Periurban landscapes in mountain areas

At the crossroads of ecological and socio-economic studies

Nathalie Bertrand and Sylvie Vanpeene-Bruhier

Electronic version

URL: <https://journals.openedition.org/rga/363>

DOI: 10.4000/rga.363

ISSN: 1760-7426

This article is a translation of:

Les paysages périurbains montagnards à la croisée des regards des sciences écologiques et des sciences socio-économiques - URL : <https://journals.openedition.org/rga/357> [fr]

Publisher:

Association pour la diffusion de la recherche alpine, UGA Éditions/Université Grenoble Alpes

Printed version

Date of publication: 15 December 2007

Number of pages: 69-80

ISBN: 978-2-200-92331-0

ISSN: 0035-1121

Electronic reference

Nathalie Bertrand and Sylvie Vanpeene-Bruhier, "Periurban landscapes in mountain areas", *Journal of Alpine Research | Revue de géographie alpine* [Online], 95-4 | 2007, Online since 24 June 2009, connection on 08 December 2022. URL: <http://journals.openedition.org/rga/363> ; DOI: <https://doi.org/10.4000/rga.363>

This text was automatically generated on 8 December 2022.

Creative Commons - Attribution-NonCommercial-NoDerivatives 4.0 International - CC BY-NC-ND 4.0
<https://creativecommons.org/licenses/by-nc-nd/4.0/>

Periurban landscapes in mountain areas

At the crossroads of ecological and socio-economic studies

Nathalie Bertrand and Sylvie Vanpeene-Bruhier

EDITOR'S NOTE

Translation: Brian Keogh

- 1 This paper is based on a two-year study undertaken by socio-economists and ecologists, the aim of which was to examine the effects of periurbanisation on the landscape and environment of an alpine area. The study focused on how space is taken into account respectively in environmental, economic and social processes. Three themes are developed: the approach from a landscape point of view, problems of spatial and temporal scales, and the choice of indicators. They require defining a hierarchy of questions and working together on subjects of common interest. Going beyond this requires conducting more specific types of analysis, of an ecological, economic or social nature, and thus leaving the common interface to give priority to specific disciplinary questions.

Introduction: on the sustainability of periurban landscapes in mountain areas

- 2 Beyond its purely spatial considerations, the landscape is stimulating research today in numerous disciplines, inspiring studies of phenomena in both the natural and human environment. Landscape can be studied from a purely ecological point of view, but also in terms of its social, cultural (Lepart et al., 2000), geographic and economic dimensions. The notion of landscape, as evidenced by the concepts of cultural landscape or *Kultural Landschaft*, underlines the importance of human action in the transformation of natural areas (Begusch et al., 1995) and their societal and temporal

construction. The interdisciplinary research that stems from this notion integrates the different dimensions of an area as a living space, such as the architectural and cultural background and environmental characteristics. It requires both a detailed explanation of the study context and a clarification of the specificity of the work undertaken.

- 3 Interest in this interdisciplinary approach is reinforced by the spatial changes currently underway, particularly those related to the spread of urban areas and the urbanisation of the countryside. Since the 1960s, the spread of urban areas has been a dominant trend throughout France¹ and has had a particularly marked effect in mountain areas. These spatially restricted areas have been subjected to the growth of valley conurbations and the development of a tourist economy, the latter affecting in particular those areas with a rich and varied ecology. In the Rhone-Alps region, the Alpine corridor (Sillon Alpin), which is very attractive from an economic point of view, illustrates this phenomenon well. Here, human impact has been reflected in an ever-increasing consumption of space, a trend that raises the question of the sustainability of development in such zones. Analyses of the pro-cesses at work have given rise to interdisciplinary approaches that have come up against a number of difficulties associated with their implementation.
- 4 Thus, interdisciplinarity is a recurring question that has been the subject of frequent methodological discussion (Van der Veen and Otter, 2001, for example). The lack of vocabulary or common understanding often underlies the difficulties of conducting collective work around concrete objects. This chapter makes a contribution to the discussions on this confrontation between disciplines based on a two-year study conducted by regional economists and landscape ecologists on the impact of urbanisation in the Chartreuse Regional Natural Park and the development of the specificity of the massif's landscapes. Research conducted within the framework of the programme financed by the park has attempted to go beyond the difficulties inherent in interdisciplinary studies by focussing on the development of functional and structural relationships between town and periphery in the pro-cesses of periurbanisation. Analyses of changes underway in the development of the residential functions of the park's settlements were therefore both spatial and socioeconomic. Beyond this, changes in the landscape and land use were studied in terms of agriculture, urbanisation and natural protected zones.
- 5 We begin by providing a context to the types of questions posed by the disciplines concerned (regional economics and landscape ecology) and then attempt to explain how, in our opinion, an area of disciplinary confrontation is constructed, endeavouring to identify "shared intermediate" objects and common analysis grids. Finally, we will consider the difficulties and pitfalls of research conducted at spatial and temporal scales that are not always compatible.

Sustainable development in mountain regions: different disciplinary questions

- 6 Questions relating to landscape dynamics and changes in the use of space vary according to disciplines: the evolution of the dynamics of ecosystems for the ecological sciences, factors influencing regional development for the human and social sciences (dealt with here through regional economics). Even if, in light of the debate surrounding the notion of landscape, understanding spatial transformations relates to

the interaction between social uses and environmental dynamics, how can these enquiries find common ground when, a priori, there exists little common interface? Does one speak of spatial cover first to interpret changes in biophysical systems or the spatial organisation of social processes and, second, to understand the uses of space that result from this?

The emergence of landscape as an economic consideration, or changes in the way space is taken into account in development processes

- 7 The consideration given to landscape in regional economics cannot be dissociated from discussions on the role of space in economic processes and on the economic flows related to the environmental and cultural attributes of this space.
- 8 Thus, location factors for both activities and populations have been of considerable interest to regional and spatial economists, governing the way the spatial dimension is taken into account in production processes. This consideration of the spatial dimension as an intrinsic factor in the productive process is relatively recent in economic analyses and relates to certain fields of the discipline. True, it was present in classical analyses from as early as the 16th century and was in some ways similar to certain contemporary research (spatial imbalance and balance; integration of the movements of men, capital and firms; importance of the role of the State in maintaining these imbalances). However, for a long time it had no more than a marginal place in the economy and the role of a science of economic space in providing an overall economic explanation is relatively recent. Depending on the analytical viewpoint, the way in which the spatial dimension was introduced contributed, during the 20th century, to an increasing complexity in relationships between economic and spatial analyses, not only for industrial economists but also regional economists.
- 9 A decisive element in the consideration of space in economic processes is the analysis of the dynamics of aggregation and spatial heterogeneity, which constitutes a challenge for the neo-classical economic analysis of general equilibrium and decentralised and atomised competition. There is abundant economic literature that explains this spatial heterogeneity through the notion of externalities (Bertrand and Moquay, 2004) as the indirect effects of one activity on another. Geographical economics thus took an interest in the advantages of agglomeration and the increasing returns made possible by urban concentration. Spatial approaches stemming from the works of A. Marshall (1920) on the localised modes of industrial organisation distinguished between externalities related to networks and the relationships between different actors. It was the industrial districts revisited after 1970 by sociologists and economists from Italy (such as Becattini, 1989), the United States (Piore and Sabel, 1984), France (Courlet and Pecqueur, 1991) or Switzerland, working in innovative environments (Maillat, 1992), that provided the dimension of an economic, social and political construction of spaces, referred to as territories. The territory appeared then as a factor that can reduce the costs of transactions (Benko and Lipietz, 1992), a space endowed with specific resources and a level of coordination to reinforce collective action (Scott, 1992) and enable local regulations.
- 10 These differentiated spaces really took on the status of landscape in economic analyses that examined the role of rural amenities – natural or constructed attributes – in the

choices of residential location and in territorial, even regional, attractiveness with regard to tourism. They questioned the role of the landscape in producing economic flows. It was then a question of the contribution of these amenities to changes in land prices. This concerned the mobilisation of the constituent elements of a landscape (river bank, forest zone, agricultural area...) in the production of environmental services (Aznar, 2002). Such questions are related to the demand for landscape amenities and the market impact of non-market goods. They are a response more generally to an investigation into spatial supply and attractiveness. Finally, the landscape dimension led to questions from the environmental economists on goods that may give rise to uses and provide services. This comes down to a question of the price that society is ready to pay to maintain the functions of using a certain number of landscape characteristics (contingent evaluation method, for example Rambonilaza, 2002)² and regional resources that can be mobilised in development processes.

Landscape ecology, a temporal and spatial approach to the functions of landscapes

- 11 For many years, ecology has studied the relationship between living beings and their milieu, conducting detailed studies of communities, the physical conditions of the milieu, and the flows of energy and matter acting within homogeneous ecosystems (ignoring border effects). These studies were able to provide a basis for analysing ecosystem functions, for example the microclimatic effects of a network of hedgerows or their role in retaining particles of eroded earth, in terms of services provided to society. On the other hand, they did not take into account the impact of human actions.
- 12 Landscape ecology, a recent science (1939), through the use of the concepts of perturbation and landscape mosaic, introduced the idea of a heterogeneous space composed of different types of area subjected to border effects and linked by corridors. It also began to integrate man as an important element in environmental processes and an increasingly important factor in the fragmentation of natural areas. From its early development in the United States, this science really took off in France in the 1980s, focussing mainly on an operational scale of the landscape (using the notion of eco-complex and catchment area) and the dynamics of habitats under natural and anthropic pressures. Hierarchy theory, which postulates that each process relates to a specific spatio-temporal scale where the scales of time and space are correlated, made it possible to examine the landscape as "a level of organisation of ecological systems" (Burel and Baudry, 1999). In recent years, landscape ecology has opened up to the historical and social dimension of landscapes³ and to the relationship between conflicting activities over space and ecosystem dynamics.
- 13 Ecologists confronted with the question of changes in spatial practices today focus on either the conservation of remarkable ecosystems (the field of conservation and/or restoration) or "ordinary nature" as the element that is most related to the economic sphere, where anthropic pressures, including urbanisation (the case that interests us), have an impact on biodiversity. Indeed, ordinary biodiversity today appears as an indispensable dimension in ensuring the sustainability of a certain number of services provided by ecosystems (pollination, control of erosion, presence of natural parasites of crop predators, etc.). Landscape ecology deals with the preservation of ordinary nature in terms of spatial organisation, connectivity, and fragmentation, for example

by linking the distribution of hedgerows and grassy strips with the abundance of greenfly predators in fields of cereals. Anthropogenic pressure is one of the major factors, acting for example through the development of urbanisation and transport infrastructures, currently affecting changes in agricultural practices. This fragmentation of habitats reduces the space available for species and upsets the corridors that provide the landscape link function between ordinary habitats and remarkable habitats.

The construction of a common reference framework for interdisciplinary research

- 14 Certain research topics, such as the landscape, the environment or an area's heritage, provide an opportunity for reconsidering disciplinary frontiers. They give rise to specific questions and concerns. However, what types of questions can be asked about the landscape beyond those concerning the interaction accepted today between societal structure and the cultural anchoring of natural areas? Do they concern ecosystems and their dynamics, the spatial expression of regional development, or the environmental goods and services that society expects from the material elements of space? Undoubtedly, it is a little of all these, with each question coming not from a single discipline but from an area common to several. The point stressed in discussions on the specificity of interdisciplinary studies is the need to construct an object, common questions or, in the most ambitious approaches, real concepts, models and methods adapted to the complex object envisaged. However, it seems that, in learning a specific approach, the construction of a shared object has to take place in "small steps" (Aznar et al., 2004).
- 15 The notion of landscape, as M. Périord (1996) and other writers (Burel and Baudry, 1999) have pointed out, is polysemic, even hazy. It is a subject of discussion that is dealt with more affirmatively today in public policies and is approached in different ways: morphology of nature, perception of a portion of space by man (Luginbuhl, 1989). It is an integral part of the human groups that shape it (Regazzola, 1993).
- 16 Our approach is based on an integrated vision of the interactions between spatial processes and regional development at the scale of urban regions. Here, the landscape constitutes a spatial system of complex activities, perceived by society as a result of human action on the natural environment, and as a context for continuous development. Thus we proposed a common framework for questions on the sustainability of landscape changes in which contributions from the different disciplines were situated. The common question then concerned the sustainability of such developments with respect to the different disciplinary analyses related to the ecology of the landscape and the regional economy, but also in places to development and agronomy.
- 17 First, the a priori assumption was that of the precedence of the regional input, that is the special attention paid to the processes of urban integration in the area under study and to the functional relations that develop between the town, as centre, and its periphery (here, the three gateway towns to the park, Grenoble, Chambéry and Voiron). The functional relations refer to the socio-economic processes involved in the diversification of spaces and the interconnection between different localised functions (provision of services, access to education and knowledge, production of goods,

amenities and living area, etc.). Different relations can thus be established by distinguishing home/work links between towns, as centres, and their surrounding areas, relations between towns as service centres and their peripheral areas, relations between metropolitan zones and secondary centres, relations between rural and urban firms, for example. The proposed integrated vision of the interaction between rural and urban identified a second type of link concomitant with the functional relations, that of structural relations. Structural relations bear witness to the forms of land use related to the organisation of urbanisation and the spatial distribution of the population.

- 18 These two types of relations, functional and structural, reflect the periurbanisation pro-cesses affecting rural areas subjected to urban pressures at the periphery of agglomerations. Using this grid, analyses were conducted of the landscape changes in the park directly associated with changes in land use. These uses are linked with the social, economic and spatial practices that may be described by tools used by regional economics. They determine the different types of land cover and the spatial pattern of this covering and may also be described by the tools of the landscape ecologist. The questions, which differ within the two disciplines, thus find common ground in the area of land use and its changes, even though each discipline has its specific concerns regarding management and economic development.
- 19 The second dimension in the approach adopted is that of the scale of landscape analysis. The first scale is that of the urban region, and considers the economic and social flows between town and periphery. The second is that of the commune, as the level for identifying spatial transformations related to the homogenisation of uses, with the random development of land and changes in spatial practices (agricultural, urban and forestry). This interdisciplinary approach to landscape study has not used the scale of the ecosystem or habitat, the methodological bias being more in favour of combining classifications of settlements according to their degree of functional integration (Bertrand et al., 2006) and their spatial transformation. Through the different possible combinations, the disciplinary dialogue thus reveals the advantages but also the limits of using tools and analyses available from the different disciplines.
- 20 Finally, the third dimension of the approach was that of the methodological exploration of a linking of tools already available in each of the disciplines in the form of a communal diagnosis and a simulation of the changes in spatial coverage. Thus the approach adapted the tools for measuring landscape metrics (linear, size of patch, distance between patches, connectivity...) to ecological objects relating to changes in use introduced by man (built areas, hedges around residential plots, etc.) in order to compare changes in the landscape mosaic with the spread of urban areas. Cadastral documents were superimposed with urban planning documents to simulate the possible changes in land use in terms of the enforestation and urbanisation of agricultural areas.
- 21 Conducting a study of the sustainability of an area through several disciplines thus requires having a common field of investigation. In the context of our research, concerning the effect on the environment of periurbanisation, the most relevant of the common fields seemed to us to be linked to land uses, uses resulting from the economic activities present in the area and having an impact on the spatial cover of the land.

Spatial and temporal scales of disciplinary approaches: difficulties of a dialogue

- 22 Exploratory research took place within the special context of a programme of study conducted for the Chartreuse Regional Natural Park. The study was commissioned in response to the need for sustainable management of the park area in the face of increasing urbanisation and underlines the "imminent risk of impoverishment of biodiversity and our heritage, and of social and spatial segregation (translation)" (Charte, 2007-2017). The park's request therefore concerned indicators for monitoring the urbanisation of landscapes and tools destined for communes to be used for awareness campaigns and mediation purposes.
- 23 The ultimate research goal was therefore to construct tools and identify indicators to be used in linking urbanisation pressures with landscape change. This interdisciplinary approach came up against methodological difficulties inherent in the exercise related to the availability of data and their cartographic representation, but above all the compatibility of ecological and socio-economic temporal and spatial scales.

Scales of analysis: difficulties of identifying a common relevant theme

- 24 The dialogue between disciplines requires working in a common spatial field of analysis and data mobilisation. In this study, the commune level was used to establish this field, which could then be completed by more detailed studies conducted by individual disciplines.
- 25 Socio-economic data depends most often on two sources. The first source is that of the large statistical data bases provided by the INSEE (commune-based population censuses, general population censuses) or other organisations (ministry of agriculture, AGRESTE, SAFER...) available at the national level for administrative areas. The most detailed levels (Nuts 5, commune level) may come up against the principle of statistical secret when the population concerned is numerically too small, which is sometimes the case for agricultural data. Such files provide good national cover. The second source of data is provided by mostly qualitative information collected by field surveys at more detailed scales. These can be used to identify those dimensions that escape the statistical approaches, such as the institutional dimension of spatial processes for example. Such approaches are costly in terms of time.
- 26 Some environmental data (Corine LandCover⁴ maps, inventories of protected zones, Natura 2000 network maps...) are compatible with administrative areas. These data, however, are very global and may not be adapted to studies of mountain areas where the landscape mosaic is very complex. Land use or habitat maps based on the photo-interpretation of aerial photos thus enable a more detailed description of the land from 1 to 0.5 m. These maps are often not available for extensive areas (except for the national parks or certain regional natural parks).
- 27 A typology of the 52 communes in the Chartreuse Regional Natural Park was therefore drawn up from INSEE and AGRESTE data (correlation analysis, principal components analysis) and used to identify 6 groups of communes on the basis of the gradient of their functional integration with respect to the gateway towns and the position

occupied by agriculture. Test communes were chosen from these different groups to characterise their structural development and to conduct an analysis of changes in land cover at the scale of the plot, comparing different layers of digitalised information (aerial photographs, cadastral maps, land use maps and/or local town planning maps). The time required for collecting and processing the data, however, does not allow an exhaustive cover of the Regional Natural Park.

- 28 While the spatial scales of available data are sometimes different, the temporal scales accessible to both the economic and ecological disciplines may, however, be relatively similar and require less adaptation. The two disciplines are able to access repetitive data, covering the past fifty years, at ten-year time intervals: censuses (population and agricultural) and aerial photograph campaigns. However, though we can access data on the changes in agricultural practices (through agricultural censuses) and aerial photographs for comparable dates and periods, the modifications observed in agricultural practices are not in phase at ecosystem level because of the inertia characterising ecological functions. Thus, depending on the dynamics of the existing vegetation, the start of fallow land development will be identifiable on aerial photographs between 10 and 30 years after the abandonment of cropping.

Search for a "bundle" of indicators

- 29 The question of the nature of indicators and their sensitivity in reflecting a process is formulated in the same way for both socio-economic and ecological approaches, that is in terms of relevance and ease of collection and use. Although these indicators are often fairly simplistic, they do provide insights into trends at reasonably low cost. Our study (Bertrand et al., 2006) made it possible to illustrate this research for common, or at least compatible, indicators to examine changes in land use in an area subjected to strong periurban pressures.
- 30 Different indicators were calculated to characterise the communes selected and to identify the different dimensions of analysis for different disciplines: functional integration of areas⁵ for the economists; structural integration and spatial changes in land cover that appeared between 1981 and 2003⁶ for landscape ecologists. The work conducted at the scale of the commune provided access to census data (RGP, RGA), the list of building permits, spatialised data in numerical form (land registry, Land Use map or local Town Planning map) and land use data obtained from aerial photograph interpretation. These different types of data were integrated in a geographic information system and analysed using comparative methods and cross tabulations.
- 31 From an ecological point of view⁷, the analyses often favoured spatial metrics tools for measuring natural objects: types of land cover (forest, fallow, meadow...), natural linear phenomena (hedges, borders, streams, etc.). In the search for indicators of landscape change at the scale of the commune, these objects were measured to determine landscape fragmentation. Indices of change were calculated for land cover, the size and distribution of patches, the distance to the nearest patch of the same type. For hedges and wooded linear strips, measurements were made of length, density and connectivity, enabling quantitative changes to be observed in the indices. One of the observations made with respect to earlier results in the Maurienne and Oisans regions is that there was little quantitative change in the length of linear wooded areas. However, a change was observed in the type of linear wooded areas, with a shift from

agricultural hedges to hedges associated with residential plots, reflecting a trend towards a less distinctive landscape in the Chartreuse.

- 32 In addition, spatial metrics tools were used to measure objects, such as built elements, that are not normally taken into account by ecologists. The aim here was to analyse, in a more detailed manner, changes in the ways of using building space (random development versus densification of the habitat, depending on the periods of construction).

Spatial representation as a factor in linking approaches

- 33 A comparison of indicators from different disciplines proved a rich source of information. Thus analysis at the plot scale by cross tabulating town planning data (areas classified as building land) and photo-interpreted land use data was used to calculate areas actually consumed by urbanisation as well as the land reserves classified as building land and still available in the town planning documents. The use of a geographic information system made it possible to identify on what types of land (open habitat, sensitive natural habitat, etc.) urbanisation had actually taken place and thus to evaluate the environmental impact.
- 34 Using a simulation approach, it was also possible to visualise where urbanisation could spread to at the scale of the commune, given the areas classified as building land on the Land Use/Local Town Planning maps. In addition, in terms of directing local public action, the indicator "available land resources" provides a possibility of discussion with local elected representatives to raise awareness of the consumption of agricultural land, open spaces and natural habitats. The link to be established between commune types and landscape parameters should provide insights into the types of landscape changes to be expected from different local planning and management scenarios. Combined with the three-dimensional landscape models, this could help identify the consequences for the landscape of such scenarios.
- 35 The spatialisation of data was used to provide the park's settlements (communes) with a discussion tool concerning spatial changes and their impact on the landscape. Thus, the translation into maps comparing ecological data (land use according to a typology adapted to the study) and urbanisation data was carried out by using digitalised urban planning documents and studies conducted at the plot scale. The diachronic analysis of the urbanisation of the landscape by landscape ecologists⁸ resulted in the production of multi-date land use maps. The changes in each type of land use between two dates provided interesting information on the processes currently affecting communes (context and dynamism of agriculture, pressure of urbanisation, etc.).

Conclusion

- 36 The interdisciplinary approach, beyond the common definition of an "intermediate" object of analysis, is complex and most often requires a prioritization of the different inputs: ecological, economic and social. The responses given and the objectives will be different depending on this choice. If the socio-economic input is given priority, ways of increasing the economic status of protected areas could be analysed. If the input is mainly ecological, the question of sustainability could be examined through a study of the impact on ecosystems of random development.

- 37 In this first stage of the study we have built a basis for working together and have made progress with certain tools, made available for general reflection by the landscape ecologists, by applying them to objects in the economic field thanks to the use of data with spatial and/or temporal scales that enable their use, with adaptations, across different disciplines. In particular, the landscape interpreted at the spatial level by the landscape mosaic of land uses provided a "mediating" object from which insights can be gained from different disciplinary approaches.
- 38 However, it seems that the limits of interdisciplinarity are related to the need to reduce the disciplinary thematic or technical fields of investigation so that certain data can be used at scales that are compatible and interesting in an interdisciplinary context, though limited and sometimes unsatisfactory from a disciplinary point of view. Despite this general observation on interdisciplinary studies, it should be stressed that progress and confrontation between disciplines enables the renewal of more precise disciplinary questioning based on common knowledge.

BIBLIOGRAPHY

- AZNAR O., 2002. – *Services environnementaux et espaces ruraux – Une approche par l'économie des services*. Thèse de doctorat d'économie, Université de Bourgogne.
- AZNAR O., CANDAU J., GUÉRIN M., MICHELIN Y., MOQUAY P., 2004. – *Intérêts et limites d'une pratique de l'interdisciplinarité : l'utilisation d'objets spatiaux pour l'évaluation de politiques paysagères locales*. Colloque "L'évaluation du paysage : une utopie nécessaire ?". Montpellier, 15-16 janvier.
- BECATTINI G., 1989. – "Sectors and/or districts: some remarks on the conceptual foundations of industrial economics". In E. Goodman, J. Bamford, P. Saynor (eds.) *Small firms and industrial districts in Italy*. Routledge.
- BEGUSCH K., PIRKL H., PRINZ M., SMOLINER C., WRBKA T., 1995. – *Research Initiative Cultural Landscapes*. BWFK, Wien.
- BENKO G., LIPIETZ A., 1992. – *Les régions qui gagnent. Districts et réseaux : les nouveaux paradigmes de la géographie économique*. PUF.
- BERTRAND N., BRETON V., BORG D., VANPEENE-BRUHIER S., 2006. – *Conséquences de la pression urbaine en Chartreuse sur l'organisation des paysages*, Cemagref Grenoble.
- BERTRAND N., MOQUAY P., 2004. – "La gouvernance locale, un retour à la proximité". *Économie Rurale*, n° 280, pp. 77-95.
- BUREL F., BAUDRY J., 1999. – *Écologie du paysage. Concepts, méthodes et applications*. Tec&Doc.
- COURLET C., PECQUEUR B., 1991. – "Systèmes locaux d'entreprises et externalités : un essai de typologie". *Revue d'Économie Régionale et Urbaine*, n° 3/4, pp. 391-406.
- LEPART J., MARTY P., ROUSSET O., 2000. – "Les conceptions normatives du paysage. Le cas des Grands Causses". *Natures Sciences Sociétés*, n° 8 (4), pp. 16-25.
- LUGINBHUL Y., 1989. – *Les paysages français, L'état de l'environnement*. La Documentation Française.

- MAILLAT D., 1992. – “Milieux et dynamique territoriale de l'innovation”. *Revue Canadienne des Sciences Régionales*, vol. X : 2, pp. 199-218.
- MARSHALL A., 1920. – *Principle of Economics*. MacMillan.
- PERIGORD M., 1996. – *Le paysage en France*. Que sais-je ?, PUF.
- PIORE M., SABEL C.F., 1984. – *The second industrial divide: possibilities for prosperity*. Basic Books.
- RAMBONILAZA M., 2002. – “Mise en œuvre de l'évaluation économique des aménités rurales en Europe : le cas des aménités environnementales”. *Ingénieries*, n° spécial, pp. 91-104.
- REGAZZOLA T., 1993. – “Le paysage : notion générique ou concept transitif”. *Recherches, Études, Environnement, Développement*, n° 43-44, pp. 20-22.
- SCOTT A.J., 1992. – “L'économie métropolitaine : organisation industrielle et croissance urbaine”. In G. Benko, A. Lipietz (eds), *Les régions qui gagnent. Districts et réseaux : les nouveaux paradigmes de la géographie économique*. PUF, pp. 103-120.
- VAN DER VEEN A., OTTER H. S. 2001. – “Land-use changes in regional economic theory”. *Environmental Modeling Assessment*, vol. 6 : 145-150.

NOTES

1. Periurban settlements accounted for 8.9 million inhabitants in 1990 and 12.3 million in 1999, when they covered 33% of the national territory (INSEE Première, 2000).
2. From a neoclassical point of view, the analysis of an economy of well being postulates the equivalence of economic well being produced by different combinations of market and non-market goods (landscape amenities in the present case).
3. The 2006 colloquium was entitled "Le paysage à la croisée des Sciences de la Nature et des Sciences Humaines (The landscape at the crossroads of Natural Sciences and Human Sciences)".
4. Satellite image data photo-interpreted in terms of 44 classes; grain fineness from 25 ha to 5 ha.
5. For example, the composition of the commune's population according to socio-professional categories, the change in the number of housing units, the number of building permits issued, the change in the number of farms...
6. For example, changes in different land uses, changes affecting agricultural areas between 1981 and 2003, length and connection of linear hedgerows.
7. The ecological indicators were calculated for a sample of communes belonging to different groups in order to determine if it is possible to link the characteristics of land use change to socio-economic typology. This step has not yet been carried out on a sufficient number of communes on account of the time required for photointerpretation and analysis of ecological data.
8. Within the framework of the programme "Conséquences des pressions urbaines sur l'organisation des paysages en Chartreuse (Consequences of urban pressures on landscape organisation in the Chartreuse)" financed by the Chartreuse Natural Park.

ABSTRACTS

Changes in regional landscapes due to urban pressures raise questions regarding land use. They also give rise to economic, social and environmental issues related to urban sprawl, increases in daily commuting, and land consumption. These changes and dysfunctions are ultimately underpinned by the question of sustainable regional development. Mountain regions such as the Alps, with their various outstanding biotopes in a restricted space, are particularly vulnerable.

Les mutations des paysages régionaux dues aux pressions urbaines questionnent l'usage du sol. Elles interpellent à la fois des enjeux économiques, sociaux et environnementaux voire spatiaux sous-tendus par l'étalement urbain, l'accroissement des déplacements domicile-travail, le mitage de l'espace. Ces évolutions et dysfonctionnements renvoient à la question de la durabilité du développement des régions, et particulièrement des Alpes, espace contraint géographiquement et objet de nombreuses pressions anthropiques et riche en biotopes remarquables. Cet article est basé sur deux ans de travaux menés par des socio-économistes et des écologues sur les effets sur le paysage et l'environnement de la périurbanisation d'un massif alpin. Nous avons pris en compte l'espace dans les processus environnementaux, économiques ou sociaux. Intrinsèque dans les analyses écologiques, elle a longtemps posé problème à l'économie pour intégrer l'espace comme dimension à part entière des processus économiques. Trois thèmes sont ici développés : l'approche du point de vue du paysage, les problèmes d'échelles spatiales et temporelles, le choix d'indicateurs. Ils demandent de hiérarchiser les questions et de pratiquer le travail en commun. Aller au-delà nécessite de développer une interrogation plus écologique ou plus économique et/ou sociale en quittant de ce fait l'interface pour favoriser des interrogations disciplinaires particulières.

INDEX

Mots-clés: écologie, interdisciplinarité, paysage, périurbain, socio-économie

Keywords: ecology, interdisciplinarity, landscape, perurban area, socio-economic study

AUTHORS

NATHALIE BERTRAND

Cemagref de Grenoble, UR Développement des Territoires Montagnards.

Nathalie.Bertrand@cemagref.fr

SYLVIE VANPEENE-BRUHIER

Cemagref de Grenoble, UR Écosystèmes Montagnards.

Sylvie.Vanpeene@cemagref.fr