

## **Towards 'Mediterranean' Entropy? A Commentary on Urban Growth, Fringe Land, Demography and Economic Transition in Southern Europe<sup>1</sup>**

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### **Abstract**

*Urban expansion and the conservation of fringe landscapes are strictly interconnected issues. The present article debates on the relation between landscape and peri-urban agriculture and the possible implications in the management of rural areas, suggesting a framework to evaluate the intimate links between agro-forest systems and expanding urban settlements in the northern Mediterranean basin. A sustainable land management perspective permeating policies aimed at preserving fringe land to excessive and unwanted settlement scattering and landscape fragmentation is a relevant approach serving different dimensions (social, economic, cultural, political) of urban sustainability. A permanent assessment of such factors allows for the implementation of scenarios based on different development options. The present study contributes to systemic and multi-scale approaches informing territorial policies and integrated management of peri-urban agricultural landscapes.*

**Keywords:** Wildland-urban interface; Agricultural economics; Urban sprawl; Soil degradation; southern Europe

### **Introduction**

Urban expansion and the conservation of fringe landscapes are complex phenomena with implications for both socioeconomic and territorial issues (Bruegmann, 2005). Peri-urbanization processes have been assessed primarily by studying the dynamics of urban settlements with the use of indicators of population dynamics, economic activities, land-use and the evolution of regional disparities (Brueckner, 2000). The socioeconomic characteristics of peri-urban farming are also important to infer the specificity of suburbanization processes, possibly reflecting conflicts in the use of fringe land (Paul and Tonts, 2005; Catalan et al., 2008; Cakir et al., 2008).

The notion of landscape is centered on different issues within both a perceptive/subjective dimension and an objective/measurable dimension (Antrop, 2004). The former issue interprets the landscape as an 'hegemonic' concept related to both environmental sensitivity and aesthetic perception. On this base, the concept integrates a broad anthropocentric view, in which the landscape is defined by the individual perception (Consiglio d'Europa, 2000). The latter issue considers landscape as the product of millenary interactions combined with the joint action of multiple local phenomena including biophysical factors and long-established socioeconomic dynamics (Soliman, 2004; Jomaa et al., 2008; Geri et al., 2010). In both cases landscape is usually seen as a cultural and natural heritage which originates from the ongoing transformation of the ecosystem (Polyzos et al., 2008; Serra et al., 2008; Feranec et al., 2010) as a result of events determined by natural and human activities primarily developed for economic purposes (Vallega, 2008).

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The present contribution debates on the relation between landscape and peri-urban agriculture and the implications in sustainable management of fringe land, introducing a functional model to identify and depict the multiple relations between peri-urban landscapes and urban systems (e.g. Shresta et al., 2008). Eco-sustainable planning, integrated with research and policy dimensions, is a relevant approach to urban sustainability. The evaluation of the main factors contributing to the sustainability framework allows for the development of future landscapes' scenarios. The contribution finally debates on measures for the conservation of traditional agricultural landscapes in peri-urban areas according to the place-specific socioeconomic context. The role of multi-scale approaches is demonstrated to be crucial for a spatially-balanced, sustainable management of fringe landscapes devoted to agriculture.

### ***Transforming Landscapes, Urbanization and Social Science***

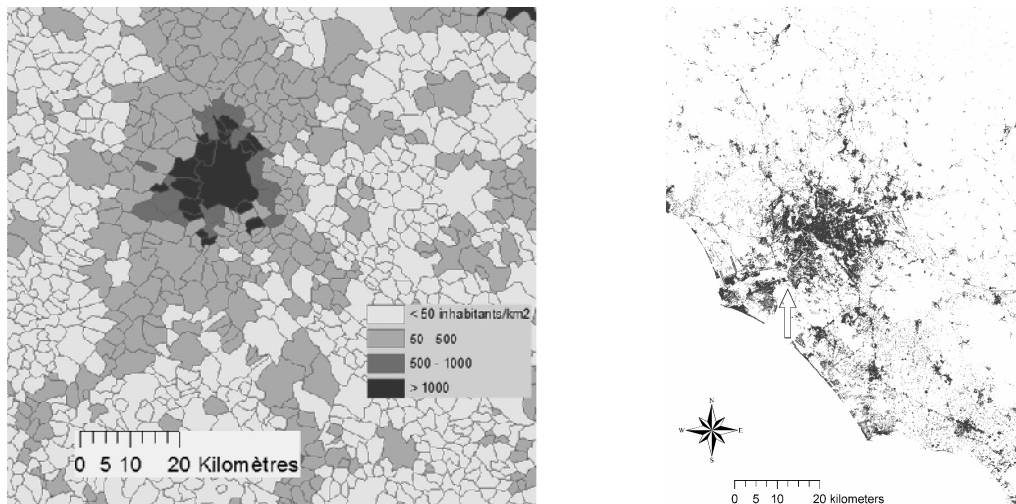
The evolution of rural landscapes over centuries has been considered as an adaptive process of local communities to the physical and economic constraints influencing crop production and rural development (Alphan, 2003). Such a continuously-adapting process ensures food, energy, building materials and modern lifestyles, consolidating a cultural landscape that preserves a wealth of knowledge in construction techniques and agronomic practices widespread in Europe since the Middle Age (Kostrowicki, 1984). Although local communities have developed continuous actions shaping land on the base of both natural and social changes, the derived landscape was progressively transformed by the evolution of civilization through historical events (Antrop, 2004).

Western societies have developed an anthropocentric attitude with regard to the relation with the natural environment (Beato, 1998). This is based on an optimistic outlook to ensure a sustainable social progress and possibly unlimited economic growth. Needless to say, such a view has stimulated only occasionally an evaluation of the impact of biophysical constraints on social systems and *vice versa* (Alberti, 2005). Social sciences integrated the concept of natural resources' limits with important changes in the human dimension in various interpretative frameworks, among which the 'new ecological paradigm' proposed by Catton and Dunlap (see Beato, 1998) is one of the most relevant. In this framework the concept of ecological and social 'carrying capacity' is considered as a key dimension of sustainability. At the same time, it was claimed how the social structure cannot be described and interpreted separately from the local territorial context. In other words, spatial dynamics and the behaviour of territorial actors cannot be analyzed without considering their social, historical, political and environmental settings. The understanding of the latent relation between actors and local socioeconomic systems may refine the analysis and, at the same time, may complicate the evaluation of the (even transforming) dualism between man and nature (Vallega, 2008).

Climate variations, soil degradation, changes in the use of land combined with social changes and the new economic dynamics are probably the most relevant biophysical aspects influencing landscape transformations (European Environment Agency, 2006). These factors impact negatively both rural districts and peri-urban areas. Managing natural and cultural resources is thus possible by integrating environmental functions and biodiversity with the conservation and development of specific territorial vocations and productions (Salvati et al., 2010). Owing to economic development and social changes, the abandonment of cultivated land has fostered since World War II in southern Europe stimulating a progressive 'naturalization' of rural spaces and a 'simplification' of fringe habitats, mixing rural landscape attributes and strictly urban functions (Vanier, 2003), as represented by the typical mono-centric spatial organization of entire regions (Figure 1).

These processes caused the progressive deterioration of all the traditional rural works previously carried out and the related landmarks being interpreted as a 'sustainable' modification of the landscape (Couch et al., 2007). The modernization processes that affected the Mediterranean landscape are thus associated with the growth of urban areas which mitigates the traditional urban-rural gradient and creates something like a 'third space' (Allen, 2003). This space is not strictly rural, not yet urban, but changes rapidly re-configuring in a mixed and confused use of land (Aguilar, 2008). Examples of changing landscapes in the 'third space' Mediterranean fringe are reported in Figure 2.

**Figure 1: (left) An example of a typical monocentric region with a population density gradient decreasing from the inner city to the outer suburbs; (right) urban scattering around a semi-compact central city (arrow)**



Source: authors' own elaboration

While landscape changes - more or less irreversibly - due to the impact of natural phenomena, human activities are shaping the ongoing process of land fragmentation associated with uncontrolled urban expansion. Although important biophysical changes reflect the continuous action of natural forces, the major landscape alterations are undoubtedly caused by human pressures, as already pointed out more than fifty years ago by Sereni (1961) in a seminal work on Italian rural landscapes.

**Figure 2: The urban-rural gradient in the Mediterranean region (left: compact and dense urban areas; middle: a rural area devoted to traditional agriculture, e.g. vineyards, surrounding a big city; right: a mixed landscape with low-density settlements intermixed with crop and semi-natural uses of land. Source: authors' own photographs**



### *Peri-Urban Landscapes and the Socioeconomic Context*

Starting from the Conservative Practices promoted by the Common Agricultural Policy, measures for soil conservation and prevention of erosion, have been traditionally supported through subsidies and incentives for farmers. However, despite rural development policies, agricultural landscapes have often changed their structure, producing deprived and marginal socioeconomic contexts exposed to the risk of land abandonment. In these areas, the dominant soil degradation processes (erosion and in some cases, salinization or compaction) is the result of a possibly unsustainable land management driven by short-term economic perspectives. The thorough human pressure on land determined by real estate speculation exalted these processes in peri-urban areas resulting in the abandonment of fertile and traditionally-farmed land (Kasanko et al., 2006).

As a matter of fact, the management of peri-urban Mediterranean land has become inadequate for the aging of farmers and the progressive urbanization of young people. Failures in land management at the local scale can be identified in the uncontrolled growth of vegetation with low ecological quality (and sometimes with higher fire risk) altering the traditional structure and composition of relict landscapes. This process consolidates the economic impact of land abandonment.

The so-called 'naturalization' process - positively perceived by the local community - can produce environmental effects with a negative impact on semi-natural ecosystems in both disadvantaged/marginal areas and in peri-urban regions. In this view, soil and landscape degradation are thus accompanied by an imbalanced social context.

Soil and water are the basic natural resources characterizing peri-urban land and their economic value is subject to market evaluation. On the one hand, the sustainable use of soil and water is problematic in a context of climate change and increased demand for natural resources. On the other hand, the soil capital tends to decline, in both physical and biological components, experiencing deterioration hard to reverse, at least in marginal socioeconomic contexts or where speculative pressures are high. This is particularly true in peri-urban areas affected by a remarkable anthropogenic impact reflected in soil sealing and habitat fragmentation (Schneider and Woodcock, 2008; Chorianoopoulos et al., 2010). For example, it is known that the urbanization of flat areas has impacted the most fertile soils for agricultural production replacing agriculture with more profitable activities (Salvati et al. 2010).

A sustainable management of water and a rational planning of the available soil resources allow to achieve a more sustainable development of fringe areas. The close connection between rural systems, landscape quality and natural resources requires efforts for restoring the ecological balance and the prevention of land degradation especially in fragile ecosystems such as the wildland-urban interface (Allen, 2003). A permanent assessment of the status and changes of natural resources is the base for any effective strategy aimed at containing landscape degradation (Castiglioni and Ferrario, 2007). The characteristics of soil and water resources should be permanently assessed by defining the degree of vulnerability to the various factors of instability at spatial scales compatible with planning development (Briassoulis, 2001).

Such information are required when designing a sustainable land management strategy with the final aim to protect peri-urban landscapes. While preservation and valorization of the landscape is a long-established challenge set up by the European Union for rural areas, this target is also important for the sustainable development of peri-urban areas. Hence, it is necessary to rethink a policy perspective creating stronger connection between the environmental dimension and the economic dimension, such as the promotion of 'niche' products in local markets assuring food security and fresh products to urban population.

### ***Planning a Sustainable Use of Land for Expanding Urban Regions***

According to place-specific socioeconomic and territorial patterns, the main practices for the conservation and restoring of peri-urban agricultural landscapes involve, among others, hydro-geological measures, the 'naturalization' of the waterways, the recovery of abandoned quarries, the containment of illegal dumping and forest fires, together with targeted measures for forestation of the steep slopes and the sustainable management of pasture land (Figure 3). However, only the increasing awareness of the socio-environmental role played by the agricultural landscapes can be considered the key word to reconnect - in a rapidly changing society - nature conservation and the economic viability of local development. To preserve traditional rural and cultural landscapes is certainly difficult in peri-urban contexts due to the complex interplay between the biophysical, social, economic, cultural and institutional elements shaping mixed urban-rural areas (Longhi and Musolesi, 2007).

While strictly rural landscapes can be effectively protected and maintained in an ecologically-viable way in the long term because of the moderate human pressure, tools that integrate the 'social' functions provided by the primary sector with environmentally-conscious local communities are especially needed in rapidly transforming peri-urban areas. There is indeed an urgent issue for active policies towards management and planning of fringe land in connection with a really 'holistic' vision that takes into account all factors composing relict landscapes and the interaction between them. This vision possibly implies a new paradigm for peri-urban areas, stimulating innovative strategies for intervention with special regards to the recovery of landscapes compromised by unregulated urban expansion or abandonment.

**Figure 3: (left) A peri-urban landscape with poor aesthetic value and affected by soil degradation requiring restoration actions; (right) a traditional agricultural landscape in a peri-urban area with medium-high aesthetic quality. Source: authors' own photographs**



Planning should consider criteria of multi-functionality of rural systems as a key target for the protection of natural resources and the implementation of conservative practices on fringe land. Moreover, to achieve a valuable synergy between ecosystem functioning and the aesthetic value of peri-urban landscapes, it is important to implement multi-objective interventions creating services whose benefits are not restricted to local communities while being available to a wider population inhabiting central cities (Figure 4). Appropriate actions should be definitely identified at the intersection between conservative farming practices, protection of natural habitats (namely forests and pasture land) and sustainable urban planning. Quali-quantitative approaches producing an in-depth analysis of demand and supply in land market will provide indications for fine tuned social, economic and institutional responses to land degradation, according to a predetermined set of policy scenarios.

**Figure 4: Landscape degradation and peri-urban agriculture (left: habitat fragmentation and consumption of fringe land after repeated burning; right: land abandonment of farming dryland under high speculative pressure from urbanization). Source: authors' own photographs**



Analytical dimensions may include a thorough evaluation of the peri-urban land with the aim to achieve an optimal balance between measures of degradation prevention and restoration of degraded landscapes. The centrality of the 'landscape' concept in the political discourse for peri-urban agriculture suggests that a unique policy target is a sub-optimal way to reconcile environment with local community issues. A broader program for the implementation of conservative agricultural practices, the conservation of natural land and the containment of urban sprawl seems to be a reasonable - and more 'holistic' - response to land degradation in peri-urban areas.

### **Final Remarks**

Social changes and economic development indirectly stimulate the conservation of peri-urban land and the recovery of degraded environments. At the same time, the potential for economic growth and social wealth depends strictly on the quality of soils and the environment *sensu lato*, the ecological carrying capacity of the system and policies assuring the maintenance of natural capital stocks. The derived model for landscape protection and recovery may have the final objective of rebalancing urban, peri-urban and rural areas into a new urban-to-rural, more sustainable 'continuum'. By underlying the strict connection observed in wealthier countries between urban sprawl and the conservation of fringe landscapes, the present contribution proposes a brief reflection on the relation between landscape and peri-urban agriculture and the possible implications for the management of rural areas. We conclude that a unique framework evaluating and planning the multiple relations between rural systems and human settlements in southern Europe could be ineffective when concentrating on individual - even if relevant - targets. Eco-sustainable planning, integrated with the multifaceted economic dimensions and social interests characterizing Mediterranean peri-urban areas is thus a more relevant approach to fringe land sustainability. Permanent assessment of these factors allows for the implementation of different development scenarios. As a concluding remark, the study contributes to systemic and multi-scaling approaches informing environmental policies, with the aim of achieving an integrated management of peri-urban landscapes.

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