual Net Operating Income (NOI) on a property, as derived from the rental stream after paying operating expenses, with the amount of money originally paid for it. This is effectively a rate of return on the invested capital achieved by its utilitarian contribution and should compensate fairly for the provision of that resource component of general economic production – it is "capital" performing "labor" as a useful building.

With respect to Piketty's other return component, the return on (passive) capital, that being capital invested for a return related to the price appreciation, real estate's duality of capital flows does also provide for a simple proportional metric concerning those flows from the asset. The specific calculation of the rate of return on a real estate investment with respect to its passive increase in asset value is made by comparing the appreciation in value of the property that has occurred (perhaps after having adjusted for inflation to produce a "real" metric), that excess being termed the "profit", with the original amount of capital invested. The basic equations for this calculation are:

Profit upon Sale = Net Sales Price – Acquisition Price

Return on Invested Capital = Profit/Capital Invested

This profit on the capital invested relating purely to the appreciation in value of the property is often referred to the as the "capital gains" (as also used in Piketty's definition) on the property, and the comparison of those capital gains with

the amount of capital invested can be termed the "Capital Return" within the meta-theory outlined here.

4.2.3. The Total Return on Real Estate

Having elucidated the dual returns from real estate as they reflect Piketty's bifurcated returns from labor and capital, and noted the respective terminology of those returns as being *yield* and *capital return*, a complication occurs in that the most common sophisticated analysis of a real estate investment is made by a calculation of the *total return (on the capital invested)*, combining both yield and return due to appreciation into a single metric. In its fully detailed analysis,a real estate investment is investigated for what is termed the Internal Rate of Return (IRR) which makes a projection of anticipated annual yields for an elected holding period or investment horizon and combines this with the appreciation on the property achieved or anticipated at sale, with all cash flows in the analysis being subjected to an appropriate discounting according to the Opportunity Cost of Capital (OCC) of the investor to adjust for the timing of the funds flows. This total return measure by the IRR is therefore represented conceptually as:

IRR = (Total Annual Yields during the Holding Period + Return on Appreciation)/OCC

This concept of total return does present a complexity with respect to Piketty's labor/capital dichotomy because for real estate to provide both the utilitarian function and the investment function it uses a common fund of capital (the acquisition price) and involves a singular means (the property) for meeting both economic purposes, that being to achieve both income from "labor" and investment returns for "capital". This singular resource seemingly differs from Piketty's concept of labor and capital having different sources, from the worker and the investor respectively.

However, if compared with an operating factory in the typical Marxist framework, whereby the owner of the factory pays for both the machinery and the labor and receives income based solely on the product produced, in this modification for real estate of the funding of economic production, the owner of the property funds the provision of space for the labor of the tenants and receives income derived from those tenants' productive activities, be they manufacturing, office work, services, retail, entertainment, etc.. It is a slightly different dynamic of payments but similarly a combination of funding of the physical asset with an external labor component but, in the case of real estate, the income provided to the owner is, although effectively derived from the rewards of economic production, the compensation only for the use of the space and does not include that contentious "surplus" to the owner derived from labor in the Marxist analysis. Should rental rates be seen by the tenants to be "surplus" to the productive value of the space provided, they will move to cheaper premises. Therefore, despite the concept of a combined total return analysis that may tend to muddy the evaluation of real estate with respect to Piketty's labor/capital dichotomy, its composition of the two, distinct forms of capital flows and return metrics enable its economic dynamic to be mapped to his construct.

5. Divergent Returns Lead to Persistent Inequality

Returning to Piketty core proposition with respect to inequality: he maintains that the higher increases in income to capital in contrast to labor is related to the fundamental dynamic of capitalist economies whereby, when the general rate of economic growth is low, it is exceeded in magnitude by the rate of return on invested capital.

With respect to real estate, it is the yield, or return on the utilitarian function of the property, that tracks general economic growth since it is based on actual income earned on the use of the property, derived from current rental rates as they respond to the broader economy. This correlation can be demonstrated by considering the more utilitarian buildings of the New York City suburban office market with respect to the GDP of the USA as shown in Figure 3 below. This correlation specifically excludes the so-called "trophy assets" of Manhattan that have been shown to be purchased based on anticipated price increases rather than current yield.

Figure 3: New York City Office – Suburban market Yield Spreads generally tracked around general Gross Domestic Product growth between 2002 and 2017, with some expected aberration during the excessive boom and bust occurring 2006-2009 and a correlation coefficient 0.34. RCA data.

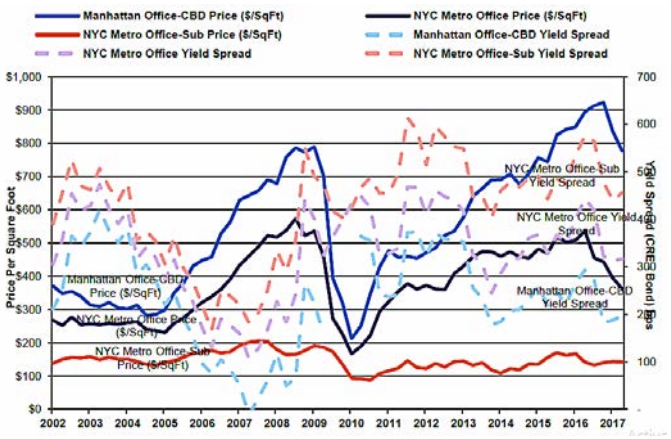

Figure 4. The correlations between Prices and Yields on office properties in the Manhattan CBD, NYC Metro Office, and NYC Metro Office–suburban areas. RCA data

In contrast, with respect to those Manhattan CBD Class A office buildings there was found to be a very weak inverse correlation of -0.13 between their Yieldsand GDP, with various studies (Chichernea, et al. 2008; Real Capital Analytics 2017) having demonstrated stronger correlations with supply/demand dynamics and capital flows, respectively.

Therefore, in seeking to compare the returns on real estate with respect to its return on capital as reflected in its appreciation in price versus its annual returns, or yield, Figure 4 below shows the comparison for New York City office properties with the markets of the Manhattan CBD, the NYC Metropolitan Area, and the NYC Suburban broken out. For the Manhattan office market, where the predominance of real estate investments were made between 2002 and 2017, the rise in prices that would deliver high levels of appreciation significantly outpaced the increases the yield, or annual returns on the utilization of the space.

Therefore, despite being more erratic, the general historical pattern over the long term for the appreciation of commercial property has been that it exceeds general economic growth rates and provides a substantial, additional return to the owner that can be categorized as return on invested capital.

5.1. **Applying Piketty's Construct to the Study of** Inequality in the Urban Built Environment

With Piketty's direct reference to the ownership of land being at the heart of the early beginnings of economic inequality, soon followed by the ownership of the industrial factories, it quickly calls to mind the question of whether or not the essential ownership of property, and how this ownership is leveraged and rewarded, might be somewhat related to the stark socio-economic inequality represented in the urban built environment today. Furthermore, if the role of the land or the factory in economic production, with its divergent benefits to those that own versus those that toil upon or within, is extended to an analysis of urban real estate and its bifurcated roles,, the current stark inequality in the provision of urban "shelter", such as most obviously evidenced by the lack of affordable housing (for labor) in contrast to the proliferation of luxury apartments (for capital investment),the framework posited by Piketty regarding socio-economic inequality is pertinent.

Undertaking some introductory empirical utilization of the bifurcated classification of capital returns in the investigation of the inequitable situation in the urban built environment, Derrington (2018 forthcoming) presents the contrast in the return performance

between the Manhattan CBD Class A office market, as a proxy target for returns on capital investment, and the New York City Metro Suburban area office market, as representing a target for yield investors. The results demonstrated that the capital seeking investment returns, as a result of price appreciation, does not have the interest in the (more moderate) annual returns or yields delivered by the properties with basic utilitarian functions such as Class B or C office buildings, moderate-rate apartments, necessity retail, or such. As a result, an abnormal proportion of real estate capital was directed to the development or acquisition of the "trophy" segment of the New York City office market, particularly from 2010 through 2017. An adverse consequence of such predominance of capital flows to "investment properties" has meant that less investment and development has been undertaken in the more utilitarian segment of the commercial and residential markets. Consequentlythose industries requiring low base production costs, such as the garment industry, makers, and artists, are being forced out of Manhattan; and workers requiring moderately priced housing are displaced from the "gentrifying" areas. Just as Piketty (2015) warns of the potential societal concerns emanating from the increasing macroeconomic Capital/Income Ratio, similarly the imbalanced flow of capital into certain property components of an urban environment, with others being neglected, might be at risk of provoking community unrest, such as is found in the growing opposition to luxury developments in major cities.

6. Conclusion

Does the underlying market-based dynamic of real estate activities in the capitalist economy inevitably result in unequal outcomes for an urban environment? Or, is the private property development process capable of including a more balanced resolution between the financial benefits of building production and the desired equitable socio-economic use and provision of habitation in today's cities?

To address these questions there is the need for a theoretical framework that affords both a deeper and more nuanced understanding of the capitalist urban economic structure by which the built environment is most commonly delivered and a rigorous construct by which the socio-economic outcomes can be interrogated with a view to informing that private business model of development, its participants, and those who seek to influence it. Given certain twenty-first century theoretical explorations by Beauregard (2017) and Weber (2015) that acknowledge the persistence of the neo-classical model in the production of the urban environment, but also incisively identify its analytical short-comings or the imbalance of motivating forces, respectively, the stage is set for potentially useful cross-paradigm investigations of urban development. Additionally, the mainstream tools of financial analysis applied to real estate have been simultaneously expanded and refined by scholars providing more granularity to the evaluations of real estate return performance and market trends and, together with more extensively reliable data collection, more incisive elucidation of the inherent economic variables and factors underlying the market cycles.

While there has been some criticism and discussion of Piketty's assumptions, technical and moral, in his treatise *Capital in the Twenty-First Century,* he does tenaciously and effectively produce a framework for investigating socio-economic inequality within the capitalist system as it exists that is very pertinent and applicable to investigating the stark inequality of habitation in the urban built environment. With his reference to the Marxist split between "labor" and "capital" in an historical presentation of the inequality of returns and the consequential potential for political leverage and sustained status of each respectively, Piketty's economic bifurcation is useful in considering the purpose, returns, and contributions of real estate:

- Firstly, in providing the utility of shelter, the "labor" of the property, with the moderate financial compensation – the annual yield as derived from rents – and as such intertwined with broad economic growth; and,

- Secondly, in acting as a store of value or increase in wealth through the passive appreciation in the price of the property in response to the investment market, rather than by its utilitarian function, and achieved over the long-term holding period with crystallization at the point of sale, and termed the return on investment "capital".

This bifurcated framework of economic analysis affords a new and explicit possibility of interrogating the distinct nature of those returns, how they occur in the market place, who benefits, and what types of properties are favored and those not.It provides a efficient methodology for elucidating the dynamics of how economic inequalities become manifest, in urban real estate development.

Piketty investigates inequality even more precisely with his proposition that generally in history the rate of return on the investment of capital, denoted by r, has exceeded the rate of growth of the broad economy, denoted by g, and is presented as r > g. In this paper, his comparison of these metrics has beenexplicitly related to the economics of real estate: his "r" or return on capital mapped to the anticipated return on the value appreciation or capital gains of the real estate investment, and the "g" or growth of the broader economy as a proxy for wage growth is mirrored in real estate by the annual yield on the utilization of space which inherently increases in relation to that broader economy as demand for space increases or decreases. Similarly, though subject to some additional industry-specific cycles, the returns on invested capital in real estate have historically been higher than those of the yield, and this disparity has been particularly pronounced during economic booms. Consequently, the diversion of real estate capital to the higher returning property types (and locations) means that the moderately priced parts (buildings or districts) of an urban built environment are neglected in terms of investment. And furthermore, it is found that certain new development, such as affordable housing, has been undersupplied in many urban areas in favor of the delivery of luxury housing and, without any municipal intervention, pricing for even moderate housing has soared.

As an early foray into an integrated study of the financial returns of the real estate development process and the socio-economic consequences, this paper unfolds Piketty's key understandings of the capitalist system and its inherent inequality, and maps those concepts onto an investigation of the economic subsystem of urban real estate development and ownership, seeking to elucidate the specific dynamics of that system which lead to the current situation. Although, at this early stage of such theoretical application, specific proposals for constructive intervention in this system are not presented, the general direction for a more detailed investigation and analysis that seeks effective intervention is indicated.

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Morphological and GIS-based land use Analysis: A Critical Exploration of a Rural Neighborhood

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ABSTRACT

The significance of neighbourhood in hosting a group of dwellings units and possessing adequate communal facilities could not be overemphasized in the study of people and place relationships. There are two main objectives of this study: (i) to study the neighbourhood's associated challenges through the size, growth, and land use distribution, and (ii) to investigate the perceived inhabitants' activities pattern within the neighbourhood. The objectives are explored through a morphological and GIS-based land use analysis of a rural neighbourhood in South-west, Nigeria. The town is studied in three transformation phases, dating back to five decades using ArcGIS version 10.3. The 1st phase spanned between the year 1910 to 1959, while the 2nd and 3rd phases ran through the year 1960 to 1999, and year 2000 to 2015 respectively. The exploration in this study is to document the diverse neighbourhood challenges, features, and prospects, which remain uninvestigated in the case study area for the past years. The first finding revealed that some challenges needed to be resolved in a bid to meet the residents' current basic needs. The second finding indicated that the rural settlements in Nigeria emanated from the residents' adaptation to the environmental conditions, cum transformation through human activities. Meanwhile, the third finding established that the human settlements evolved in connection to the local socio-economic, recreation and religious virtues of the traditional marketplace (Oja). In conclusion, human historical and social influences play a significant role in ameliorating the challenges associated with the spatial developments of the settlements. The implication of the study becomes vital to the major stakeholders and professionals in the built environment on the significance of enhancing the sustainable communities in Nigeria.

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1. Introduction

Neighbourhood as a place in built environment refers to a fractional part of a city or suburban area which offers a residential environment and allied facilities for lower percentages of residents' population (Nadeem, et al., 2013).In other words, the neighbourhood could be perceived in terms

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of residents' populationcapacity that may range from 2500 to 25000 residents, with the sizes up to 30 acres (Nadeem, et al., 2013). The neighbourhood environment such as rural town and villages can be studied in its totality of the existing surrounding conditions (Aydin & Buyuk, 2014; Berk, 2005). Similarly, it could be seen as a recognized boundary whose characteristics are derived primarily from its components. The components involve physical, cultural, and social aspects. Rural neighbourhood environment could be described as a fractional key node of activities within a portion of a suburban area serving as a residential environment equipped with necessary facilities for a fewer percentage of residents' population (Agboola, Rasidi& Said, 2016). Rural neighbourhood indicates a connection between the residents' population, the degree of its remoteness, and physical features in comparison to what is obtainable in urban or city centres (Salamon & Mac Tavish, 2009). The authors acknowledge, rural as perceptual functions hinge on the population size of the residents and parameter of such locality.

The meaning of rural in this study is coined as a place with fewer agrarians' population of residents having a specific local identity. In this vein, rural neighbourhood according to Duxbury and Campbell (2011) could be ascertained based on a variety of characteristics such as population density and size, socioeconomic characteristics, residents' status, the level of development, and cultural affinity. The primary function of the neighbourhood is to acts as a link between the physical and social dimensions of shared and liveable spaces (Kazmierczak, 2013).

Recent development in the field of rural and urban design, landscaping, architecture, engineering sociology, urban geography among few have called for proper exploration of neighbourhood and morphology concepts with respect to its size, design, transformation, and planning.

Morphology is described as the formation of plots, buildings, use, streets, plans, townscapes (Gordon, 1984). The significance of morphology is reflected largely in that it enables the documentation of spatial aspects of urban and sub-urban developmental viewpoints. In the words, it assists in producing concepts and generalizations related to the character and classification of land use within the suburban area, and to the spatial interactions of cities growth, through internal structure and processes (Goodall, 1987; Herbert & Thomas, 1982). In addition, morphology is useful in solving some urban and rural planning related challenges, and appraisal of features and prospect by the decision makers in the built environment (Whitehand, 1987). Historically, the planning idea originated from Howard's garden city movement (Kallus&Yone, 2000; Spreiregen, 1965) when efforts were geared towards combating problems associated with excessive use of automobiles for daily movement and suburbanization during the 20th and 21st centuries (Nadeem, et.al., 2013).

While affirming the associated landscape challenges in Nigeria, Onwuanyi, (2017); Fadamiro & Atolagbe, (2006); Officha, Onwuemesi&Akanwa, (2012) and Agboola, Zango&Zakka (2015b), submitted that the unplanned land use experienced in most Nigerian neighborhoods has affected the adequacy of the landscapes in diverse ways. Therefore, it becomes imperative in studying the transformations in the physical spatial conditions and development pattern of a typical rural town in Nigeria. This is a view of proffering solution to the associated challenges in land use activities.

The objectives of this quantitative and qualitative study focus on the followings: [i] studying the associated challenges with the town through the size, growth, and land use distribution [ii] exploring the perception of the inhabitants (stakeholders and professionals in the built environment) on various activities pattern within the town. The two objectives will explore residents' perception of the quality of neighbourhood land use provisions and transformation in physical development of the neighbourhood. Research questions will answer the following: [i] what are the factors that contributed to the transformation of the case study neighbourhood? [ii] Does the quality of the rural setting affect the perception and interaction of community residents?Understanding the existing morphology of a settlement would constitute a vital factor towards creating an

appropriate future developmental intervention. This would, therefore, possess a veritable tool for the rural planning and design in Nigeria.

2. Review of literatures

2.1 Geographical Information System, Morphological spatial Analysis and Land Use Planning

The most useful applications of Geographical information system (GIS) is for planning and management of the land-use suitability mapping and morphological spatial analysis (Brail and Klosterman, 2001; Collins et al., 2001). Notably, the land-use suitability is targeting at identifying the most appropriate spatial pattern for future land uses taken into cognizance the specify requirements, preferences, and predictors of some residents' activities (Collins et al., 2001). Various past studies have adopted the GIS-based land-use suitability analysis in a wide variety of situations including landscape evaluation and planning (Miller et al., 1998), and viable regional planning (Janssen & Rietveld, 1990).

In the same vein, plethora of studies have been initiated towards solving neighbourhood related problems such as: improving residents' sense of community, improved residents' social interactions within the neighbourhood, provision of adequate security, improved neighbourhoods' environmental pollution, and health problems (Francis et al., 2012; French et al., 2014; Middleton, 2010; Bonilla 2013; Peter et al., 2010; Song &Knaap, 2003; Broadbent, 1990). Improved general features of neighbourhood lead to the new urbanism that enhances the design of high density, and good neighbourhoods transportation network. This could also target social cohesion and environmental sustainability (NU, 2002; Rubenstein, 1987).

Another concept of eco-towns promotes the design of environment-friendly neighbourhoods with zero-carbon buildings (Barclay, 2011; Nadeem et. al., 2013). Likewise, Berk, (2005) opined that residents' activities and continuous lifestyles formed parts of the basic factors that shape the social environment. This issue was further argued by Meenakshi, (2011) as the causes of segregation in the social environment as against the physical neighbourhood environment.

2.2 Components of Rural neighbourhood and its Morphology

Neighbourhood essential components provide natural and cultural features to improve community infrastructure, in which its social status promote neighbourliness. According to Galster (2001), neighbourhood consist of [i] structural characteristics such as residential and non-residential buildings with various scale, materials, design, and landscaping, [ii] infrastructural characteristics incorporating roads, sidewalks, streetscaping, utility services, [iii] demographic characteristics of the residents population, hinges on age distribution, family composition, ethnic, and religious, [iv] class status characteristics of the residents' population compositions, [v] environmental characteristics showing the degree of land, air, water, noise pollution and topographic features, [vi] social interactive characteristics, including quality of interpersonal associations and residents' perceived commonality, [vii] residents' sense of identification with place, and historical significance of buildings. In view of this, organised settlement enhances users' opportunities and sustainability of the environment (Nasuh, 1993; Agboola et. al., 2015 b).

However, the literature suggests that a neighbourhood unit should be socially and environmentally sustainable in terms of provision and location of residential accommodation, public facilities, commercial areas and utility services (Bramley& Power, 2009; Dave, 2011). In the same vein, neighbourhood planning should have its aim rooted in the provision of essential amenities capable of enhancing ethnic's interactions and maximum utilization. Shaping attributes of the neighbourhood in multi-ethnic groups should constitute an equal right of access, right of use and equal ownership or control (Megalhaes, 2010). The cultural activities influence the transformation process and then impacts on the change of physical structure social value (Boblic, 1990; Rapoport, 2004; Karakul, 2009). People as the users of built environment react to the transformation process

that appears in various ways; such resistance, acceptance, re-adoption, and creation new meanings. These could be traceable to the changes in the physical elements as well as the spaces arrangement (Rapoport, 2004; Ganis, 2009).

Meanwhile, the rural neighbourhood composed of diverse open green spaces enabling recreational, religious, social, aesthetic, psychological and economic activities (Kaymakli, 1990; Akinci, 1996; Yildiz, et al., 2011, Agboola, et. al., 2015a). The morphological changes manifest in terms of the social, environmental and economic context that showcased the effect of human cultural actions which culminated in the formation and transformation of neighbourhood built environment depicted in Figure 1.

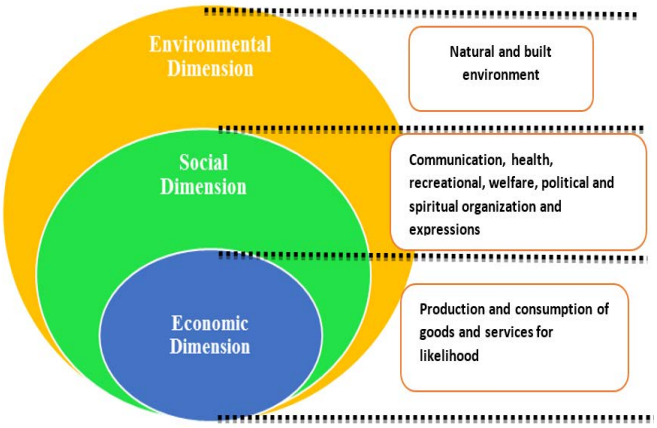

Figure 1. Dimensions of Neighbourhood formation and transformations. Adapted: Pillai, (2013)

Rural morphology dwelt with the various forms of historical approach in relation to the developmental processes of diverse historical periods. The approach explains in details the relationship between the social processes and the observed physical development. An environment where community residents live is surmised into natural, artificial, and social areas (Aydin &Büyük, 2014). It is argued in this study that the artificial environment relates to the physical environment as evolved by the human requirement that changes over time. The social environment is coined as places meant for human social interactions. And lastly, the artificial environment is the one influences man-made features such as buildings, roads, and other land features. According to Zhang and Li, (2012); Arianeet. al., (2005) neighbourhood environmental characteristics consists of accessibility, amenities, sociability, aesthetics, safety, and policies. The characteristics of which can either to enhance or discourage people's perception and influenced by usage, shared experience, and gainful opportunities derived (Kazmierczak 2013; Peter, et. al., 2010).

In other perspectives, peoples' interest has been shifted towards encouraging communities and identifying the heritage values of their locality. For instance, in England community-based work is being advocated by the Common Ground organization which was saddled with initiatives to preserve the distinctiveness of localities. The Common Ground (2009) roadmap project recorded a huge success in uniting local communities and mapping the significant aspect of a place. In Australia, as reported by Stephenson (2010), the Commonwealth government has promoted a technique of cultural mapping aiming at helping communities support the cultural diversity for economic, social and regional development (Commonwealth Department of Communications and the Arts, 1995). Comparing their motive with the Common Ground (2009) their methodology involves encouraging community groups to record and conserve their culturally important resources through various means, such as histories, thematic walks, or improvement schemes.

2.3 Rural neighbourhood services, facilities and Features

The rural services and facilities could be categorized as primary and secondary. Primary services and facilities include a general food store, post office, bank, libraries, health centre, and green space such as village green, green street edges. Others include public toilets, public seating, and transport stops. The secondary services and facilities include open spaces like market squares, parks, and recreation grounds, and community facilities such as a stadium. Other includes road lighting systems, traffic signals, domestic water systems, sanitary sewer systems, parks and recreational facilities, public schools, police and fire protection buildings. These are

essential elements useful in providing a livable community, transformations, and enhancing the quality of life (Massam, 1993).

Two groups of services are iterated by Jenks and Jones, (2010). The first group represents indispensable elements called infrastructures such as transportation (streets and roads networks), water supply networks, sanitation, drainage, solid-waste management, electricity, and telecommunication. The second group includes urban services and facilities such as educational, health, commercial, industrial, administrative, cultural, religious, social services and green space. Winter and Farthing, (1997) identified local neighbourhood services and facilities in the United Kingdom context and iterated the compositions of a food shop, post office, pub, supermarket, primary school, and open space. Other services that need frequent access include a chemist, restaurant (Burton, 2000a), bank or building a society (Barton et al., 1995) and community centre (Dempsey et al., 2009). Empirical study has reinstated that the environment is capable of encouraging peoples' physical activity (Goldstein, 2002). According to Onibokun, (1973), a neighbourhood in Nigerian context encompasses physical, social and psychological variables. Consequently, the neighbourhood acts as meeting and connection place make a significant contribution towards fostering community identity, social interactions, and community revitalization. In another perspective, the characteristics and features of neighbourhood possess an ideal place for communal interaction (Aydin and Büyük, 2014). The Nigerian neighbourhood transformation before and after colonialization has affected by people's culture in the society in recent time. Consequently, the physical and social characteristics could help concretizing a proper understanding of the built environment which has affected the socio-cultural structure of the economic and general conditions of villages.

The neighbourhood environment characteristics in Nigeria as presented in Figure 2 could be grouped as natural, artificial, and social characteristics. Meanwhile, the artificial explained in details the physical environment evolved by people over a considerable period of time. The artificial environment is influenced by buildings, roads, and settlement styles. Following this, the social environmental characteristic relates to places where people interact, and also hinged on the residents' socioeconomic prosperity, cultural attachment, and functional attributes. Meanwhile, personal and social identities of residents such as ownership, belonging, tolerance and respect determine the neighbourhood identity character (Aydin and Buyuk, 2014).

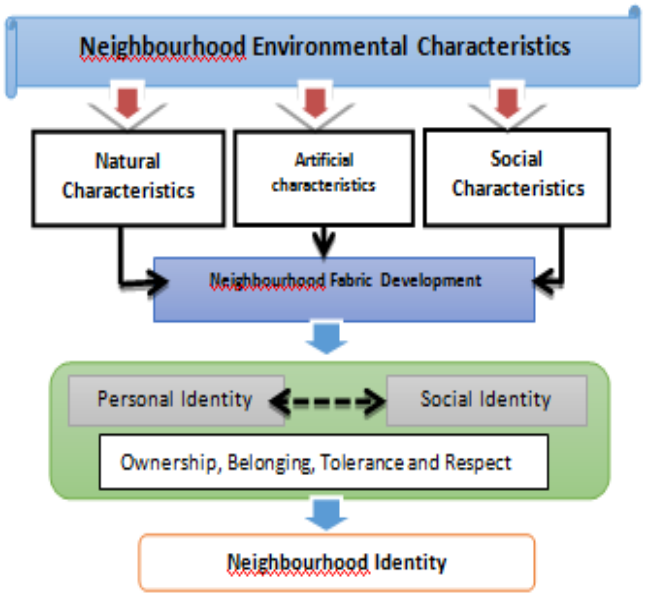

Figure 2.Neighbourhood characteristics. Adapted from Aydin and Buyuk (2014)

3. Rural Settlement Pattern in Nigeria

A settlement is a collection of buildings where inhabitants live and earn their living (Ahmed, 2009; Olawepo, 1999). However, the settlements vary in size from small hamlets to large cities. Rural settlements according to Weir and McCabe (2012), are areas with relatively low development densities. A rural settlement pattern inferred the manner in which buildings and other forms of structures are distributed in a particular location. The pattern is of significant interest to the geographers, historians, and the anthropologists through the provision diverse level of community development over a considerable period of time. Settlements are viewed as a reflection of structural relationships among the architectural, cultural, and social perception of the environment (Aydin &Büyük, 2014; Daniel and

Hopkinson, 1992). In this vein, rural settlements in Nigeria are regarded as settlements with less than 20,000 people and whose population predominantly engages in primary agricultural production (Aderamo & Magaji, 2010).

Hosts of factors influence settlement pattern worldwide (Centanni, 2017; Okoro, 2012; Ahmed, 2009). The first is the economic and human physical influences. In this case, the settlements locations allowed maximum communication between different settlements and increased trade. The second relates to the social factors. These include relief, transportation, climate, drainage, groundwater supply, defense and government policies. The third connected to the ethnic and cultural factors. These include aspects of caste, community, ethnicity, and religion. This leads to social segregation and fragmentation of a settlement into several units. The fourth is the historical or defense influences. In the past, mostly border areas of north-western plains were conquered or attacked frequently by outsiders. These factors culminated in the type and spacing of dwellings. The three major forms of settlements as presented in Figure 3 include the nucleated, linear and dispersed settlements.

3.1. Nucleated settlements

These are settlements that are formed at crossroads or route centres, comprising a large number of houses clustered around a central point such as a market square. They form a commercial nerve of the neighbourhood along a river or road.

3.2. Linear settlements

These are settlements with groups of houses arranged in a linear pattern along a transportation artery. They may not comprise any commercial structures, unlike the cluster settlements. The settlements incorporate the structures that are arranged in a role or line form usually along a river or road seacoast, river valley, mountain ranges. Linear settlement often time developed in response to certain convenience or proximity to transport route among others.

3.3. Dispersed settlements

These are settlements that have no obvious centre in which the structures are spread out or scattered over a considerable expanse of land from which the occupants derive their livelihood. They are also known as isolated settlements in which the buildings are spread out in a scattered form. This type of settlement is often formed in a remote or sparsely-populated area. Disperse settlements pattern are often associated with agricultural activities in a farmland region.

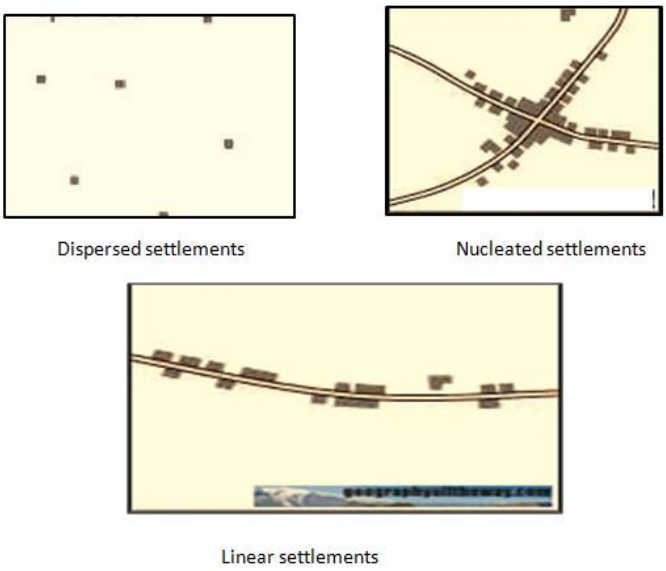

Figure 3.Three forms of human settlements. Source: www.google.com

4. Research method, measurements and data analysis

For planning and management, the most commonly used applications of GIS are the land use suitability mapping and analysis (Brail&Klosterman, 2001; Collins et al., 2001; Herzele & Wiedemann, 2003). On a wider scope, land-use suitability analysis through the GIS application has the potential to provide a useful monitoring tool towards the use of neighbourhood green spaces and their changes (Herzele& Wiedemann, 2003). Similarly, the procedure is capable of appropriating adequate spatial pattern for future land uses in a bid to establish specify requirements, preferences, or predictors of some activity (Hopkins, 1977; Collins et al., 2001).

Morphology is often used to present the changes in the physical and spatial transformation of landmark features in landscape architecture. It has helped in depicting a graphical

representation of neighborhood changes and enables the calculation of the time wise increase in area spatial expansions. This study adopted morphological method as previously studied by some scholars such as Chen (2011); Na et al., (2009) and Doralti (2004). The increasing use of Geographic Information Systems (GIS) provides objective measures of comprehension of types and other neighbourhood accessibility measures such as diversity of land use. Therefore the morphology procedures involved the use of maps to ascertain the development and changes in the physical and spatial patterns of neighbourhoods.

Three periods were considered in this study namely: colonial period of pre-independence (the year 1910–1959); the post-colonial period after independence (the year 1960-1999), and modern movement in landscape architecture (the year 2000-2015). The analysis procedures included (i) gathering, collection, and updating of existing features and elements of the neighborhood through on-spot assessment, (ii) the maps were produced based on the timewise periods and digitized by using AutoCAD software (version 2012). The digitizing was done for the purpose of exportation into the ArcGIS version 10.3, and for subsequent mapping, (iii) the maps weresuperimposed to deduce the changes in the spatial development and features. In line with the previous study of Malczewski, (2004); geographic information systems were used to determine the various land-uses of the neighbourhoods such as (i) areas covered by the market square as commercial zone, (ii) residential and government coverage areas, (iii) educational institution coverage areas, (iv) religious coverage areas, and (v) green and open space coverage areas. The procedure adopted for the evaluation of the neighbourhood land-use areas of the case study town. Summarily, the examination is based on the physical form of the town, taken into cognizance the link between the physical form and socio-cultural context. The mapping of the neighbourhood is a systematic approach targeting the identification and classifications of a community's cultural resources (Rowe, 2012).

Perceived neighborhood characteristics and preferences parameters were adapted from Handy et al., (2004). The study adopted a quantitative research method using relative Importance Index (RII) to analyze the collated data using a Likert scale. The parameters considered include (i) rating of the present conditions of the neighbourhood and adjoining land features encourages easy accessibility (human and vehicular access, RPN1), (ii) rating of the present conditions of the neighbourhood that encourages safety via quietness and low crimes [RPN2], (iii) rating of the present condition of the neighbourhood that encourages interactions (socialization) among all groups through provision of benches, walkways etc [RPN3], (iv) rating of the present condition of the neighbourhood that encourages peoples' attractions through the level of its cleanliness, housing styles and streets' green landscapes [RPN4], (v) rating of the present conditions of the neighbourhood that encourages lots of off-street parking such as garages and drive ways [RPN5].

Respondents (Stakeholders and professionals in the built environment residing in the community for more than two years) were purposively sampled and requested to rate their level of agreement or disagreement with the series of statements on a five-point scale from strongly disagree [1] to strongly agree [5]. Relative Important Index (RII) was appropriately used to cross-compare the relative Importance index among the perceived constructs by the respondents. The formula adopted for relative importance index (RII) is in line with past studies of Agboola&Salawu (2015) and Agboola, et al., (2017) as follows:

$$RII = \frac{\sum fx}{\sum f} \times \frac{1}{k} \quad \text{.. eqn. 1}$$

Where:

RII = Relative importance index

∑fx = the total weight given to each attribute by the respondents

∑f = the total number of respondents in the sample

K = the highest weight on the Likert scale which is 5

5. Study areas

The geographical location of South-WesternNigeria as depicted in Figure 4, lies between the parallels 5.86^0 and 9.22^0 North, and

between 2.65⁰ and 5.72⁰ East with an estimated area of about 181,300 km² (Atanda, 2007). South West Nigeria has six states; Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo. It is majorly a Yoruba speaking area, although there are different dialects even within the same state. The weather conditions vary between the two distinct seasons in Nigeria; the rainy season (March – November) and the dry season (November–February). The dry season is also the bringer of the Harmattan dust; cold dry winds from the northern deserts blow into the southern regions around this time. Ijebu-jesa as the case study neighbourhood lies on Latitude: 7° 40' 57.61" N; Longitude: 4° 48' 51.70" E. Ijebu-jesa is the capital of Oriade Local Government area in the Osun State of Nigeria. It is a commuter city with connections to Ekiti State on one side, Ondo State on another and it has a border with the famous Ilesatownship. The area is surrounded by towns such as Iwoye-jesa, Iloko-jesa, Ere and Ijeda.

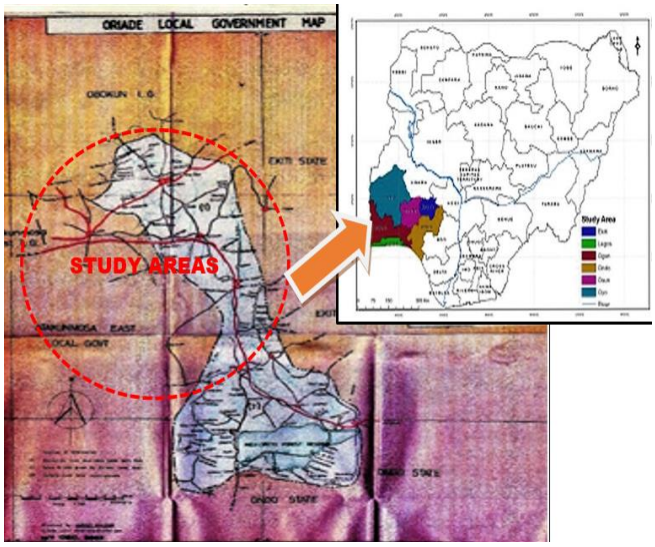

Figure 4. Map of the study areas and its position in Nigeria.
Source: Agboola et. al., (2018) and www.google.com

6. Results and discussions

6.1. The transformation in the town's size, growth and land use distribution system

The nature of planning during the ancient period was such that it was undertaken by traditional leaders in consultation with community members based on their social-economic needs. The developments were in form of haphazard with crooked and irregular lanes ended up at wide open space at the centre of the settlement. The open spaces were used as marketplaces (oja) and meeting grounds for deliberations on community issues. This early development comprised sub-divided compounds and occupied by related lineages were in clustered form with small lanes and streets in between them. The rationale for such spatial configuration was to protect the inhabitants from external aggression. Humans operate on various tangible and intangible elements of cultural dimensions. Figure 5; identify the comparison of the land use for the three transformation periods of the Ijebu-jesa built form.

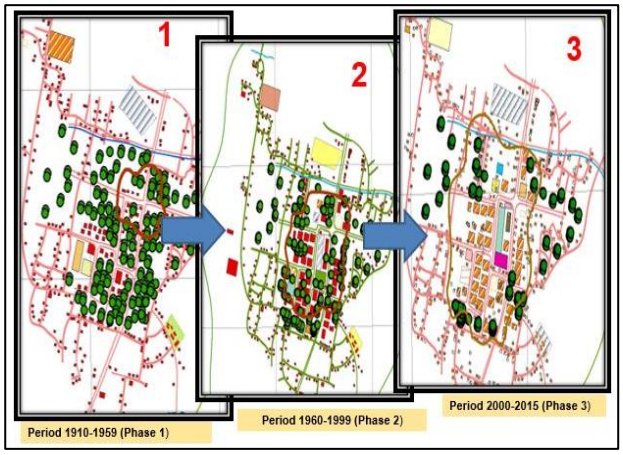

Figure 5. Comparison of the land use for the three transformation periods of the Ijebu-jesa built form.

6.1.1. Period 1910-1960 (Phase 1)

This historic period covers almost fifty (50) years of existence of the town. Meanwhile, the period is classified as pre-colonial and colonial periods of the open space's planning in Nigeria (Oduwaye, 1998). At the same time, this period is associated with the existence of traditional landscape. The spatial characteristics of this period associated with the existence of about 2.62 km² (4.74%) of both the residential structures and government structures (Figure 9). The greatest greenery and open space areas of 48.92 km² (88.41%) were available during this period as shown in Figure 7. In view of this, the location of the market square (*Oja*) and shrine (*ojubo-orisa*) at the core of the neighbourhood created cluster types of settlements pattern. There were no planning

concept and expertise at this period, as the pacesetters and founders were King (Oba), chief (*Oloyes*), and the community residents. Therefore, the coverage area of the market square (*Oja*) was about 1.04 km^2 (1.88 %) with virtually no spectacular facilities (Figure 8). Hence, the general level of development of the neighbourhood was at lowest ebb as shown in Figure 5. It is noteworthy to state here that there was virtually little or no human and vehicular congestion at this period.

6.1.2. Period 1960-2000 (Phase 2)

The period of 40 years refers to a postcolonial period, after independence associating with researchers' awareness on industrialization, urbanization, planning, and preservation (Falade 1989; Oduwaye 1998; Oyesiku 1998). Meanwhile, others include an appreciation of open space greeneries. Historically, the industrial revolution seems to have negative and devastating effects on the environmental landscape during this transformations period. Therefore, this period informs peoples' awareness of the interaction between man and nature, which brought open space planning concept. This equally acted as a bridge between the past and present-day relationships between the society and its environment (Rescia et al., 2008). Similarly, scholars began to advocates the need for the establishment, management, planning, and design of landscape and built environment in general. Hence, Figure 5 and Figure 9 revealed an increase in the percentage of land use features due to the various factors. First was the incorporation of private residential, religious (church and mosque) and commercial structures (banks, shops, eateries etc) which led to a reduction in green space from 48.92 (88.41%) of phase 1 to 39.92 (61.07%) of phase 2. This phase 2 reflect (i) increase in the percentage of the new religious structures [Figure 11] and educational structures [Figure 10], (ii) increase in areas occupied by market square (*Oja*) to about 1.83 km^2 [2.80 %] from 1.04 km^2 [1.88%] experienced between Year 1910-1959 as shown in Figure 5. (ii) Increase in road and street networks and connectivity [Figure 7].

Hence, it obvious that a drastic change of environment and physical character exist at a higher proportion than the former base map features (Figure 5 and Figure 9). In addition to this, reduction in the percentage of greeneries has affected the human appreciation of open space beautifications. This was also traceable to the increase in the population of the community residents at this period. According to the 1991 census (the Final result of 1991 National population census of Nigeria), the population of Ijebu-jesa was 11,680. There was an increase in the population by the year 1996 projected population to about 13,314 indicating an increase of about 12.27 % (Agboola, 2016).

6.1.3. Period 2000-2015 (Phase 3)

The period spans through fifteen (15) years, which solidified the advent of the modern movement in landscape planning and management in Nigeria. The appropriate consolidations of ecological approach towards landscape management were initiated. Also, advocacy was intensified on concern for landscape as cultural heritage. Researchers such as Falade (1989); Oduwaye (1998); Oyesiku (1998); and Adejumo et al., (2012) advocating and taking cognizance of the interrelationship between the people and their environment. Consequently, the increase in the awareness of scholars on the significance of the landscape qualities, design, and management in Nigeria is noted at this period.

The above scenario led to the general debate on the term sustainable development, which could be in form of physical or social developments. This period is experiencing an upsurge in residents' population of about 22,499 (the year 2015 projected population) amounted to about 40.82% (Agboola, 2016 and Figure 9). It is obvious that greater percentages of the green areas seen in phase 1 of development that spanned years 1910 to 1959 and that of phase 2 between years 1960 to 1999 have been taken over by residential, educational and commercial structures (Figure 5). This led to a reduction to about 28.48 km^2 (32.09%) in of the land use coverage by the green space and open space areas in phase 3 of the neighbourhood development (Figure 6 and Figure 9). In other

words, the expansion/urbanization has further created more spaces for (i) area covered by market square as commercial zone with 2.04 km² [2.30%], as depicted in Figure 8, (ii) area covered by residential structures and Government structures with 29.02 km² [32.75%] as depicted in Figure 6, (iii) areas covered by educational institutions with 16.38 km² [18.45%] as shown in Figure 10, (iv) religion coverage areas with 12.29 km² [14.41%] as revealed in Figure 11.

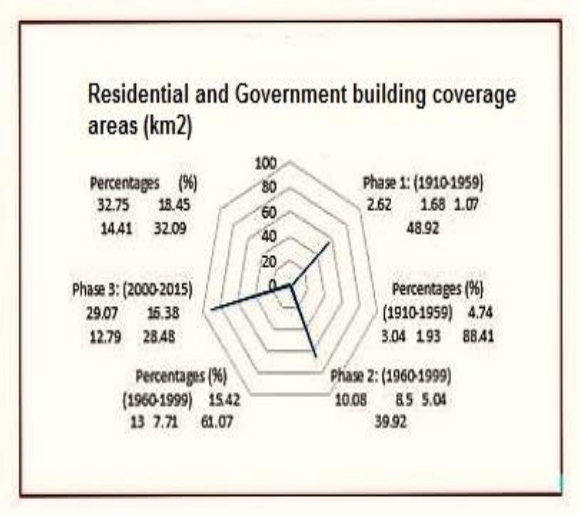

Figure 6. Land use coverage by the residential and Government structures (Km2)

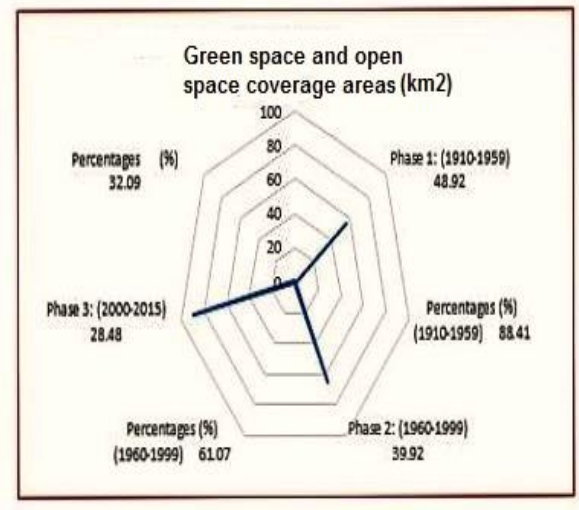

Figure 7. Land use coverage by the green space and open space areas (Km²)

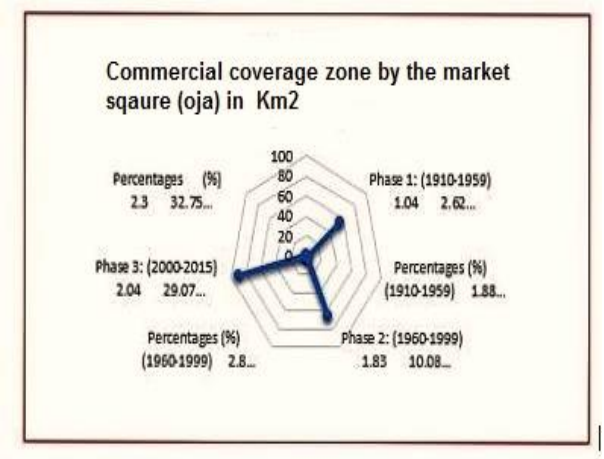

Figure 8. Land use coverage by the market square (oja) in Km²

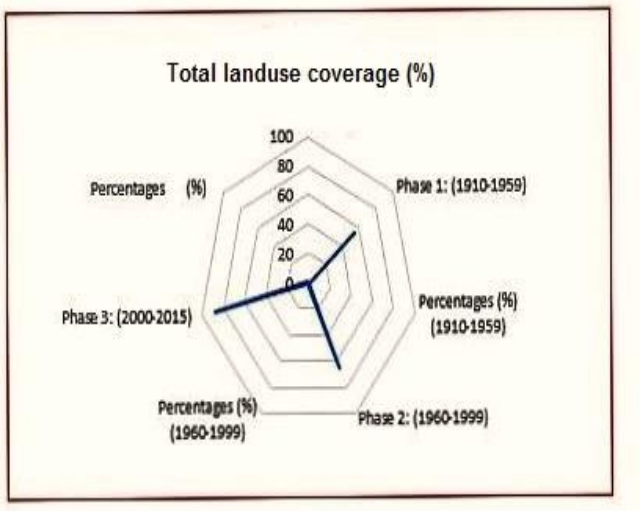

Figure 9. Total land use coverage (%)

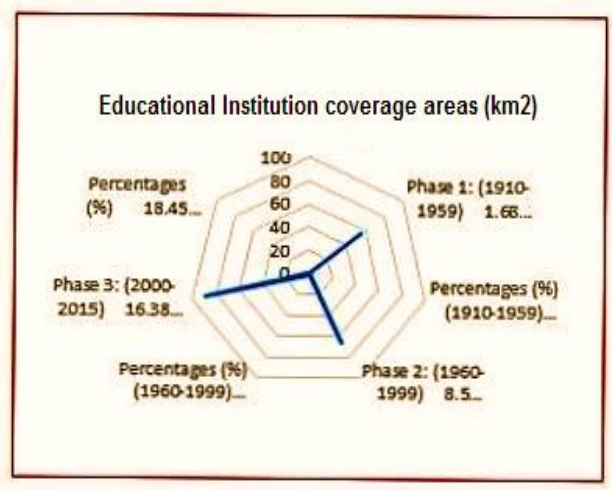

Figure 10. Land use coverage by the educational structures (Km²)

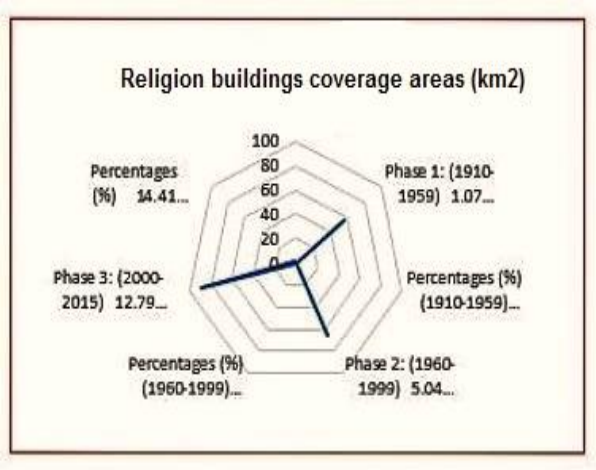

Figure 11. Land use coverage by the religion structures (Km^2)

6.2. Perceived inhabitants' activities on the neighbourhood characteristics and preferences

The non-parametric results of a total number of 18 collated survey questionnaires were reflected in Figure 12 and Table 1. The mean and the relative importance index (RII) analysis presented the followings: (i) respondents' accessibility to the neighbourhood [RPN1] exhibited mean value of 4.61 and relative importance index of 0.92; (ii) neighbourhood safety [RPN2] revealed a mean values of 4.11; and relative importance index of 0.82; (iii) respondents' socialization within the neighbourhood [RPN3] showcased a mean values of 3.77 and relative importance index of 0.76; (iv) respondents' perception of neighbourhood attractiveness [RPN4] depicted a mean values of 3.11 and relative importance index of 0.62; (v) neighbourhood spaciousness via the adequacy of market square conditions and green infrastructures [RPN5] showed a mean values of 2.27 and relative importance index of 0.45.

From the aforementioned, accessibility to the neighbourhood ranked 1st indicating inhabitants gave the highest priority in appraising the suitability of the neighbourhood in the provision of excellent vehicular and pedestrian accessibilities. In other words, the neighbourhood accessibility has been considered in this study as an important aspect of sustainable neighbourhood development, particularly in the social well-being dimension as supported by past study of (Lynch et al., 2011). Accessibility remains the basic requirements to meet residents' free entry thus tends to enhance residents' quality of living (Lau & Chiu, 2003; Landry & Chakraborty, 2009). More importantly, accessibility was identified as an important aspect of environmental determinants for residents' physical activity. Ranked 2nd was the neighbourhood safety. The security and safety available in the neighbourhood space influence the quality attached by the residents. This is in line with the previous study of McCormack & Shiell (2011) in which the residents' safety is considered vital in the overall neighbourhood design.

Socialization within the neighbourhood signified interactions among the diverse ethnic residents. Thus, it is ranked 3rd in the hierarchy. The result of the survey demonstrated that the neighbourhood forms could allow interaction among residents. Due to the low ranking, it is expected that an improvement is needed in the provision of adequate benches, walkways, seat out among others. This is corroborated by the researchers in the field of urban design and planning in which neighbourhood space established as an essential ingredient for social interaction and daily life experience (Madanipour, 1992; Worpole, 1992; Calthorpe, 1993; Pasaogullari & Doratli, 2004). The outcome of the analysis placed respondents' perception on neighbourhood attractiveness 4th in the rank. The attractive appearance of the neighbourhood could be judged in terms of the level of upkeep, variety in housing styles and street landscape, settings and fittings (Sallis, Bauman, & Pratt, 1998). Similarly, it relates to the perception of the physical judgment of neighbourhood by the residents via its aesthetics.

However, the low ranking in the residents' perception in this respect suggests a need for an improvement and proper maintenance. Advocacy for proper neighbourhood facilities and amenities would better enhance its beauty and attractiveness. Last ranked(5^{th}) was ascribed to residents' perception of the neighbourhood spaciousness via the provision of the well-landscaped market square and green infrastructures. This lowest ranking indicates that much effort is needed to enhance neighbourhood spaciousness. The design and planning of neighbourhood open spaces remain

a vital factor in its accessibility. Meanwhile, the spatial design of neighbourhood open spaces and its accessibility influence people's choice (Landry & Chakraborty, 2009).

Table 1. Result of the perceived inhabitants' activities on the neighbourhood characteristics and preferences

		Frequencies of response									
Variables	Codes	5 (Strongly Agree)	4 (Agree)	3 (Neutral)	2 (Disagree)	1 (Strongly Disagree)	Σf	Σfx	Mean	RII	Rank
Accessibility to the neighbourhood	RPN1	14	3	0	0	1	18	83	4.61	0.92	1st
Neighbourhood safety	RPN2	12	2	0	2	2	18	74	4.11	0.82	2nd
Socialization within the neighbourhood	RPN3	9	4	0	2	3	18	68	3.77	0.76	3rd
Level of neighbourhood attractiveness	RPN4	5	4	1	4	4	18	56	3.11	0.62	4th
Neighbourhood spaciousness (market square and green infrastructures' provisions)	RPN5	3	2	0	5	8	18	41	2.27	0.46	5th

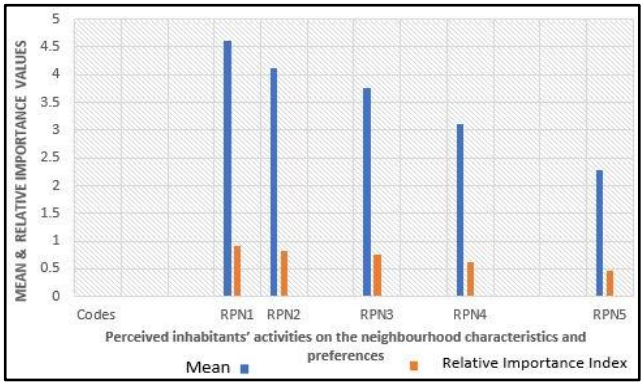

Figure 12. Perceived activities on the neighbourhood characteristics and preferences.

7. Conclusion and Recommendation

The study fills the knowledge gap by identifying the morphology of a rural neighbourhood as showcased by the residents' perception and character favouring future rural planning and design in Nigeria.Additionally, the combination of quantitative and qualitative of this study through relative importance index and the GIS-model allows documentation of neighbourhood comparative studies in Nigeria. The uniqueness of this study relies on the fact that it depicted rural landscape information that intertwines with social information on a neighbourhoodlevel.This allows a better insight into the various deficiencies in Nigerian rural setting. Each transformation period was intertwined with driving forces such as accessibility, urbanization, and globalization.

Meanwhile, the challenges associated with every phase were as a result of the nature of the rural neighbourhood, the pace of the changes, and peoples' perception of the landscape. In other words, the quality of neighbourhood spaces impacts on citizens' patterns of activities. This study approach encircled the classic relationship between people and the sustainability of the neighbourhood environment as a means of enhancing residents' well-being and social needs. As established in this study, the social fragmentation of the rural landscape, however, has not been given dueconsiderations. The major originality of this research lies in the attempt to bridge a gap between the quantitative and qualitative study of rural neighbourhood towards the future design and planning practices. This research thus recommends adequate planning and design of neighbourhood and its adjoining spaces by the professionals and other relevant stakeholders for neighbourhood inhabitants in Nigeria. The knowledge gained from the outcome of the research could be made operational as an integrated monitoring tool that could be adopted by the three levels of government (local, state and federal authorities) in Nigeria.

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Urbanization: Planting Forests in Pots

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ABSTRACT

Taking plants from their original habitat and keeping them in pots is an illustrative example of manmade, power-oriented and unnatural habitation. Naturally, a plant cannot survive in a segregated environment of a pot. For this reason, diverse supportive activities such as watering, feeding or protecting must be planned. These supplying infrastructures create a great power for the caretaker over the life of the potted plant. Using the example of potted plants, this article tries to shed light on social and ecological problems of urbanization.

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"To live
like a tree alone and free
and
like a forest in brotherhood"
(Nazim Hikmet Ran, 1940)

1. Introduction

Last week Reuters released a news related to the newest study on the wealthiest cities of the world and stated that with 3 trillion dollar wealth, New York City is the richest city of the world (RT, 2018). Forbes reports that New York City is the world capital of ultra-rich people with its 79 billionaires (Savchuk, 2016). These and similar news related to New York City creates an image of a prosperous environment in the mind of readers. However, few minutes of surf in the studies and statistics or a short visit to the city is enough to discover the reverse reality of shortage and poverty in the city. Even though there are many systematic and volunteer social support programs, the pains and distresses of New Yorkers are not relieved. Below I will give examples of these social programs on the issues of homelessness and hunger. In spite of the well-developed and functioning aid programs of public and local authorities, which do not regularly exist in other mega-cities and never exist in smaller towns, the insufficiency of these programs is easily readable from the

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existing conditions and the growing rates of social problems in the city.

Both the state government in New York and the New York City management have several housing aid programs such as the Homeless Housing and Assistance Program (HHAP), the Solutions to End Homelessness Program (STEHP), New York State Supportive Housing Program (NYSSHP), Housing Opportunities for Persons with AIDS Program (HOPWA), Emergency Needs for the Homeless Program (ENHP), and the Operational Support for AIDS Housing Program (OSAH) administered by the Housing and Support Services (HSS) of New York government and Department of Homeless Services New York City (OTDA, 2018). Nevertheless, during the year 2017, 130,000 homeless people including 45,000 children slept in the municipal shelter system of New York City (Coalition for the Homeless, 2018). According to the reports of the federal government in the United States, the number of homeless people in New York City is the highest one in the United States (Iverac, 2017).

In addition to the 250 million meals, which are served in schools, or through the non-profit partners in homeless shelters, care centers and public hospitals, New York City also directly distributes 250 million meals every year. The city management establishes food supporting programs such as Emergency Food Assistance Program (EFAP) which serves 5.5 million Kg of food for 15 million people annually and The Supplemental Nutrition Assistance Program (SNAP) which serves 1.7 million New Yorkers. However, the meal gap in New York City is very high; and 225 million meals are missing from the homes of the families struggling with food insecurity every year. There are almost 1.3 million food-insecure New Yorkers. (NYC Food Policy, 2017). New York City has the highest number of food insecure individuals in the United States (Feeding America, 2017)

2. Where the Problem Comes From?

New York City contains almost the same variety of the problems that all other urban areas around the world are facing, with a much more gravity and seriousness. In this sense, New York is a prototypical urban area in which a huge number of people with the variety of problems and opportunities are aggregated (Lindsay, 1974). Supplying the needs of these people is highly dependent on the systematic tools, technological means, resources and energies. Robson declares that without these supports, the survival of these vast aggregations of people in their concentrated urban areas is impossible. He underlines the dependency of urban inhabitants on the machines and mechanisms of transfer, filtration, and administration of drinking water, or the services and systems of waste collection and sewerage (Robson, 1972).

This urban society is the result of industrialization and domination of capitalism and as Lefebvre explains is highly interrelated with the establishment of urban infrastructures (Lefebvre, 2003). These supporting systems and infrastructure are developed to fulfill the missing functions of the human habitat that in any natural habitat originally exists. This artificiality and vulnerability of urban habitat and its dependency on external energies support and care from the outer resources, reminds me the condition of a potted plant.

3. How Potted Plants Survive?

Plants originally grow on earth under the conditions deriving from their co-operations and inter-relations with other living beings such as plants, fungi, microbes, insects and animals, in addition to other climatic and physical conditions. These co-operations create some niches such as microclimates supportive to the growth of a specific plant and build a resilient environment for its life. The highest resiliency and sustainability, the best living conditions and overall performances of plants can be found in forests where the most diverse and strong inter-connections exist. Conversely, potted plants and their fragile life conditions originate from their complete isolation from the resources of life such as water and food, and their destitution from any solidarity and collaboration. Johns expresses this instability with the mutative health conditions of potted plants changing even between morning

and evening of the same day from a healthy to a seriously diseased condition (Johns, 1974).

The extremely artificial life of potted plants makes special care necessary (Johns, 1974). Neglecting of this care even for a short while has a fatal effect on their life mainly because of the limited amount of exhausted and dead soil - in a period after planting - separated from natural conditions, resources and organisms (Beckett and et al, 1983, Fogg, 1959, and Johns, 1974). As much as the lifespan of a potted plant is longer, its vulnerability - when potted in a container - is higher and consequently, its need for care is more. Accordingly, seasonal plants require less care than annual and perennial ones (Fogg, 1959).

Today science and technology gives us enough power to build the necessary infrastructure and provide and control the needed artificial conditions for potted plants such as adequate climatic conditions, watering (irrigation) and feeding (fertilization) even with smart tools (Figure 1) - this recalls the idea of smart cities.

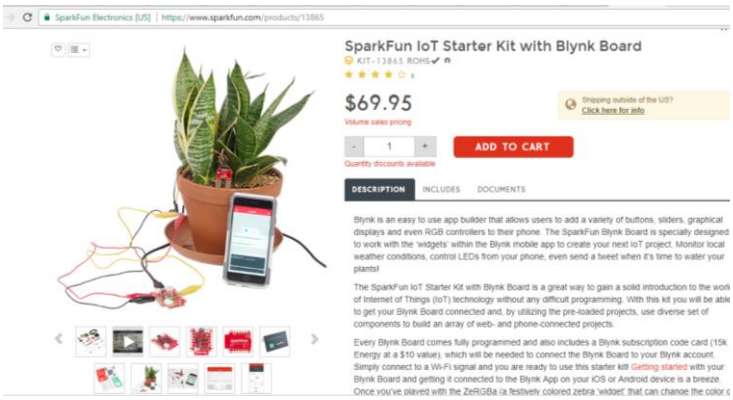

Figure 1. Diverse kinds of smart kits which make the control of the living conditions of potted plants easier (Sparkfun Website)

The variety of chemicals produced and used to create a "protective" environment for the potted plants and support their artificial health such as pesticides and insecticides, fungicides, paints and sealants, anti-desiccants, disinfectants and sterilizers and deterrents (Beckett and et al, 1983). To keep them alive for a long period, it is necessary to keep them in laboratory conditions, and continuously re-pot them (Figure 2).

Figure 2. The oldest potted plant in the world is in the "living laboratory" of the Royal Botanical Gardens in Surrey (Kew Website)

However, the majority of the potted plants which do not have the luck of being kept in laboratory conditions or under highly sensitive care circumstances die in the early stages of their life. On the contrary of the forests which exist to provide life not only to their dwellers but to all beings on the planet, pots and containers foundationally provide death to their plants. In addition to this friable life in pots and containers, while forests do not require any external care, habitation in pots require a huge amount of time and energy to compensate the survival circumstances of their inhabitants -just as the urban areas of today.

4. What about Forests?

In 2016, Peter Wohlleben published a book on the secret world of forests entitled "The Hidden Life of Trees: What They Feel, How They Communicate - Discoveries from a Secret World". The book describes the fact that forests are not a simple conglomeration of trees, other plants and living beings; they are superorganisms which act as a whole. He refers to the human beings' short lifespan compared to trees - which can live over thousands of years - as the main reason of becoming unfamiliar with the life of trees and highlights that collaborative life of forest, solidarity between trees and sharing of resources in forest are fundamental grounds of this long life (Wohlleben, 2016).

According to Wohlleben, forests contain an

infrastructure that enables communication and exchange between its inhabitants. Mainly fungal network in the soil which he calls "wood wide web" creates this capability of sharing information and goods. In addition to this network, the interconnected root system of trees in forests is another way of nutrient exchange and support between trees. Wohlleben says that the connected trees have no other choice but to exchange and he refers to the amazing results of a research done by the Institute for Environmental Research at RWTH Aachen which presents the equal growth of trees in a beech forest as a result of their synchronized photosynthesis performance. Trees equalize their differences with the help of connected roots and fungal networks in a way that strong ones support the weaker ones and accordingly, by growing together and in a synchronized way, they can optimize nutrient and water savings and divisions and all of them can reach to the ideal growing of their kind. He expresses that the reason that trees are becoming social beings is the advantage of being together:

> "*A tree is not a forest. On its own, a tree cannot establish a consistent local climate. It is at the mercy of wind and weather. But together, many trees create an ecosystem that moderates extremes of heat and cold, stores a great deal of water, and generated a great deal of humidity. And in this protected environment trees can live to be very old*" (Wohlleben, 2016, p: 4).

According to Wohlleben, the forest loses its unity and consequently its existence when the vulnerable trees disappear. Their vanishing results in the penetration of the hot sun and strong winds into the forest floor, disruption of moist, and accordingly loss of other trees because of the disability of forest to act as a closed unit and to create its own microclimate (Wohlleben, 2016).

5. Have any Human Habitats Similar to Forests Existed?

Ralph Becker in his article of "Three Delusional Ideas of the Western World on Natural Environment, Humans, and Their Societies" shares a story:

> "An anthropologist proposed a game to the kids in an African tribe. He put a basket full of fruit near a tree and told the kids that whoever got there first won the sweet fruits. When he told them to run they all took each other's' hands and ran together, then sat together enjoying their treats. When he asked them why they had run like that as one could have had all the fruits for himself they said: "UBUNTU! How can one of us be happy if all the other ones are sad?" (Becker, 2015, p: 382).

Becker explains that Ubuntu is the short form of a proverb in South African Xosha culture: "Umuntu ngumuntu ngabantu". This proverb means that the existence of anyone is possible through her relations with others. Accordingly, Ubuntu means, "I am because, we are" (Becker, 2015).

Becker refers to the studies of Dalene Swanson and Martin J. Gannon and expresses that the culture of Ubuntu and what can be called communalism is not particular to South Africa but all parts of Sub-Saharan Africa. This is a culture of interconnection with other members of community even with future generations and strong dependency on land (Becker, 2015).

Similar studies can be found related to the communal life and habitation culture of the Native Americans, Polynesians, Aborigines and many other "non-civilized" societies - with colonial terms.

6. When Have Urban Societies Been Planted in Pots?

I believe that "civilized" cities - with their bastions, walls and gates, their concrete insulations from food production and other means of life, their division from other communities, their immortal constructions which were built against nature and still fighting with it - have been structures with an endless need of external support and accordingly fragile habitats similar to pots. Spiro Kostof in his book entitled "The City Shaped: Urban Patterns and Meanings through History" gives a clear hint related to the fundamentality of city - pot relations by expressing the inter-connection of the

termination of self-sufficient habitats with the foundation of urban settlements:

> "Cities started when there was a shift away from a simple, self-satisfying village economy" (kostof, 1991, p: 31)

However, this vulnerability rose to the highest degree during the post-industrial urbanization period, mainly because of being over-populated and over-constructed urbanized clusters encircled by sub-urbanized areas - in contrast with the ancient small towns that were surrounded and supported by rural habitats (Davis, 1965).

7. What Are the Main Problems of Potted Urban Areas?

The below graphic (Figure 3) created by Jon Lang expresses the way that functions of the built environment tries to answer human needs.

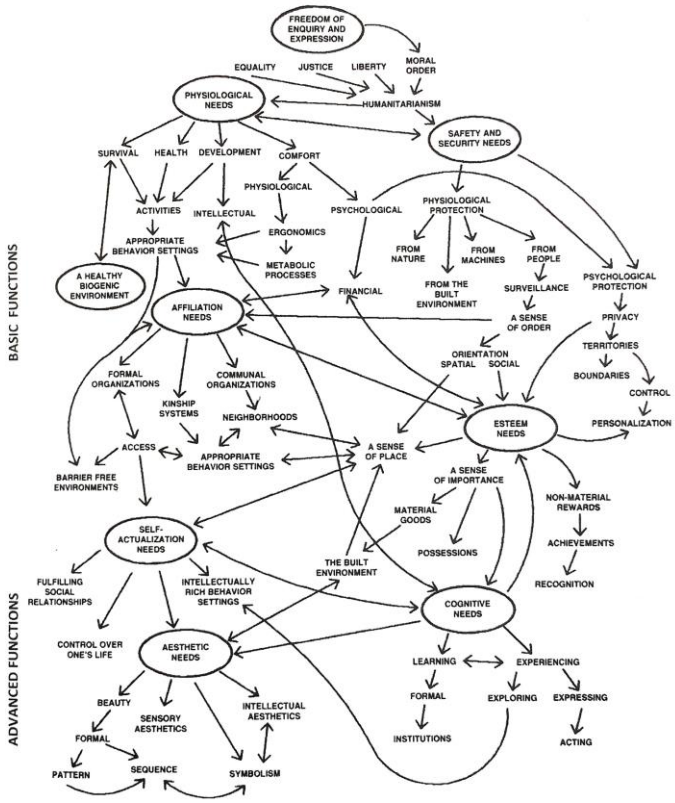

Figure 3. Human needs and the function of the built environment (Lang, 2017, p: 15)

The complex and multi-layered inter-relations presented in the above graphic expresses the similarity of human settlements to forests in terms of diversity and complexity. However, at the same time, it shows the inevitability of grassroots connections and communal collaborative actions which urbanized societies are not set up on these horizontal organizations.

Urbanized societies prefer "well designed" centrally ruled systems. The main aim of these systems, provided by diverse forms of oligarchy including capitalism, is to concentrate the power of control over the resources and their distributions in a centre controlled by the powerful rulers - in other saying caretakers. As a result, the first problem of the potted - centrally administered on-grid over-populated - mega-urban areas is the concentration of power in the hand of a small group.

The inhabitants of mega-urban areas do not have access to enough resources for their survival needs. They do not have enough powerful inter-connections between each other - or even awareness on this matter - to develop solidarities and co-operations for supplying these needs. The way they are educated and culturally grow makes them completely dependent individuals and does not let them have any skills to establish a more resilient life for themselves. Accordingly, the second problem is the vulnerability of this lifestyle and the urban system. Pots always need caretakers for their watering, feeding, healthcare and other survival needs.

Urban areas are overpopulated areas with the lack of resources and unfair systems of access and control over these resources and accordingly, they are the places of competition for limited resources. Majority of their inhabitants suffer from discrimination, poverty, and injustice and consequently, urban societies face crime, conflict, terror and violence. The third problem of urbanization is the creation of injustice and violence.

"To feed" and "to water" this huge population, to educate, control, and entertain them, summarily to build adequate infrastructure and tools to cover their needs, urbanized areas destroy nature. Accordingly, the fourth complication of

urbanization is today's crucial problem of environmental and ecological degradation that is the sub-product of urbanized society (Barnett, 1974).

One of the main differences between forests and pots is their lifetime. While forests dominantly contain perennial plants with long lifespans, seasonal and annual plants are preferred in pots. The same problem can be arguedabout the urbanized areas where temporal life is more dominant. Urbanization supports and is supported by high mobility of population. While on one hand migration as a long-term and residence-led mobility creates diversity which gives a high potential and energy of founding a forest-like relations, on the other hand the high percentage and dominance of daily or short-term visits to urban areas on the local inhabitants breaks human-land connections and frustrates permanent and long-term inter-connections and collaborations. Examples from New York City present how temporality of life in urban areas comes true. More than half of Manhattan's daytime population are daily visitors who are not staying in the city during nights (Moss and Qing, 2012). From this daytime population, only 35% live in their own houses and the other two third are tenants who change their houses frequently (NYC Planning). This kind of temporality makes urban societies without multigenerational perspective and long-term vision, with serious lack of collective memory and sense of belonging, no resiliency and no capability of resistance. The loss of permanent habitation strategies and long-term visions deriving from the temporal residency which is granted by urbanization is the fifth problem of urbanized societies.

Mass population of urbanized areas generates and accumulates a great number of diverse needs that paves the way for the growing of the culture of consumption in a market-oriented capitalist world. Urbanized societies use, manipulate, burn everything including materials, foods, nature and even culture and transform them to waste. Consumption and its sub-products such as waste and pollution can be counted as the sixth problem of urbanization.

8. Is It Possible to Replant Urban Areas in Forests?

Looking at the below image of a potted city and imagining the replantation of these structures in a forest resembles a violent action similar to agriculturalization of forest lands, or passing huge pipelines from the middle of forests or more similarly dumping construction wastes into forests.

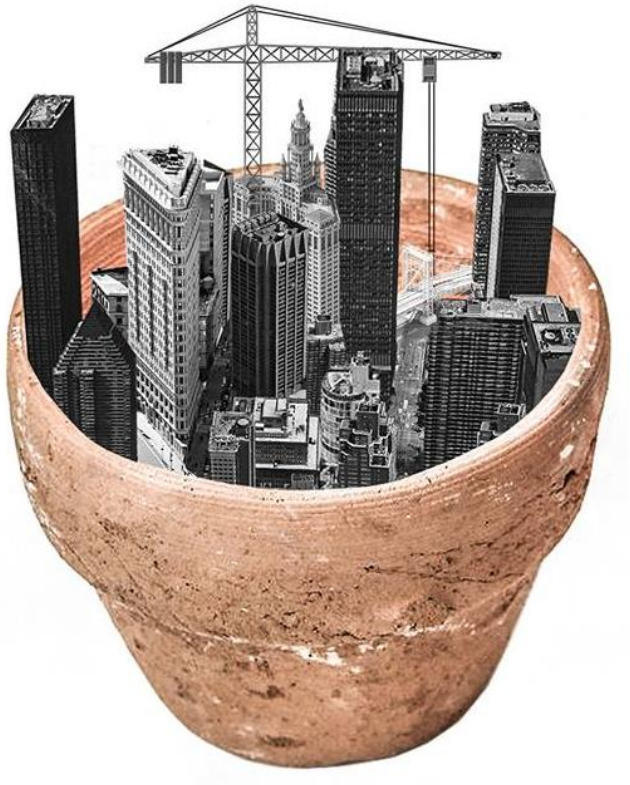

Figure 4. An Urban Area in A Pot, By Serap Sonmez (Sonmez, 2018)

Additionally, replanted urban areas in forests will not act as a part of the forest without a comprehensive restorative action. This follows the same logic of the difference between planted forests and natural forests. Wohlleben describes that planted forests, because of the irreparable damage to their roots, are incapable of communication and networking with other parts of the forest. These plants always behave "like loners and suffer from their isolation" (Wohelleben, 2016, p:5).

Consequently either the damage of the roots must be fixed, prior to the commencement of the integration of urban areas in forests, or re-forestation must be started from deserts - or both of these strategies. That is to say, as the first way,

physical environment must be regenerated in a way that settlements exist in harmony with nature. Additionally, anthropocentric and individualist mind-set of urban societies must be culturally rehabilitated. As the second way, with correct strategies, reforestation of deserts can be realized. In other words, communities outside of the existing system can investigate on the re-building of human nature and human-human relations and spread their alternative achievements to the global community. Following any of these ways, the new human habitation model must be as diverse, multi-layered and complex as cities, but distinctively with strong relations to its land, permanent and multigenerational strategies, self-sufficient and off-grid settlements in harmony with nature, horizontal organizations, and people with strong loyalty to communal life and solidarity.

The hazardous conditions of global human society and planet today, lead us to try these solutions. Either we will win and natural life will be regenerated or nature will win and will be regenerated - but without us.

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