

# RETROFITTING SUBURBIA THROUGH PRE-URBAN PATTERNS

Pere Vall-Casas

## **Abstract**

This paper suggests that an analysis of pre-urban patterns is an important basis for developing strategies to retrofit suburbia. Specifically, the recovery of rural grids and watercourses as the main elements of civic networks allows one to: (1) increase diversity, accessibility and *nodality* of the overlapping residential tissues; (2) reinforce the diffusion effect of isolated urban transformations; and (3) integrate urban retrofitting strategies with the unique characteristics of each place. This approach is outlined using the Barcelona Metropolitan Region in Spain as an example, and considering the applicability to US suburbs such as those in Boston or Phoenix.

## **Introduction**

The homogeneous quality of the suburban landscape overlays the unique nature of each place (CALTHORPE, 1993). The characteristic agricultural landscape is replaced by an anonymous built environment, disconnected from the particularities of place and more privatized (JACKSON, 1984). The recycling of pre-urban materials contained in the suburban tissues should be considered to help reverse this situation.

Homogeneous residential developments generally show little regard for the pre-existing natural and cultural substratum. In this context there is a disconnection between the new tissue and the old place where it is located. The process of loss of identity and intensive development is common. The recovery of the underlying rural structure may contribute to the transformation of subdivisions into authentic neighborhoods, thus improving the quality of life of the residents.

The building of strong urban identities requires well structured civic contents (TALEN, 2008) that must also be connected to place. It is therefore appropriate to delve into the specific morphological characteristics of the different suburban landscapes from an historic perspective. The understanding of the various layers that have built each tissue gives us better opportunities to intervene (SECCHI, 1994; CORBOZ, 2001). The pre-urban cultural heritage, although fragmented and simplified, is still a strategic factor to be contemplated. This article outlines the resilience and cohesive social and physical capacity of pre-urban patterns, using the Metropolitan Region of Barcelona (MRB) in Spain as an example.

## **Pre-urban patterns and civic networks**

Subdivisions are based on the transformation of agricultural land into urbanized land. The shape of the new urban product is the result of the tension between three parameters: (1) urbanization techniques (streets and plots layout), (2) geographical constraints (topography and water courses), and (3) traditional farming conditions (roads, fields and farms). Developers apply urbanization techniques that best meet the market's demands and ensure revenue generation, often disregarding the unique

characteristics of place. The agricultural settlement, on the other hand, is organically linked to the territory through a sedimentary and slow adaptation to the geographical constraints.

Resistant pre-urban patterns are those spatial structures that survive the pressure of the urbanization process and determine the form of the urban tissue (BOERI & al., 1993).

The pre-urban fabric has often been considered the reason of the scattered and disordered suburban environments and its flawed structure (SCHEER, 2001). However, the capacity of the rural grids to generate both guidelines for a more sustainable urban form and citizen participation should be considered.

Roads and paths, old villages, farms and churches, as well as infrastructure of irrigation and drainage, form traditional networks based on which the productive and social activity of farming communities has been organized. These materials increase functional diversity, pedestrian accessibility and *nodality* of overlapping tissues. Rural networks were established through the systematic and transforming actions of people without mechanic transport systems. The urban markers (LYNCH, 1960) resulting from this process still maintain the old territorial coherence and induce healthy behaviors derived from the technical limitation.

The value of pre-urban fabrics surpasses their physical reality, sometimes weak and deteriorated, and is enriched with the contribution of a shared significance. The community involvement is usually at the base of many initiatives to recuperate heritage elements and cultural resources. A mosaic of public and private users converges, each having different objectives in its conservation and reuse (HAYDEN, 1995; ALANEN & MELNICK, 2000).

Accordingly, the cultural heritage can play an important role, together with the open spaces and the public transport systems, in structuring suburbs through civic networks. The concept of civic network is not new and its design, as a system of physical landmarks with collective meaning, has a relevant theoretical background (LYNCH, 1960; ROSSI, 1966). Its application in the urban renewal of the compact city has been tested successfully in Barcelona during the 1980's (BUSQUETS, 1992). The construction of a well-articulated grid of public spaces such as squares, civic axes and parks, contributes to the visual understanding of the city and makes it more livable. It

makes sense to apply this strategy in efforts to retrofit suburbia. Local roads, streets and paths; farms, parks and urban centers, watercourses and canals, can be articulated in a united and meaningful urban structure. The potential of the civic networks built by pre-urban patterns in the regeneration of the subdivisions of the MRB, Spain, is considered below.

### **The pre-urban patterns for retrofitting suburbia in the MRB, Spain**

The MRB suburban growth begins during the 1960's in a context of economic and demographic growth and widespread private mobility. Real estate business expectations on the one hand and the increasing demand for second residence, detached housing on the other hand, found favorable conditions of accessibility, land availability and lack of planning in the rural municipalities of the periphery of Barcelona. Since the 1990's, the subdivisions are experiencing a general growth trend of their population and an increase in primary residence housing. Currently, these urban tissues present significant deficits of basic urban services (pavement, and supply and drainage networks) (FONT & al., 1999; BARBA & al., 2006).

There have been major efforts to outline the planning framework from which to develop the improvement of the subdivisions. The recent Metropolitan Territorial Plan of Barcelona identifies large residential areas to regenerate (GENERALITAT DE CATALUNYA 2009). There is a certain consensus on overall strategies to adopt: (1) support for public transport, (2) introduction of new urban centers, (3) incorporation of higher densities allowing services and facilities, and (4) preservation of a regional open space system (NEL·LO, 2002; RUEDA, 2002; MUÑOZ, 2008; BARBA & al., 2006). Therefore, appropriate technical bases are needed in order to move forward with the implementation of these strategies.

Within this framework, the authors have studied the potential of applying pre-urban patterns for structuring the suburbs of the municipality of Lliçà d'Amunt, MBR, Spain. Its 1,350 acres of subdivisions, added to those of the neighbouring municipalities, make up a suburban continuum with a density of 6 dwellings / acre (see Figure 1). The recycling of historical materials is approached from two different and simultaneous perspectives:

the identification of the pre-urban patterns and the design of a civic network that takes advantage of them.

The analysis of the interaction between the pre-existing landscape and built-up areas allows one to identify the following pre-urban patterns and these implicit guidelines towards sustainable development:

- The permanence of the agricultural plots. The creation of residential tissue through individual property units contributes to the delineation of each subdivision as a neighborhood with its own spatial identity (see Figures 1 and 2).
- The permanence of the homesteads system. The farms with associated spaces, embedded in the residential tissue, provide both functional diversity and opportunities to increase *nodality* (see Figures 1 and 3).
- The permanence of the rural grid. The continuity and the organizing capacity of old roads, transformed into civic axes, allows one to structure the set of subdivisions in a unified residential district (see Figure 3).
- The permanence of the watercourses. The continuity of watercourses allows one to connect their associated open spaces, residual interstices or agricultural zones, and therefore increases the pedestrian accessibility and environmental quality (see Figures 4 and 5).

The design of a civic network, as a creative synthesis of the opportunities that pre-existing structures may provide, multiplies the regenerating capacity of the isolated materials (see Figure 6); and unifies efforts towards a clear model, well accepted by the various stakeholders who share the same territory. Simple approaches are needed that give stability to the regeneration process and are able to integrate multiple local projects (VON PETZ, 2006).

### **The pre-urban patterns for retrofitting suburbia in North America**

The geographic diversity and the historical background of the American suburban phenomenon, developed from the beginning of the nineteenth century on very disparate metropolitan territories (BERGER, 2006; HAYDEN, 2003; KENNETH, 1985), are two

important factors to assess the regenerating capacity of the pre-urban patterns. Some morphological studies have noted the presence of rural roads and plots underlying the layout of subdivisions (BOERI & al., 1993; SCHEER, 2001). According to this statement, the question proposed below is in which contexts this presence of rural roads and plots can be significant.

We can assume in general terms that the inertia of the agricultural substrate depends largely on two factors: its own consistency and the nature of the urbanization process. The comparison between the suburbs of the North East and the South West can be used to support this statement. The residential sprawl of Metro Boston, Massachusetts illustrates subdivision settlements on historical agricultural substrates through an adaptive process with small plots. The case of Metro Phoenix, Arizona shows the overlay of large-scale homogeneous residential areas on territories of recent development, in contrast to the previous case. The comparison between them also reveals the local character of the pre-urban networks as specific products of the geography and the culture.

The town of Sudbury in Metro Boston combines a complex water domain made up by rivers, streams, wetlands and ponds, with the pre-existences of agricultural development that starts in the middle of the 17th century. The presence of farms embedded in the residential tissue and old farm villages located at crossroads providing community services, is relevant. The permanence of the rural road grid with segments of recognized historical value is also significant. Winding routes with intersections every 1 or 2 miles function as edge collectors of the inner subdivisions. Commercial and sport areas, schools and churches, are located on the transit channels with particular intensity in some intersections. A sort of soft and diverse sprawl is developed through sedimentary and small real estate operations. The pre-existing elements are recycled or ignored but not destroyed (see Figure 7).

The case of Phoenix, where suburbia extends over a recently developed desert, exemplifies the apparent lack of historical materials. An agricultural substrate of lower inertia is constructed from the second half of the 19th century, through the recycling of a system of canals originally built by native tribes to irrigate the Valley of the Sun. The land survey organizes the growth and the geodesic grid provides access to large

residential clusters that contain their own public spaces and amenities. The routes concentrate less civic life and tend to become borders of autonomous parts. Large-scale real estate products, roughly overlaid on agricultural land reduced to the abstract status of available surface, lead to a hard and homogeneous sprawl, more generic, simplified and mechanical (see Figure 8).

In both cases the presence of pre-urban materials is increasingly appreciated by local communities because it offers an opportunity for urban improvements. Many cities of Metro Boston have their Heritage Landscape Inventory prepared by the State Agency DCR, in response to strong citizen commitments to preserve cultural resources (<http://www.mass.gov/dcr/>). Also in Phoenix, where the inertias are less perceptible, civic platforms emerge with the same purpose (<http://www.canalscape.asu.edu/>). Notions of pre-existing identity can become the foundation for the shared aspirations and the strategic argument for a more sustainable urban form.

### **Does retrofitting suburbia through pre-urban patterns fit with North American suburban culture?**

Once the potential of the heritage networks related to nature and culture has been observed, the next question to be considered is if their recovery has enough background in suburbia retrofitting, especially when most of the current proposals addressed isolated goals of retrofitting. The improvement of subdivisions only based on *urban acupuncture* is subject to two main constraints: the isolation of actions, which compromises their diffusion effect, and management difficulties due to the rigidity of residential tissue.

An intermediate approach between the local and regional scale may help to resolve both limitations. The heritage networks allow for the multiplication of regenerative effects on a broad spectrum of retrofitting projects. Likewise, an intermediate approach allows the integration of static and elastic tissues, as well as open spaces. The difficulties of financing targeted retrofitting interventions can be compensated with revenues generated by the densification and incorporation of new uses in areas with

flexible land use. Therefore, the recovery of pre-existing networks with civic content, mainly old roads and watercourses, is advisable.

Diverse studies on the evolution of the historic suburbs note the progressive transformation of significant rural routes in civic axes and the systematic investment in parks addressed to control water bodies and to build open space systems (HOLCOMB, 2008; WARNER, 1962). These are two recurrent strategies in the long tradition of construction and reconstruction of American suburbia. Current projects aimed at the recycling of commercial strips (DUNHAM-JONES & WILLIAMSON, 2009) and the recovering of metropolitan open spaces (PLATT, 2006; GIRLING & HELPHAND, 1997) address the same topics with a new vision. Therefore, a solid background endorses the applicability of the suburbia retrofitting through pre-urban patterns.

## **Conclusion**

Despite the fact that the resolution of suburban pathologies is often tackled through generic answers, the authors suggest that more attention should be paid to the opportunities provided by the specific substratum. A better understanding of the underlying codes serves as the basis for introducing guidelines for the incremental progress towards metropolitan sustainability.

The recycling of pre-urban fabrics leverages the social capital invested by previous generations. Additionally, it approaches urban improvement in a way that allows for a continuation of local identity. For these reasons, pre-urban patterns are strategic and deserve special attention. However, the administrative fragmentation hinders the development of shared opportunities, and a major effort to establish broad alliances is required.

## **References**

ALANEN, A. R. & MELNICK, R. Z. (Eds.) (2000): *Preserving Cultural Landscapes in America*, The Johns Hopkins University Press, Baltimore.

- BARBA, J. & MERCADÉ, M. (2006): *Les urbanitzacions a la província de Barcelona. Localització i característiques dels sistemes de baixa densitat residencial*, Diputació de Barcelona, Barcelona.
- BERGER, A. (2006): *Drosscape. Wasting Land in Urban America*, Princeton Architectural Press, New York.
- BOERI, S. & LANZANI, A. & MARINI, E. (1993): *Il territorio che cambia. Ambienti, paesaggi e immagini della regione milanese*, Abitare Segesta Cataloghi, Milano.
- BUSQUETS, J. (1992): *Barcelona. La construcció urbanística de una ciudad compacta*, Ediciones del Serbal, Barcelona, 2004.
- CALTHORPE, P. (1993): *The Next American Metropolis Ecology, Community and the American Dream*, Princeton Architectural Press, New York.
- CORBOZ, A. (2001): *Le Territoire comme palimpseste et autres essais*, Éditions de l'Imprimeur, Besançon.
- DUNHAM-JONES, E. & WILLIAMSON J. (2009): *Retrofitting Suburbia. Urban Design Solutions for Redesigning Suburbs*, John Wiley and Sons, Hoboken, New Jersey.
- FONT, A. & LLOP, C. & VILANOVA, J. M. (1999): *La construcció del territori metropolità. Morfogènesi de la regió urbana de Barcelona*, Mancomunitat de Municipis de l'Àrea Metropolitana de Barcelona, Barcelona.
- GENERALITAT DE CATALUNYA (2009): *Pla Territorial Metropolità de Barcelona. 2009*, Generalitat de Catalunya, Departament de Política Territorial i Obres Públiques, Barcelona.
- GIRLING, C. L. & HELPHAND, K. I. (1997): "Retrofitting suburbia. Open space in Bellevue, Washington, USA", *Landscape and Urban Planning*, 36: 301-313.
- HAYDEN, D. (1995): *The Power of the Place. Urban Landscapes as Public History*, The MIT Press, Cambridge.
- HAYDEN, D. (2003): *Building Suburbia. Green Fields and Urban Growth. 1820-2000*, Pantheon Books, New York.
- HOLCOMB, E. L. (2008): *The City as Suburb. A History of Northeast Baltimore since 1660*, The Center for American Places at Columbia College Chicago, Chicago IL.
- JACKSON, J. B. (1984): *Discovering the Vernacular Landscape*, Yale University Press, New Haven.

- KENNETH T., J. (1985): *Crabgrass Frontier. The Suburbanization of United States*, Oxford University Press, New York.
- LYNCH, K. (1960): *The Image of the City*, The Massachusetts Institute of Technology Press, Cambridge.
- MUÑOZ, F. (2008): *Urbanización: paisajes comunes, lugares globales*, Editorial Gustavo Gili, Barcelona.
- NEL·LO, O. (2002): “Dinàmiques urbanes, activitats emergents i polítiques públiques a la regió metropolitana de Barcelona”, *Papers. Regió Metropolitana de Barcelona*, 36: 105-114, Institut d’Estudis Regionals i Metropolitans de Barcelona, Barcelona.
- PLATT, R. H. (Ed.) (2006): *The Humane Metropolis: People and Nature in the 21st-Century City*, Lincoln Institute of Land Policy, Cambridge.
- ROSSI, A. (1966): *L’Architettura della città*, Editorial Gustavo Gili, Barcelona, 1971.
- RUEDA, S. (2002): “Els costos ambientals dels models urbans dispersos”, *Papers. Regió Metropolitana de Barcelona*, 36: 73-104, Institut d’Estudis Regionals i Metropolitans de Barcelona, Barcelona.
- SECCHI, B. (1994): *Tre piani. La Spezia, Ascoli, Bergamo*, Franco Angeli, Milan.
- SCHEER, B. (2001): “The Anatomy of Sprawl”, *Places: A Forum of Environmental Design*, 14, 2: 25-37.
- TALLEN, E. (2008): *Design for diversity: exploring socially mixed neighbourhoods*, Architectural Press, Burlington.
- VON PETZ, U. (2006): “¿Resucita el ave fénix de sus cenizas?. La Exposición Internacional de Construcción (Internationale Bauausstellung-IBA) del Parque del Emscher”, *Urban*, 11: 44-69, Departamento de Urbanística y Ordenación del Territorio, Universidad Politécnica de Madrid, Madrid.
- WARNER, S. B. (1962): *Streetcar Suburbs. The Process of Growth in Boston (1870-1900)*, Harvard University Press, Cambridge, 1978.

## Figures

**Figure 1.** Subdivisions of Lliçà d'Amunt, Metropolitan Region of Barcelona, Spain. Farms embedded in the residential tissue.

**Figure 2.** Topographic map and subdivisions boundaries. Lliçà d'Amunt, Metropolitan Region of Barcelona, Spain, 1977. Source: Master Plan of Lliçà d'Amunt, 1977. Generalitat de Catalunya.

**Figure 3.** Subdivisions of Lliçà d'Amunt, Metropolitan Region of Barcelona, Spain. Pre-existing substratum: homesteads system.

**Figure 4.** Subdivisions of Lliçà d'Amunt, Metropolitan Region of Barcelona, Spain. The structuring elements in agroforestry zone: forest, agricultural land and farms.

**Figure 5.** Subdivisions of Lliçà d'Amunt, Metropolitan Region of Barcelona, Spain. The structuring elements in urban zone: parks and social facilities, commercial activities, public transport system and farms.

**Figure 6.** Subdivisions of Lliçà d'Amunt, Metropolitan Region of Barcelona, Spain. Synthesis of the structuring elements: open space system, civic axes and farms.

**Figure 7.** Sudbury, Metro Boston, Massachusetts, USA, 2009. Source: <http://earth.google.com>.

**Figure 8.** Metro Phoenix, Arizona, USA, 2009. Source: <http://earth.google.com>.