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Towards A Sustainable Urban Form: A Comparative Analysis on Urban Regeneration between Crewe (UK) and Barahona de Fresno (Spain)

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Abstract

This paper will explore different approaches to sustainable urban form through the comparative analysis of two different locations: Crewe in the UK and Barahona de Fresno in Spain. Despite these locations have different scales, shortcomings, and opportunities, both existing settlements share some issues like the abandonment, isolation, deterioration, or deprivation of the community, which, although experiencing many changes over time, still retain significant aspects of their architectural, urban, and ethnological heritage. In this context, both examples have been redesigned under the same umbrella of sustainable urban regeneration and conservation, by applying the proper treatment that each case requires. In order to cope with such a situation, the urban regeneration of both settlements have been relied on the conservation of their existing local identity, either tangible or intangible, by attempting to reduce the impact of new private or public spaces within or outside its existing urban fabric. Within this framework, the desired balance between the regeneration and conservation of Crewe and Barahona de Fresno has been the main aim of these academic projects, in order to reinvigorate these existing settlements from the standpoint of sustainable urban form.

Keyword: Sustainable Urban Form, Sustainable Urban Regeneration, Urban Conservation, Heritage.

Introduction

The implementation of Information and Communication Technologies (ICT) in the past quarter-century and its quality has become one of the key factors to evaluate urban performance, alongside its physical infrastructure. In this context, the concept of a sustainable city is estimated to increase the competitiveness of cities (Caragliu, del Bo and Nijkamp, 2011). In order to evaluate the application of these sustainable urban regeneration principles, this paper presents a methodology for comparative assessment of two different settlements: Crewe in the UK and Barahona de Fresno in Spain (Della Spina et al., 2017). In accordance with this purpose, students of the Master of Architecture and Urbanism at the Manchester School of Architecture have developed two urban regeneration projects to transform these settlements into more liveable and sustainable human settlements, by identifying the existing problems of two different locations and providing

solutions (Roberts et al., 2016). It has also been discussed whether can be saved Barahona de Fresno from becoming extinct and the ways to improve both settlements to become more habitable urban areas.

The first part of this study offers a literature review on the sustainable urban regeneration approaches and aims to address its targets. The second part summarises the history and the existing urban problems of Crewe town centre and Barahona de Fresno, by explaining their urban form and transformation process. Finally, the paper is concluded by a comparative analysis of the sustainable regeneration proposals to be implemented in two different settlements by discussing the similarities and the differences.

Research Methods

In order to have a solid grasp of the existing environmental issues, a mixed method including quantitative and qualitative research methods has been followed. In this context, site analysis methods have been applied to both locations to gain an accurate environmental understanding (LaGro Jr, 2011). Within the scope of these analyses, the historical background and urban transformation of the regions, the use of existing land and buildings, the architectural features of these structures, existing urban deficiencies and demographic data have been examined to obtain qualitative data (Tallon, 2013). For both settlements, the obtained analysis data has been evaluated through a SWOT analysis (strengths, weaknesses, opportunities, and threats), which offers a framework to assess the feasibility of a project in its planning and application phases (Sabbaghi and Vaidyanathan, 2004). An indicator, which includes the implementation of smart infrastructure systems, conservation of the historical identity of the settlements and sustainable design approaches, has also been designated within the scope of regeneration proposals. In addition, similar case studies and a wide literature have been reviewed in order to offer solutions to the existing problems of both settlements in the design phase of the proposals.

Sustainable Urban Regeneration

Cities are often likened to living organisms which can transform and evolve to adapt to the changing world. Therefore, cities are never completed. Changing in land use and redeveloping neighbourhoods are parts of the transformation of cities. Urban areas extend or sometimes shrink. Changes in the environment, the economy, or social demand can all lead to pressure or alter land-use patterns. Urban regeneration is a newer phenomenon that emerged in the 1980s to contribute to adaptation of cities to changes and point out that it is about more than purely destruction and reconstruction. However, the term of regeneration has uncertain edges. According to some approaches, regeneration is needed to be evaluated economic, physical and social problems from a holistic approach (Jones and Evans, 2013). Alpopi and Manole define urban regeneration as enhancing the quality of life and investing in the future vision of cities. Regeneration actions which are broad in scope and tough are necessary for the future in any case (Alpopi and Manole, 2013). At the same time, urban regeneration is intrinsically sustainable because it attempts to resolve urban issues in an extensive and

systemic manner with the aim of achieving long-term improvements in the economic, physical, social, and environmental conditions of a changing city (Hussein, 2018).

The focal point of environmentally sustainable regeneration strategy is to enhance the quality of life of local people. The initiatives based on improving job opportunities, training, housing renovation, regeneration of town centres, crime prevention and community wellbeing can be regarded as parts of sustainable regeneration strategies (Bennett and Patel, 1995).

On the other hand, urban regeneration strategies aim to achieve socially sustainable outcomes. Colantonio states that urban regeneration projects can produce results in ten social sustainability dimensions which are employment, education, demographic change, culture and identity, health and safety, housing and built environment, participation, social capital, social interaction, and quality of life (Colantonio and Dixon, 2009). Likewise, in urban regeneration projects, derelict heritage buildings can be made more functional by containing old and new elements. While it enables the land use in cities to be more effective, it also establishes a link between the past, present and future (Kim and Kwon, 2020).

Crewe's Urban Form and Transformation Process

Crewe is a railway town in South Cheshire with a population of 70,000. During the Victorian Era, it consisted of only a few farms and cottages with approximately 700 people. After 30 years of the opening of the Grand Junction Railway, the population grew to 40,000 people by 1871 (Glancey, 2008). The urban design of Crewe was made by Joseph Locke, who started planning houses around the railway work centre (Devine and Clark, 2003). The civic heart of the town was built around Earle Street with Market Street and Market Square. The surrounding streets were residential terraces (Kelham and Rudlin, 2007). In the late Victorian and Edwardian periods, well-laid-out streets of substantial terraces extended to the north and south of the centre with the associated community and commercial buildings (Devine and Clark, 2003).

After the Victorian and Edwardian Eras, Crewe grew outwards along the main road routes. The west of the town saw a large development of 'green suburb' estates (Kelham and Rudlin, 2007). Following the Second World War, many important buildings were destroyed during this period.

At the beginning of the new century, the modern developments destroyed much of the early industrial housing at the town's historic core. The urban area of Crewe doubled from 1912 to 2000, and a large modern industrial estate was developed in southeast Crewe (Kelham and Rudlin, 2007). Now, Crewe is being considered as a key gateway from the South to the North. The initial formation, growth, and transformation of Crewe town have always been affected by the railway.

Likewise, Crewe's architectural heritage corresponds to the developments of the railway. In the town centre, the oldest one is the Christadelphian Church, which was built in 1847 with a Gothic Revival style. Other public

buildings that are listed, Market Hall, Lyceum Theatre, Tower of Chris Church, and Municipal Building, have the characteristics of various architectural styles. Edwardian, Italianate, Gothic, and Baroque styles emerged in Crewe town centre throughout history (Historic England, n.d.; The Builder, 1854; Crewe Lyceum, n.d.). The historical buildings are one of the strengths of Crewe in terms of the identity of the town. The historical urban context ensures attractive places besides improving city identity.

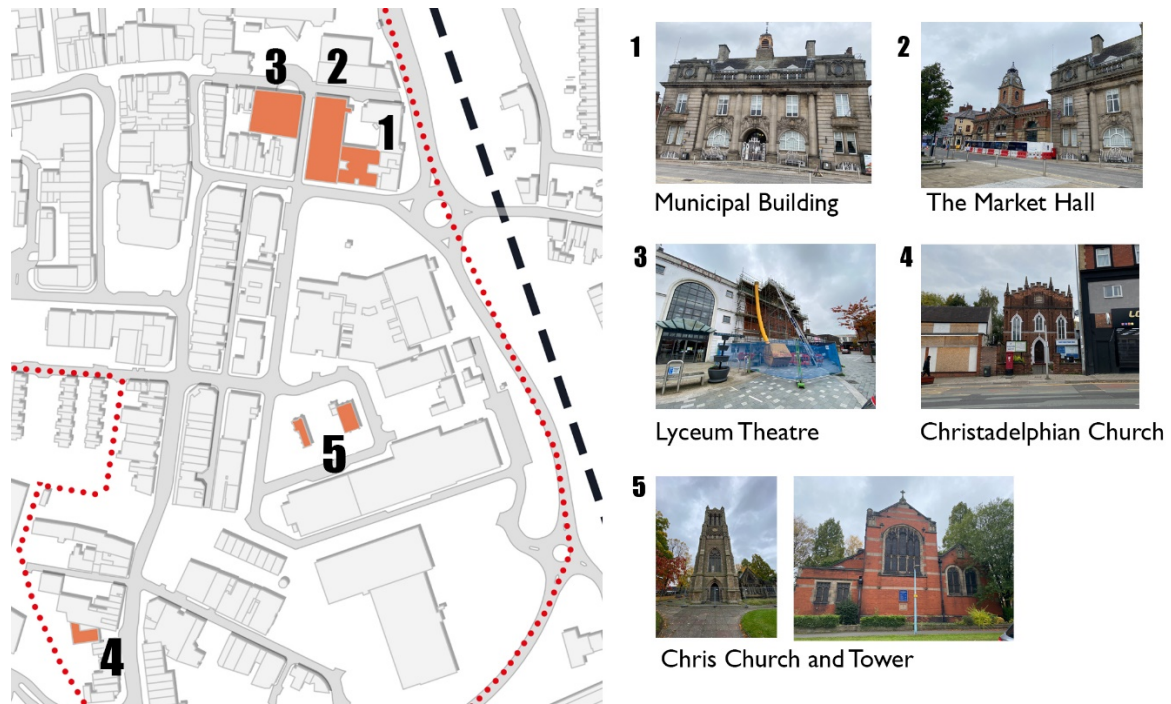


Figure 1. Crewe's heritage buildings (Source: Authors)

Barahona de Fresno's Urban Form and Transformation Process

Barahona de Fresno Barahona de Fresno (Segovia - Spain), is one of many depopulated small villages located throughout the mid-north of Spain, because of a migration process of people leaving the land and moving to the main cities (Paniagua 2011; Recano, 2017). This case has been seriously marked by the release for sale of almost the whole village in 2017, which has prompted the rejection of the seven inhabitants who are currently living in the village.

Barahona (Spanish-Basque term that means "good mountain") has its origin in a small Roman villa, which was located at the boundaries of the municipality's meadows, nearby Barahona river. At the end of the 18th Century the six families who at that time lived in the village moved out, what led to the village of Aldeanueva del Monte to take over Barahona de Fresno, both currently being part of the municipality of Riaza (García García, 1980). In the mid-20th Century, villagers from Barahona de Fresno and from different surrounding settlements began to construct the railway track that runs through the village to connect Madrid with Paris. However, such railway track was only used for more than twenty years (from the 70s to the 90s).

Despite most of the architectural heritage of Barahona de Fresno is buried below its cereal fields, there are still few traditional country houses and the 12th-century Romanesque church, which had a Romanesque tower before constructing the belfry that remains.

The village is comprised of three main areas: the settlement, farmland, and woodland. Within the settlement, the streets of the site are mainly composed of semi-enclosed external roads and irregular internal roads. The streets can be classified into three types according to their wideness and openness to the countryside, but the village has a smooth skyline and similar hues in warm colours that unify the whole townscape. The main public spaces of the settlement are the church, a playground for children and a small square, where villagers often have meetings and local festivities.



Figure 2. Serial visions of Barahona de Fresno (Source: Authors)

Comparative Analysis Between Both Case Studies

The concept of Sustainable Urban Form has long been embodied in planning policy and urban design theories such as Smart Growth, New Urbanism, Urban Intensification and Compact City. All these emphasize on the importance of generating diversity, mix of uses, transport choices and walkability, permeability, and street grids, as well as compact forms and higher densities (Hemani and Rudlin, 2012). Both Crewe and Barahona de Fresno lack specific industries and not enough job opportunities, as well as the two are also preparing for better connections in the future. The former has the UK's long-term planned HS2 station, and the latter has available rail lines and convenient intercity bus lines. The urban fabric of Crewe is relatively complete, but there is a lack of public space and vitality. In the case of Barahona de Fresno, despite its urban fabric is

partially demolished and in very poor conditions, the existing settlement can still be regenerated in several ways (Jabareen, 2006).

Table 1. Comparasion SWOT analyses of Crewe and Barahona de Fresno (Source: Authors)

	Strengths	Weaknesses	Opportunities	Threats
Crewe	Railway history, location of town, attractive heritage buildings and community spirit.	Too much car parking lots taking away the identity, poor walkability, poor public transport, abandoned buildings and lack of identity.	Open space in the town centre, manageable human scale, willing inhabitants and HS2 arrival.	HS2 arrival, elderly population dominance and fed-up community.
Barahona de Fresno	Access from four different highways, historic housing and landmarks, open spaces, and beautiful landscape.	Redundant properties, territorial isolation, lack of communal space, narrow and unsecured roads.	Potential for tourism development and research centre, thanks to its geography, heritage, natural resources, and open areas.	Getting government approval, investment to improve the village, and train operations.

The academic project for Crewe has included a car-free plan to avoid traffic jams in the central area of the city, as well as encouraging the use of public transportation and increasing the green areas. In Barahona de Fresno’s masterplan, the landscape resources have been considered for its future regeneration, both in terms of conservation and economy. Firstly, by preserving existing open areas for leisure, a tourism industry could be formed; secondly, by introducing research institutions based on astronomy, agriculture and animal husbandry, a diverse and active community could be created (Thornburn, 1971).

The concern for the local community is first reflected in the urban open space in the Crewe project. Increase outdoor activity venues to meet the needs of different age groups: set up a series of outdoor venues, like Heritage hub, Green Corridor, Regeneration Areas, Eco-Creative Hub, Exhibition Area, and several gardens. In addition to this, it was introduced intelligent city equipment to achieve a more energy-efficient and sustainable city centre.

Similarly, the urban regeneration of Barahona de Fresno also embodies humanistic care, setting up restaurants, shop, café, museum, office space, gallery, and clinic to improve the life of the local community. Barahona de Fresno’s project has also paid enough attention to plan the expansion of the village to accommodate future residents and industries. Through the maintenance of existing railways and the construction of a new railway station, the village could be connected to the rest of the territory, thus facilitating the transportation of residents, visitors, and goods.

Culturally, the operations of the two settlements are basically the same. Both projects aim to restore the local heritage of both settlements as much as possible. Through different transformation methods, the

heritage can be adapted to contemporary urban life and reintegrated into the local community. Within this context, the subsequent plans have proposed the regeneration of both locations through the preservation of their urban form, landscape resources and heritage buildings.

Table 2. Differences and similarities between the two plans for Crewe and Barahona de Fresno (Source: Authors)

	Crewe	Barahona de Fresno	Differences	Similarity
Environmentally	Reduce the use of ground parking lots to increase the green area; formulate a car-free plan to encourage the use of public transportation; plan to build environmentally friendly municipal infrastructure.	The local area has good landscape resources, and the plan is to build parks and sightseeing facilities to attract tourists to introduce the tourism industry; at the same time, animal and plant resources can also be introduced into research institutions to expand the industry.	Crewe's project focuses on the increase of green space in the city center; Barahona de Fresno's project focuses on the introduction of sustainable industries through environmental resources.	Have made full use of the local landscape resources.
Local Community	Pay attention to local community life, provide urban parks, renovate abandoned buildings, and stimulate the vitality of local communities.	Provide more public space, employment opportunities and amenities to meet the basic needs of local communities.	Crewe's community is relatively mature and focuses on stimulating the vitality of the community; Barahona de Fresno's project aims to improve the basic needs of the community.	Fully consider the needs of the local community.
Culturally	Restore the local heritage and put it back into use.	Restore and reuse the local heritage, as well as expand the existing settlement.	Crewe's project focuses on the reuse of heritage buildings; Barahona de Fresno's project also considers the expansion of the village.	Have restored local heritage buildings.

Conclusions

Cities have been changing to adapt to the new developments in the world. Urban regeneration which strengthens the cities in terms of economic, social, and physical is the key concept in the adaptation process. Sustainable urban regeneration is more than a range of construction actions in the built environment for future cities. To achieve sustainable urban regeneration, the urban problems need to be re-examined by considering changes in land-use patterns, social and environmental to improve the quality of life of people and create a better future for cities. In this study, Crewe and Barahona de Fresno have been evaluated from a sustainable urban regeneration perspective. Barahona de Fresno is on the edge of the danger of abandonment, whereas Crewe is searching for a new smart future vision in the shade of the mega project. Although these two locations have different urban contexts, they have some similarities in terms of the needs of the local community, landscape resources and local heritage buildings. To create a sustainable future for both two against the irresistible transformation process, the built environments could be redesign by considering the potential of the landscape, the activities are needed to create an attractive social life for local communities, and heritage buildings could be conserved and renovated for a sustainable urban future.

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