Strategies for the Development of Integrated Infill Buildings in Historic Contexts

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Abstract

Rapid urbanization, westernization, and modernization that are taking place have great impacts on life-style and the material culture of the people around. ‘Infill buildings development,’ its simplest manifestation is the organization or re-development of parcel land that has been bypassed and still vacant and underutilized as a result of the progressing processes. Infill development can happen everywhere, it can be parcel of land that is underutilized compared to the surroundings such as urban areas, village settings or areas with large lot of developments. Infill building is also a part of mixed-use land development, is the concept that is mostly use in housing strategies to provide affordable housing or to solve demand for some various types of buildings development. However, historic contexts which gives info about the historic trends or history of certain locality usually faced problems due to the growth in population and high increasing demands of the infill buildings in conjunctions with lack of proper designs. Today, professionals such as architects, planners, builders as well as concerned politicians in most of the regions are working towards the improvement of historic contexts, by expanding and increasing the density of the existing areas to create good walk-able neighborhoods that respect each other. Although some still assumed there is a problem in preserving historic places and boosting the historic densities. Moreover, proper integrated infill buildings in historic contexts represents us with sustainable developments, economic and cultural growths, as well as social and environmental opportunities. Consequently, using the literature survey as method of generating data, this paper will theoretically discuss the effective strategies and concepts for the development of integrated infill buildings in any historic contexts. The paper will also explore responsible infill buildings development in the historic contexts. While exploring the strategies, the discussions include best ways to maintain the historic contexts and also ways of embracing the existing contexts through infill buildings development.

Keywords: Infill buildings, Historic contexts, Responsible neighborhood

Introduction

This paper describes the strategies that can be used to appropriate and achieve a successful and well integrated infill buildings, as well as the concepts that can also be employed for historic contexts to gain responsible neighborhoods. However, cultural heritage sites in most historic urban areas, districts, regions, or countries at large is an important part of societal and community well-being (Tweed and Sutherland, 2007). Researchers acknowledged that infill buildings development is the process of structuring vacant parcels land within existing urban areas that are already largely developed being it historic or not historic context for a particular purpose (Keith, 2007, Planning Policy Statement PPSS, 2010). Most communities have a significant amount of potentials for infill buildings developments on lots which for various reasons have been passed over in the normal course of urbanization, or where existing uses are no longer viable due to circumstances or disinvestment (Report No. 38, 1997). Infill building development can take place everywhere; it can be plot of land that is underutilized or improper used, compared to the surrounding such as urban areas, village settings, large historic contexts, city centers, or areas with large lot of existing structures. Infill building is also a part of mixed-land use developments as well, is the concept that is mostly use in housing development strategies to organize affordable housing or to solve demand for some various types of estates developments.
Tweed and Sutherland, (2007) say preservation does not mean that neighborhoods or historic districts must be frozen in all aspects, but it does mean that, when infill buildings developments occur, it should be in a manner that reinforces the basic visual characteristics of the settings. Consequently, development of integrated infill buildings are generally a concept or method of positioning/siting new buildings in such a way that it will respect the contexts, from building scales to street patterns, and from skyline to façade compositional arrangements and the textual ornamentations and color. This approach does not mean that infill buildings should look old in their physical characteristics appearance, it means infill designs should by all possible ways in-cooperate built-components, features and color textures of the existing contexts. Winter, (2003) noted that “imitating historic styles is generally discouraged, rather imitating older buildings at large, and also new designs should relate to the fundamental characteristics of the historic resources on a block while also conveying the stylistic trends of the today”.

Such approach may do so by drawing upon basic ways of buildings that makes up parts of the characters of the historic designs. According to the Planning Policy Statement PPSS, (2010) the features upon which to draw include the ways in which buildings are located on their neighbors, the manner in which they relate to the street patterns and their basic mass, forms, as well as the finishing features. If these designs characteristic features are appropriately coordinated, proportioned and arranged in an infill buildings designed, it will be similar to their neighbors and the whole historic contexts will have good visual compatibility outlook.

These elementary design relationships are more fundamental than the details of specific architectural styles and, therefore, it is possible to be harmonious with the historic contexts while also producing designs that are contemporary in characters (Winter, 2003). With the above introductory discussions, review on infill programs and the theoretical surveys, however, using literature as method of generating data, this paper seeks to theoretically design appropriate strategies that can be followed to achieved good and well integrated infill buildings in any historic contexts. The research explored the significances of integrated infill buildings in historic contexts, and drawn conclusion that responsible and well proper infilled buildings usually crates ‘sense of place’ as well developed coexistence and compatible relations with the existing contexts.

Overview of the Historic Contexts

SAN DIEGO, (2007) noted that, built historic contexts give information about way back activities of the days, and the iconic buildings are the properties grouped by an important distinct in the history of communities, states, or the nations during particular era. While Pendlebury, et al, (2009) asserted that historic contexts usually comprise all the aspects of the past such as archaeology, historic buildings and the total historic landscapes, as well represented us with the total impacts of human activities over the years.

Accordingly, historic contexts are the record of the past, it tells the stories of people on a particular environment, and it contributes to special qualities and played various significant parts in the economic and social life of an area. Historic contexts can effectively be a positive strength for change, and some of the “most successful regeneration schemes have used the historic place as a key inspiration for the delivery of dramatic physical and economic transformation” (Planning Policy Statement PPSS, 2010). Similarly, built historic contexts allows historic resources to be evaluated for local, regional, or state significances by comprising it to similar resources from the same time period and geographical area as well.

Some historic contexts provide foundations for identifying the possible source of help in geographical regions, initiating a resources-based survey for certain inventory programs. The National Register Bulletin 24, ‘Guidelines for Local Surveys’, revised by Parker, (1985) acknowledged that historic contexts are identified as broad pattern of historical developments in most communities, or its region at large that may be represented by historic efforts. The bulletin further goes on to explain that historic contexts are “developed on the basis of background data on the community’s history, and the history and prehistory of the region in which it lies” (Parker, 1985). Therefore, the development of the historic contexts allows city, state and national planners at large to better determine the significances and the potentials of the built resources within the areas of intents.

Consequently, Doratli, et al, (2007) explored historic urban contexts as mix of assets that offers varieties of possibilities for defining identities, and the definitions may be found in neighborhood buildings, streets patterns, squares characters and peoples’ culture. Historic contexts offered information about historic trends in the prehistoric culture, or history of certain regions, localities, states, or body of a particular time. The contexts may usually embraces large number of values, such as “cultural identity values (including age, tradition, continuity, political, and national values), scarcity values (resulting from typology, form, period of construction and design of the buildings in this areas, which makes them unique when compared with recently built buildings), resources values (the amount of existing housing stock, which can also be considered an economic issue), an aesthetic values, social and psychological values, political values, an environmental values, and an educational values” (Doratli, et al, 2007).
Historic contexts provide the characters and distinctiveness that is so important to a positive ‘sense of place’, it can also support the regeneration and sustainable economic change, cultural and social development of communities. It can assist in the delivery of housing, societal education and community cohesion objectives. According to Tyrrell, (2003), historic contexts provides tangible link with our past and “contributes to our sense of national, local and community identity, and it is a key part of tourism offer”. While Galvin, (2009) argues that for a monument to be ascertained historically significant, it must represent a meaningful part of the community histories, archeology, architecture, engineering, or culture of the area and it must contain the characteristics that make it a good representative and possess well essential quality that associated with that aspect of the past.

Understanding Infill buildings

The discussions of infill buildings promoted in this paper is more than the gradual development of individual piece of land, rather some general notions of the concepts and strategies of the development of every vacant land within historic contexts. Even though there is a shift in strategic approach of infill at the beginning of the 20th century until present, from a contrasting design approach to referential strategic design approach (Demiri, 2013). However, Infill buildings is the process as well as way of developing an area set apart or under-used piece of land within existing urban settings that are already developed (Keith, 2007). Most communities and societies have significant empty land around the city areas, which, for one or two reasons, has been passed over in the course of progressive developments. Keith, (2007), stated that, infill buildings maintain some conditions of resources where people already reside and allows rebuilding to occur. Accordingly, it is also an instruments of accommodating developments, cultural growth, and redesigning built contexts so as to be environmentally friendly and as well socially sustainable surroundings.

This approach further encourages Friedman, (2003) to acknowledges that, a successful infill design usually focuses on the “completion of the present community fabrics and its surrounding neighbors just for high quality representations”. Infill buildings, as discussed offers to a healthy combination of uses that support and provides added durability and convenience for occupants. According to Demiri (2013), infill buildings development conserves people’s financial resources by using the advantages of existing basic organizational structures, increases walkability by offering to safe and good looking pedestrian environments, and creates new favorable conditions for mixed-use neighborhoods that create the “sense of place” that is largely missing from development task during the previous years.

Therefore, effective infill buildings developments are valuable means in helping to promote a community’s livability, creating overall residential or public building densities, great enough to support desired alternative transportation choices, as well allowed large varieties of convenient services and social amenities. Infill buildings usually provide alternative possible choice in housing to support the different needs and preferences of people and returning cultural, social, administrative and educational components. It is a way of recapturing the missing recreational opportunities of the communities by providing some associating places for increased interactions and collaborations among the community residents, as well can improve and restore the economic and social vitality to existing city centers, and maintain the long established neighborhoods relationships. Similarly, Lehmann, (2007) noted that the purpose of the significant quantities of infill buildings developments in some urban areas is to obtain the right mix of accepted practice, by using the building scales, and increased the densities of some city centers with lots of social amenities and the spatially complex designs.

Figure 1. Shows a sketch of the integrated infill buildings with the existing structures

The Integrated infill buildings

Integrated infill buildings simply mean new buildings that are successfully sited in an old districts or areas that are largely already developed, and at the same time are in harmony with the existing contexts from all points of views. Ryan and Weber, (2007) stated that every significant and careful infill designs in most distressed urban neighborhoods, usually offered greatest integration into the surrounding neighborhoods and in turn, can potentially increase the properties values. This means that, it is highly important that the design of infill buildings in any historic contexts should be in consistent with the designs of surrounding historic built contexts and the characters of the entire sites at large. However, Milford, (2001) noted that when designing infill buildings, it is worthy to consider the existing contexts such as the design proportions, materials and color, facade compositions, and the street relations.

These design elements noted and the pattern should relate to the design structures already existing on the street so as to make it successfully fitted and well integrated as demonstrated in figure 1. Furthermore, Ryan and Weber, (2007) acknowledged that when integrated Infill buildings occurred in the built contexts, it usually limited
some substantial changes to neighborhood structures and regenerate sense of belonging. Therefore, integrated infill buildings are the one that strive the highest and best design elements with regard to contemporary features and good architectural practice, while integrating such features into design programs or concepts that are well suited for the historic contexts. The integrated design elements and the site compositional features that are important in establishing the built consistencies include the materials, massing of the buildings, site landscapes, constituent scales, building skylines, street lines and the patterns of the arrangements of the roof designs as described in figure 1.

According to Ercan, (2011) the actual manners of conservation initiatives, particularly in most historic contexts, is therefore to develop some strategies for integrated infill buildings; not only certain about the continuing contributions of the heritage to the present and the expected forthcoming conditions through the thoughtful and sensible managements of change responsive to the historic contexts and the collective needs, but also protecting the fundamental features of the social built contexts. Ercan, (2011) further noted that, such infill strategies, if can discover the means of reconciling the needs, values, aspirations, and concerns for the local people background and the conservations of the historic contexts, will probably lead to more equitable, reasonable, and sustainable answers to the problems that historic contexts usually faced. Therefore, paying attentions to the characters of the exiting built context, is also a key component for ensuing integrated infill building development that can gains suitable outlook of the neighborhoods and acquired esteem acceptance.

Strategies for the Integration of Infill Buildings

Architecture is a synthetic of materials, coordinated by spirituals and the behavioral culture of people (Nguyen, 2007), it creates a context for our everyday living at the same point provide environments that are traditionally good and culturally sound. Therefore, the nature of the sites of historic contexts are the basic part of their distinctive qualities. The spacing and postures of historic heritages within the contexts or the neighborhoods usually established patterns that are essential to the characters of the historic contexts. Accordingly, each individual building within the historic contexts may not be a good design or architecturally significant, but the organization of the built components with proper uniform arrangement, or the building setbacks and the street features, offered the historic contexts strong and powerful sense of belonging. Hagen (2009) says, the early architects and urban designers of historic buildings/sites considered the streetscapes, building setbacks, drive ways, pedestrian walkways, and the manner buildings sits on the lots in relations to other structures and the site at large. Therefore, the existing historic contexts will be enhanced if the infill buildings development are carefully design and well integrated with the existing contexts. This can also contribute in some manners to the main purpose, functioning and the desirability of the existing contexts. However, the following analysis below are the suggestions of the strategies to make infill buildings development more integrated, resemblance, attractive and well reasonable.

The Skyline

The objective of infill is to concentrate more designs in already developed districts and to small degree on disconnected open spaces (Greenberg et al, 2001). But how the infill buildings can support the contexts is one of the challenging issues trench in the contemporary designs. However, the skylines of buildings are important characteristics in integrating designs, and it is essential that a satisfactory relationship is developed between the lines of the built components such as the eaves, parapets, gables, ridges or the porches of the infill buildings to that of historic structures or the adjoining buildings around. Simon, (2007) state that, infill designs should contribute to the characters and legibility of the historic contexts, and the new buildings should form logical continuities in the skylines so as to live in harmony with the existing historic structures.

The design in figure 2 which is popularly known as Golden Nugget building in Graz, designed by architects INNOCAD demonstrates this approach very well, the designer quickly responds to the cultural heritage buildings by compromising the skylines of historical buildings as well creates respectable transition between the two different heights. The infill building is sited into the continuous streetscape and forms a corner of a building block, arranged along the street façade with the desired historical presence (Demiri, 2013). Therefore, the design characters of the infill buildings related to horizontal lines to that of existing structures should by all means maintain the regularity manner and consistent fashions as strategized in figure 2 & 3. It would be of ill-mannered to bring in pitched gables designed-forms into built contexts where all design styles were horizontals in the skylines. The assertive shapes of the infill pitched gables-designs pronounced may alter the skylines of existing historic contexts.

Infill buildings have to be supporting figures to the view of the cities, both the skylines, spatial structure and the compositional units can also create an intense outfit (Simon, 2007). Some historic cities, contain a complex mixture of pitched, gables and parapets, which are further enriched by the addition of dormer windows and chimneys. However, difficulties can often occur in the designs of new architecture because of the lack of chimneys and other historic architectural features which usually end bad situation to the skylines, giving the effects of removed roof-scape.
On the contrary, introduction of fake chimneys which serve no functional purpose cannot be recommended. Therefore, the skillful imaginative designers may be able to create functional roof features, such as vents for heating or some air-conditioning systems, which can provide continual visual interest to some otherwise bland skylines. A good example of this approach is defined in figure 3, the designer applied this concept in a tactical manner, the so-called Tesco supermarket and carpark in the historic market town of Ludlow is an excellent infill design that respond to the 18th century historic context. The designer creates a function projected burnt bricks and glass in order to fit the 18th century chimneys. In fact, the design “has been published widely as a model for incorporating new design in historic context of 18th century curve street” (Golding, 2001).

Building lines

The relationship between infill buildings with its historical context is determined from the values assigned to the meaning of its heritage design and consequently to that its modern qualities (Demiri, 2013). However, the most obvious issues in built contexts are building/street lines. Because building line defines the relationship of the facade of the infill building to that of its existing neighbors. Consequently, to preserve the historic street lines as well as the building lines at large, infill designs needs to be as important agent for consideration, because regular building lines frontage add good visual interest. Since buildings lines define the edges and richness of a built environment, therefore, appropriate design with effective consideration most be applied to historic contexts. However, in many historic contexts, the building lines are moderately regular and continuous, reflecting the historic pattern of the cultural designs. Though in some instances, only buildings of “particular significances, such as churches, large houses and town halls were given prominence by breaking the facade lines or forward from the regular building line” (Housing Policy Debate 2010).
Therefore, every change in a historical context is based on the interpretation of the place, since the infill buildings should be approached not in isolation to the historic contexts but as totality with the existing designs, then building line will always play a role in successful integration (Demiri, 2013). The lines of the ridges, height of the parapets, lines of the door and window openings, and the proportions of the other built components of infill buildings should as much as possible reflect the predominant features and proportions of adjacent existing buildings in the street. This concept was clearly demonstrated in the design of library and administration building, central school of speech and drama, in London (figure 4). The design “demonstrates that it is possible to incorporate institutional, large-scale uses within a predominantly domestic context without causing disruption” (Golding, 2001). The designer quickly maintained the characters of the predominant building lines from the skyline to the façade compositional lines with effective results. The analogical combination of the historical built components to that of the infill such as the window sills, horizontal roof grid, public spaces, and the street articulated in an orderly manner with the infill façade.

The difficulties of the interrelation between the infill and existing architecture in the urban fabric are crucial in all districts (Demiri, 2013). New developments with irregularities in lines are clearly extremely damage to the historic fabric of urban districts, and if they cannot be avoided then the street line and facades can be modeled and manipulated, so as to create an appropriate vertical and horizontal visual rhythm of the context (Beer and Higgins, 2000). A clear example of this approach is demonstrated by MJP Architects in designing a Tesco Supermarket and Carpark within the historic market town of Ludlow (figure 4). The roof of the supermarket follows the form of the land so that it blends well to fit the townscape (Golding, 2001). The design approach was so nice, “the building compromised the curve street line at frontage where the bulk of the supermarket is hidden behind a two storey building containing more intimate uses, such as staff accommodation and a café” (Golding, 2001). This design approach has obviously reflected as a strategic method of incorporating infill building in historic context, and nevertheless is justified in the interests of maintaining a cohesive street scene.

**Color and texture**

Some effective considerations of the development principles, programs and policies might also permit the identifications of required conditions for a successful infill designs, as well as the pitfalls to avoid (Montgomery, 2003). Another possible way or the strategy that can be used to integrate design and character of infill development within existing contexts or the neighborhood is through the use of color and texture. The color and texture of infill buildings should relate to and use as reference points to the materials, and details of adjacent buildings and the surrounding heritage at large (Lardner, 2006).

Architects INNOCAD used this technique very well in responding to the UNESCO world cultural heritage area in Graz (figure 2). Demiri, (2013) says the street approach of the so-called ‘Golden Nugget’ building completes the streetscape, and the golden color of the materials is slightly different from the yellow adjacent buildings, but creates a transition as well as continuity within the historic urban context. The new design and its existing neighbors creates an ensemble character with fair connection. Similarly, if the color or the quality of fabric of the infill buildings are closely in harmony with that of its neighbors as demonstrated in figure 2, then many shortcomings of proportions or detailed design will be overlooked by the casual passer-by. Accordingly, the concept can be achieved by establishing points of color similarities across the various historic.

![Figure 4.Library and Administration Building, Central School of Speech and Drama, Swiss Cottage, London. Designed by Cullum and Nightingale. Source: Golding, (2001)](image-url)
buildings and consider whether any fabric interrelation can be applied to the nascent or the emerging infill buildings (Montgomery, 2003).

Buildings which are pronounced in their colors or the textures will surely draw attention to them-selves and definitely will encourage closer careful inspection. However, smart appearance of color between infill buildings and existing structures, as well as the spatial arrangement of landscape designs can set-up interesting relationships within built contexts (Chapman, 1996). Intentional use of contrasting color in order to signal the presence of an important building can obviously be justified, but the intentional use of contrast in order to satisfy a craving for innovation, or the client’s desire to make a commercial statement are hardly sufficient justification for creating disagreement within some historic contexts (Montgomery, 2003). Therefore, improper use of color combination in historic environment can be offensive, “but the inspired use of a splash respective color can be very exciting” (Chapman, 1996). In many situations, the sensitive use of color may be more relevant than an insistence on finding an exact match to the existing materials of adjoining buildings.

The use of modern synthetic materials, such as patent glazing or stainless steel inevitably creates sharp contrasts with the natural materials from which our historic contexts are constructed. But the use of modern burnt bricks as in Tesco Supermarket and Carpark (figure 3) and other related factory blocks can enhance the relationship much more. Therefore, “appropriate building scale, materials, color, window proportions, and facade articulation, all contribute to compatibility of the neighborhood”. (Beer and Higgins, 2000). However, overused of the simple glasses or in short mirror-glazed façade, which intentionally reflects the details of historic buildings around is now becoming rather overworked and is unlikely to be an enduring solution to the design of infill buildings in historic contexts. When used in a thoughtful way, synthetic materials can add to the sparkle and richness of a visually complex environment, but the designer must be sufficiently competent to handle the potentially damaging visual conflicts which can arise.

The Scale

Tangible iconic features of the past can give the environments some depth meanings and sense of time, also serve as cultural symbols, provide recreations, and supply the distinguishing features that physically define a community (Yahner and Nadenicek, 1997). Scaling of design and proportion of the components is another important strategy for integrating infill buildings in historic contexts. Significant infill building development has the potential to substantially change the characters of existing neighbors or the community at large; the degree of change usually depends on many things, such as density and building scales (Housing Policy Debate 2010), such techniques has been demonstrated in the design of library and administration building, central school of speech and drama, Swiss London (figure 4). The scale of the building responded to old historic designs from the approach as well as those at back. The design creates a fair connection between the historic buildings both at the front and back. In generally, the term ‘scale’ is intended to define the expectation which a particular building generates about the size of the neighboring structures.

Poor building scale and disposition of elements can often alter the sequence of façades, and can affect the subconscious impression which people usually have about the normal size of buildings. Therefore, effective consideration of building scale is much more important than the beauty when it comes to issue of designing a new building in historic districts. Scale of the new buildings should by all means correlate to the existing structures (SAN DIEGO, 2007). Accordingly, the effective manipulation of scale is a vital aspect of the successful design of infill buildings in historic contexts and is a skill which is all too rarely encountered.

Building scale is usually “perceived in terms of the relationship between building in whole or in part” (Chapman, 1996). In generally, the scale of infill buildings can deliberately enlarge or reduce by adjusting the elevation features in order to respond to the patterns and the designs characters of the historic contexts. This approach has been achieved by Cullum and Nightingale while designing library and administration building in London (figure 4). The adoption of the scale and rhythm of the neighboring domestic buildings shows a good mannered, sensitivity and proper interrelation with new design (Golding, 2001). This shows that it is highly possible to mix sensitivity and due deference to historic environments with certain expression of individual definition and a contemporary identity (Golding, 2001).

Conclusion & Recommendations

The paper shows number of concepts or method in which good design can be succeeded in sensitive historic urban contexts. Equally importantly, the findings show that most of the unnecessary excuses offered for not achieving high qualitative and standard designs in historic contexts are not valid. The general, most important lesson from the studies is that, all integrated infill buildings development depended on time and thorough check-up for their success. Moreover, careful character appraisal and analysis of the contexts is one of the key components for the effective infill building development. However, to achieve certain degree of success in integrating infill buildings in historic contexts, there is need to have an effective system of land use analysis and strategic planning, from street line
pattern to façade arrangement, and from color and texture to building lines.

References