Toward Sustainable Regeneration in Central Urban Areas

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1 Introduction

Cities are entering a new era; their role expands, becoming nodes in a global competitive network, centers of activity, and places of consumption. Within this context, urban regeneration in the derelict areas of the central urban areas is of great significance.

Urban regeneration has been encouraged by many localities to attract people back to cities and persuade others not to leave through significant construction and aesthetic investment in central areas of cities. However, it is questionable whether these activities are leading to actual lasting change, whether they contribute to the making of livable places, and whether the impacts of regeneration compromise the sustainability of the area or the city.

A contained, well-connected, mixed-use city is advocated by many as the most sustainable urban form, being highly important for sustainable urbanism. A compact city offers opportunities to reduce fuel consumption for traveling, like homes, work, and leisure facilities are closer together; urban land can be reused, while rural land beyond the urban edge is protected. Compact cities with higher densities are also associated with economic benefits, due to high concentrations of people supporting local economics and easier access to services and facilities with diversity, and improved cultural capital [4, 15]. However, since cities are all different in form and structure owing to a host of place-specific factors, the degree of compactness and/or defragmentation should be context-sensitive [12].

In the first two decades of the twenty-first century, in most cases in the world cities, the following characteristics have identified the world cities: As the industry

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has closed, brownfield sites in inner-city locations, be it contaminated or not, and waterfront lands in some cases, have become available for large-scale urban redevelopment ([9], 25). The transformation of these brownfield sites requires sensitive adaptive reuse and huge investment based on a comprehensive masterplan for revitalization for smart densification of the suffering city core. This requires political leadership to attract investment and a holistic understanding of the principles of sustainable urbanism.

2 The Requirements of Sustainable Urbanism

Successfully implemented urban regeneration projects demonstrate that holistic approaches deal with the following issues: (1) densification through "brownfield development," (2) recycling historic complexes/buildings, (3) livable public spaces, (4) good mixed-use and promotion of culture, and (5) ecological sensitivity.

2.1 Densification Through "Brownfield Development"

The term "brownfield" could be defined as any land which has been previously developed, including derelict and vacant land, which may or may not be contaminated ([9], 850). Brownfield development, which is strongly linked to the concept of sustainable development, is the redevelopment of formerly industrially used, derelict sites and docklands, emerges as an effective tool to prevent urban sprawl through densification and defragmentation, and can be considered central to sustainable development as it helps reduce urban sprawl and prevent the greenfield development. Brownfield development would also eliminate negative imagery connected with an industrial heritage as old industrial centers are frequently defined in the media by severe economic and social deprivation, vandalism, public disorder, pollution, and a lack of civic amenities [11].

As Williams and Dair [19] suggest, sustainable brownfield development has been produced sustainably (i.e., in terms of design, construction, and participation processes) and enables people and organizations involved in the end use of the site to act in a sustainable way ([19], p. 28). The objectives of brownfield development could be defined as minimizing the use of resources, minimizing pollution, protecting biodiversity and the natural environment, protecting the industrial heritage, and protecting the cultural environment [3]. A careful brownfield development facilitates mixed-use, takes advantage of compact building design, creates housing opportunities and choices, creates walking distances, fosters distinctive, attractive communities with a strong sense of place, preserves open space, farmland, natural beauty, and critical environmental areas, provides a variety of transportation choices, and makes development decisions predictable, fair, and cost-effective ([17], p. 41).

It should be accepted that a specific legal arrangement both at the local and central government levels is a must to develop appropriate solutions for the sustainable development of brownfields. In line with this, regulations concerned with contamination, liability, and public participation must be added to the environmental legislation as observed in the exemplary cases in the developed countries.

2.2 Recycling Historic Complexes and Buildings

Various transformation projects are planned in various cities of the world in order to revitalize the central urban areas with the old texture and to increase social and economic activity. However, most of these are not addressed with holistic approaches that take into account the physical, social, and economic sustainability of the region. Aiming at sustainable regeneration, it means ensuring development through the renewal of local traditional life, environment, and activities and/or the restructuring of the economic structure of the region, and it requires a detailed analysis of historical structures as well as a comprehensive analysis of the social and economic structure. In this context, a participatory framework and cooperation with other stakeholders should not be forgotten. The historic condition of existing buildings should be respected and viewed as valuable "built resources" and valued with adaptive reuse. Newly proposed, reused, or infilled structures should not be replicas of historical buildings but should be designed with a contemporary architectural approach that reinterprets the original features of historical or traditional structures.

2.3 Livable Public Spaces

As Bentley [1] proposes, "cities exist for processes of communication and exchange between people—that is the only reason for having them in the first place—and public space is a key medium through which these processes take place." Public spaces indeed have an important role as containers of human activity and places of social interaction ([2, 6, 18], p. 386; [5]/1971) and, therefore, play a significant role in the creation of sustainable and livable cities. However, most of the new urbanization examples do not have enough space for them, and most of these areas, which are introduced as "public spaces," lack spatial, ecological, and social qualities. The poor quality of public space and the built environment is directly related to the poor quality of a city's social life, and therefore moral, social, psychological, and economic incentives should be provided for cities to attempt to revitalize their social life [6]. In this context, cultural spaces/streets/squares can be a vital component of the public realm, as they help to establish the identity of a city.

2.4 Good Mixed-Use and Promotion of Culture

As observed in various cities of the world, central regions have lost their livability for various reasons and have become places that only accommodate work and trade. Urban centers have become more problematic places as the residents of the central region move away from them due to various problems they face here and move to the suburbs; buildings were evacuated, lost their functions, shops were closed, most of the social–cultural activities went far from the city center, and, as a result, the central districts turned into areas devoid of security and livability ([10], p. 24).

In a sustainable city, a functional layout that encourages mixed-use should be preferred instead of single-functional models by creating compact city centers with services and facilities within walking distance [7, 8, 16]. This will reduce the need for vehicles and public transport, strengthen social interaction, and reduce demands on infrastructure and energy resources.

When the built environment is combined with culture, it supports the creation of unique and identity places. The time frame for cultural consumption is not limited to the necessities of the normal working day. In other words, cultural activity can be used to create a '24 hour city' as the basis of the evening economy, because it can attract people not only to different places but also at different times, with things like longer store opening hours, evening.

2.5 Ecological Sensitivity

Most architects, town planners, and urbanists do not have the opportunity to design entirely new towns or villages, nor are they likely to become involved in the provision of an entirely new network or hierarchy of urban spaces. Providing solutions with ecological sensitivity in urban regeneration strategies is an opportunity to make places that have not been created with a concept or strategic tendency in this regard, in terms of ecological design. In this context, the spaces belonging to the central texture should be put into the service of the public with appropriate projects, and adaptive reuse possibilities of existing old and historical buildings and complexes should be evaluated. Encouraging concentration in the city center instead of spreading to the areas around the cities that have not been opened for construction before will contribute to the environment and its sustainability in every respect. The use of natural resources and energy, the use of materials with local and regional natural characteristics, the compatibility of the building with the environment and climate, and the renewal and/or recycling of existing buildings while integrating new buildings are the elements of ecological sensitivity.

3 Exemplary Cases

3.1 Ghirardelli Square, San Francisco, USA (1962–1967, 1982–1984)

Ghirardelli Square, which has a history of three centuries and is one of the first examples of the transformation of industrial heritage through adaptive reuse, has been an exemplary model for many new regeneration projects and brownfield developments. The complex, previously housing a wool factory, then a mustard factory, and finally a chocolate factory, consisted of a series of interconnected industrial buildings linked together by several courtyards (Figs. 1 and 2). The complex was redesigned by Wurster, Bernardi, and Emmons, with the preservation of the famous Ghirardelli chocolate factory and its renovation making the traditional production of chocolates open to the public, and its integration with new social–cultural events (restaurants and cafes, cinemas, science center, exhibition hall, sale units, etc.) and outdoors, it has become a point of attraction where local people and tourists spend time with pleasure for 24 hours (Figs. 3, 4, and 5). Ghirardelli's presence in San Francisco landmarks, shops, and restaurant menus has constructed a positive and nostalgic image in people's minds. People from all over the world flock to San Francisco to tour Ghirardelli Square and try Ghirardelli products in booths and many San Francisco residents cherish the name, Ghirardelli. Promoting cultural events and festivals with successful management, the complex has set an ideal example of how the industrial heritage can be exploited.

Fig. 1 The original Pioneer Woolen Building on San Francisco's northern waterfront before it was taken by the Ghirardelli Chocolate Company in 1893. (Source: https://www.ghirardelli.com/about-ghirardelli)

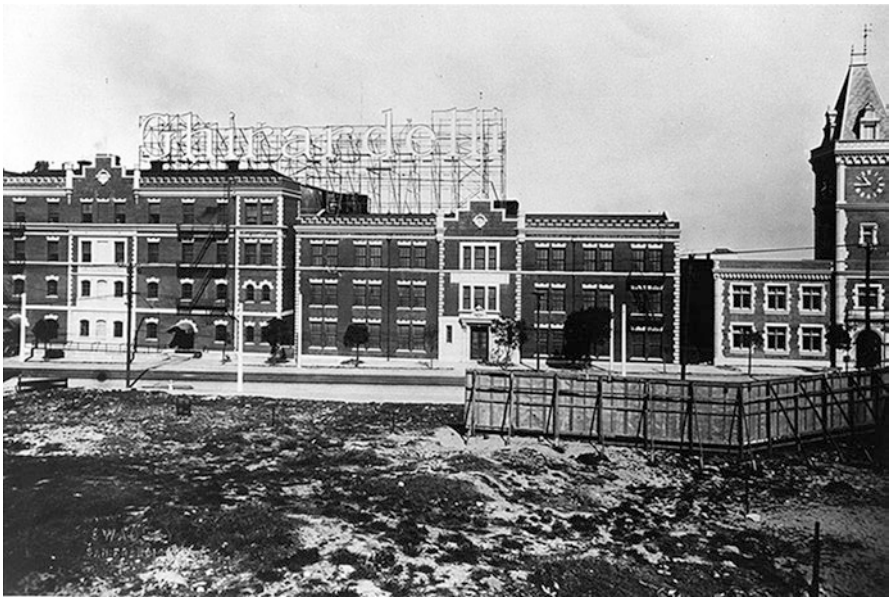

Fig. 2 Ghirardelli Factories in 1936 (Chris Carlsson Collection)

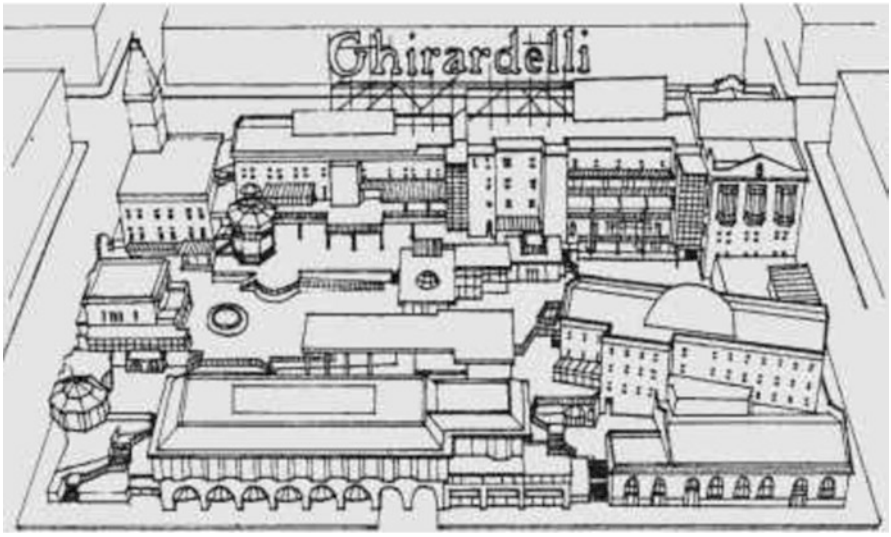

Fig. 3 The layout of Ghirardelli Square after adaptive reuse on the industrial site. (Source:https://www.northernarchitecture.us/urban-design-3/ghirardelli-square-san-francisco-usa-recycling-a-building-complex-19627-19824.html)

Fig. 4 (**a**, **b**) The views to Ghirardelli Square from the street and from the higher level. (Source: Photo by the Author, 1996)

Fig. 5 The view of Ghirardelli Square from the central courtyard. (Source: Photo by the Author, 2008)

3.2 Bulvar Shopping and Recreation Centre, Samsun, Turkey (1887, 2009–2012)

Bulvar Shopping and Recreation Centre is one of the successful brownfield development projects in Turkey, through which the city of Samsun has enlivened its decaying city center. The project, based on a successful adaptive reuse scheme in the former Regie Tobacco Factory complex, the first industrial complex in the city, was awarded at the ICSC European Conference in 2013 the "Best Rehabilitation Project Jury Special Prize" among the newly developed projects in the category of medium scale. The Regie Tobacco Factory was built in 1897 by the Regie

Management. It was the symbol of Samsun's agricultural history for 85 years and had a strong effect on people's daily lives, collective memory, and urban identity (Figs. 6 and 7). The factory, after 12 years of abundance following its closing in 1994, has successfully transformed into a multifunctional commercial and

Fig. 6 Regie Tobacco Factory: the first industrial complex in the city, 1887. ("Post card"—Source: Samsun Metropolitan City Municipality Archive)

Fig. 7 Regie Street in the 1880s (Samsun Metropolitan City Municipality Archive)

recreational complex between 2009 and 2012 and opened in July 2012 as a multifunctional commercial and recreational center following the restoration works by Torunlar GYO and Turkmall.

The complex, covering an area of 17.500 meter-square, was built with reinforced concrete and masonry construction technique designed with a courtyard plan system within a hierarchy of outdoor spaces of different sizes. In all the blocks in the complex, the floor covering is wooden, and the roof covers are traditional-style tiles. In all blocks, doors and windows are wooden, and stairs are reinforced concrete.

Today's Bulvar Shopping and Recreation Centre, developed from Regie Tobacco Factory as a multifunctional complex (2009–2012) and linked to the main square, marks the city center by providing a popular place for gathering, shopping, dining, and passing the time (Fig. 8). The most outstanding feature of this lively complex is its human-scale form comprising several plazas, courtyards, and pedestrian streets interlinked to each other and defined by active edges provided by cafes, restaurants, and shops.

Fig. 8 (**a**–**c**)The successful adaptive reuse scheme: from Regie Tobacco Factory (Source: Samsun Metropolitan City Municipality Archive) to Bulvar Shopping and Recreation Centre (Source: Photo by the Author, 2015, 2019)

The complex, the major public space of the city, could be considered the living heart of the city that is missing in many cities in Turkey and other countries, and the development of the pedestrian street in the complex is a very successful example of transformation without damaging its identity. The complex, which has become a multifunctional trade, shopping, and recreation center, makes a strong contribution to the identity, function, and vitality of Samsun city center today while contributing to the city's social and economic transformation [13].

3.3 The High Line, New York (1999–2011)

Built on a derelict railroad in Chelsea, the High Line was a collaborative effort between James Corner Field Operations, Diller, Scofidio + Renfro, and Piet Oudolf. As stated by Scherer [14], building the park required stripping the old railway down to everything but its bones and creating an entirely new landscape that functions as a park, pathways, and gathering spaces all at once.

The High Line is the perfect example of sustainable regeneration. The cross section has multiple layers; a porous drainage layer, gravel, filter material, subsoil, and upper soil layers. The materials used in the High Line have been selected for sustainability, considering their lifetime and long-term gain. Circulating water is used in some parts of the area. Plant species that are native, drought resistant, and

Fig. 9 The view of the elevated tracks at West 13th Street in New York in August 1915. (Photo by G. Grantham Bain, in https://www.shorpy.com/node/4794)

Fig. 10 (**a**–**c**) The High Line, New York. (Source: Photo by the Author, 2019)

suitable for microclimate and those that require less irrigation were preferred. The benches are made from sustainable resources. Some old buildings around the High Line were also reused.

The High Line's strong connections with its surroundings, its accessibility, wheelchair compatibility, and location between two magnet areas, together with the support of cultural centers on the line, make it an excellent attraction especially for young people and visitors of the city (Figs. 9 and 10).

4 Conclusions

Successfully implemented urban regeneration projects demonstrate that a holistic approach is essential for sustainable development. In this context, the first necessary step is "densification through brownfield development". This includes providing that historic complexes and buildings are properly reused, public spaces are retrofitted as livable places, good, compatible mixed-use is encouraged, culture is promoted, and ecological sensitivity is safeguarded". Ecological sustainability efforts must be embedded in all phases of urban regeneration and recycling old and historic buildings to safeguard sustainability. Further, the environmental legislation needs to be enhanced with additional regulations concerned with contamination, liability, and public participation issues.

The analyzed examples of urban regeneration through brownfield development reveal that their success continues if there is good management promoting social and cultural activities. Behind all schemes are different experiences, decisions, and dynamics, and all are places that contribute to the creative economy and focus on production.

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