

The de-bordering process in urban landscapes: a land use and land cover analysis of a Pyrenean border region - the Central area of the cross-border Catalan space

Pastor Saberi, Roser; Castañer i Vivas, Margarida; Varga Linde, Diego

Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:

Pastor Saberi, R., Castañer i Vivas, M., & Varga Linde, D. (2017). The de-bordering process in urban landscapes: a land use and land cover analysis of a Pyrenean border region - the Central area of the cross-border Catalan space. *Europa Regional*, 24.2016(1/2), 23-34. <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-54416-3>

Nutzungsbedingungen:

Dieser Text wird unter einer Deposit-Lizenz (Keine Weiterverbreitung - keine Bearbeitung) zur Verfügung gestellt. Gewährt wird ein nicht exklusives, nicht übertragbares, persönliches und beschränktes Recht auf Nutzung dieses Dokuments. Dieses Dokument ist ausschließlich für den persönlichen, nicht-kommerziellen Gebrauch bestimmt. Auf sämtlichen Kopien dieses Dokuments müssen alle Urheberrechtshinweise und sonstigen Hinweise auf gesetzlichen Schutz beibehalten werden. Sie dürfen dieses Dokument nicht in irgendeiner Weise abändern, noch dürfen Sie dieses Dokument für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen.

Mit der Verwendung dieses Dokuments erkennen Sie die Nutzungsbedingungen an.

Terms of use:

This document is made available under Deposit Licence (No Redistribution - no modifications). We grant a non-exclusive, non-transferable, individual and limited right to using this document. This document is solely intended for your personal, non-commercial use. All of the copies of this documents must retain all copyright information and other information regarding legal protection. You are not allowed to alter this document in any way, to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public.

By using this particular document, you accept the above-stated conditions of use.

The de-bordering process in urban landscapes. A land use and land cover analysis of a Pyrenean border region: the central area of the Cross-border Catalan Space

ROSER PASTOR SABERI, MARGARIDA CASTAÑER I VIVAS and DIEGO VARGA LINDE

Abstract

The presence of a political border in a region has an impact in the landscape. Implications of the boundary on border landscapes could be the consequence of the juxtaposition of two political and economic systems and also the result of economic opportunities offered by borders. These impacts depend on the nature of borders and their opening in the EU might change border's impacts upon landscapes.

In this research landscape evolution on either side of the border in the central area of the Cross-Border Catalan Space is compared. The study is based on the land use and analyses three periods in time from the 1950s until 2009.

Focusing on the urban landscape transformation, different territorial strategies developed by the municipalities located in each side of the border are evaluated through landscape comparison. Furthermore, it assesses how the loss of function of the Franco-Spanish border has affected and transformed the urban landscape dynamics, especially in Le Boulou (France) and La Jonquera (Spain) municipalities. Given that the border is still the limit between two different political administrations, it is important to observe the existence of landscape differences. Will the border's opening to the flow of people and goods accelerate the urban transformation related to economic opportunities generated by the border? In other words, is the end of the border's breaking effect going to increase urban landscape transformations?

Initial results show an increase of the urban landscape transformation closely related to the de-bordering process. They also demonstrate deeper urban landscape changes in the southern side of the boundary due to the juxtaposition of different legal and economic systems in an open border and globalised context. Final results also indicate that political decisions have a considerable impact over the landscape dynamics, particularly in those taken at the local level.

Urban landscape; political border; border landscapes; land use and land cover; de-bordering process; Franco-Spanish border; Cross-Border Catalan Space

Zusammenfassung

Der Prozess des Grenzabbaus in urbanen Räumen. Eine Untersuchung der Landnutzung und Landbebauung in einer Grenzregion der Pyrenäen: Der Zentralbereich der katalanischen Grenzregion

An einer politischen Grenze kommt es zu Auswirkungen auf die Landschaft – als Folge des Nebeneinanders von zwei politischen und wirtschaftlichen Systemen und auch als Ergebnis wirtschaftlicher Chancen. Diese Auswirkungen hängen von der Art der Grenzen und ihrer Öffnung ab. Im Beitrag wird die Landschaftsentwicklung auf beiden Seiten der Grenze im Zentralbereich der katalanischen Grenzregion verglichen. Die Studie untersucht die Landnutzung in drei Zeiträume von den 1950er Jahren bis 2009.

In Bezug zur Umwandlung der Stadtlandschaft werden verschiedene räumliche Strategien, die von den Gemeinden auf beiden Seiten der Grenze entwickelt wurden, durch Vergleich der Landschaft bewertet. Beurteilt wird, wie der Verlust der Grenze des Franco-Spaniens die Dynamik urbanen Raums beeinflusst und verwandelt hat, insbesondere in den Gemeinden Le Boulou und La Jonquera. Da die Grenze noch immer zwei unterschiedliche politische Verwaltungen trennt, ist es wichtig, vorhandene Landschaftsunterschiede zu beobachten. Wird die Öffnung der Grenze für Menschen und Güter die urbane Veränderung in Verbindung mit den durch die Grenze geschaffenen wirtschaftlichen Möglichkeiten beschleunigen? Nehmen durch das Ende der Abschottungswirkung der Grenze die Veränderungen im Stadtbild zu?

Erste Ergebnisse bestätigen das. Sie zeigen auch tiefere Veränderungen des urbanen Raums an der südlichen Seite der Grenze aufgrund des Nebeneinanders unterschiedlicher politischer und wirtschaftlicher Systeme im Zusammenhang von offener Grenze und Globalisierung. Abschließende Ergebnisse weisen auch darauf hin, dass politische Entscheidungen – insbesondere auf lokaler Ebene getroffene – erhebliche Auswirkungen auf die Dynamik der Landschaft haben.

Stadtbild; urbane Räume; politische Grenze; Grenzlandschaften; Landnutzung und Landbebauung; Prozess des Grenzabbaus; franco-spanische Grenze; grenzübergreifende katalanische Region

Introduction¹

Over the last two decades there has been an increasing awareness of the importance of landscapes for people's wellbeing. In the scientific field, this awareness has been reflected in the publication of numerous works analysing landscapes in different research fields, including geography, ecology, spatial planning and history of art, among others. Concern for landscape has also been reflected at legislative level: on a European scale with the European Landscape Convention, and on a State level with the establishment of landscape laws that have later been incorporated into local and regional planning. Also, since the 1990s there has been an increase in geographical studies on borders, and more specifically border impacts on border regions and their inhabitants (VAN HOUTUM 2000, p. 57; ANDERSON, O'DOWD, & WILSON 2002, p. 1; NEWMAN 2006, p. 143). Simultaneous interest in the two concepts has resulted in a re-emergence of concern over border landscapes at both legislative and academic levels. Evidence of this can be found in the 9th Article of the European Landscape Convention, which makes a special mention of border landscapes and the need to promote cross-border cooperation within its framework. On the old continent, border landscapes are a testimony to and result of Europe's turbulent history. Consequently, their preservation is of interest if a valuable European heritage is to be maintained that provides a better quality of life to the population living in these border regions.

This paper focuses on how the urban landscape evolved in the central area of the so-called Cross-Border Catalan Space from the 1950s to 2009. The aim is to highlight border effects on the landscape by comparing the landscapes on either side of the border, with a particular emphasis

on the de-bordering process and its landscape impacts on the Franco-Spanish border. With specific regard to the urban landscape, the article analyses how the landscape has evolved in *La Jonquera* and *Le Boulou* in order to determine whether there are close links between this and the changes undergone by the border. Moreover, as border landscapes can be considered a category of political landscapes, the article also assesses the significance of political actions in their evolution.

The study is based on the land use database obtained from the photointerpretation process applied to aerial photographs and ortophotomaps, and analyses three selected periods from the 1950s to 2009.

Border landscapes and the de-bordering process

Border landscapes have been defined as the product of a set of interactions and processes of political, economic and cultural origin which occurs in the geographical space (HOUSE 1982; RUMLEY & MINGHI 1991, p. 4; SANGUIN 2015, p. 390). Thus, they are cultural landscapes that juxtapose two different political and administrative systems. Each of these political systems includes political action arising directly from the State and also from lower scale administrations (both regional and local). Given that State political power has an impact upon the landscape (WHITTLESEY 1935; SANGUIN 1984), border landscapes are characterized by receiving the impact of political power from two (or sometimes three) States. This aspect has enabled SANGUIN (1984, p. 27) to consider border landscapes as one of the most emblematic examples of political landscape, understanding the latter as landscape forms derived from political action (SANGUIN 1984, p. 24).

If cultural landscapes are the result of continuous land reorganization in order to better adapt their use and spatial structure to changing societal demands (ANTROP 2004, p. 1), two types of border landscapes can be identified. On the one hand, landscapes where each side of the border adapts differently to the environmental

conditions, and on the other, those where they adapt similarly. The fact that two political systems are juxtaposed in border landscapes leads to the emergence of landscape differences on each side of the border, which will be more accentuated if the border landscape is not shared by the same cultural group and less where there is a common cultural background.

Insofar as border landscapes might be considered a category of political landscapes, a fundamental aspect that defines their character is also the nature of the political border itself, which is determined by the functions that it carries out. RAFFESTIN and GUICHONNET (1974), in their work *Géographie des frontières*, described five border functions: legal, control, fiscal, military and ideological (GUICHONNET & RAFFESTIN 1974, p. 49). Depending on the geopolitical relations existing between the neighbouring States, the border will perform these functions with a greater or lesser intensity. Equally, clear differences can be found between functions performed by a border dividing enemy States and those carried out by a border separating cooperating States. Therefore, the strength of the imprint left on the landscape by the political border will vary according to the functions that border performs.

Over the past 60 years, the inner EU borders have gradually changed in nature as a result of the so-called de-bordering process (BLATTER 2001, p. 176; RUMFORD 2006, p.157; JÁNCZAK 2011, p. 38). The loss of border functions has been the result of both globalization and European integration processes (Fig. 1). In the EU context, the de-bordering process has taken place on a threefold level: the opening of borders, the Europeanization of State policies and cross-border cooperation. The opening of EU borders came as a result of establishing the single market, the eurozone, the Schengen Area and multiple single agreements between States. As a consequence, it has meant a loss of the control and fiscal function previously associated with borders. The Europeanization of State policies has led to the legal function being diluted: throughout

¹ This work was supported by the pre-doctoral contract [BR-2012/30] from the University of Girona and was conducted in the framework of the research project: „Twenty five years of cross-border territorial cooperation between Spain and France within the framework of the European Union: a geopolitical analysis of territorial plans, projects, stakeholders and hits“ (2011–2014), led by the Environmental and Territorial Analysis and Planning research group (APTA) of the University of Girona.

the Europeanization process, EU members have gradually adapted their public policies to EU directives and regulations, thereby reducing the differences between the legal systems of neighbouring States. Finally, cross-border cooperation policies – and more specifically INTERREG programmes – have contributed to the assimilation of current governance systems on each side of the border, in turn reducing the legal function of the border. However, it is worth noting that the de-bordering process seems to have lessened in recent years, as some inner EU borders have undergone a re-bordering process.

As far as the French-Spanish border is concerned, this de-bordering process has its own particular characteristics. Established in 1659 under the Treaty of the Pyrenees, the border has experienced periods of greater and lesser impenetrability depending on the geopolitical context. Nevertheless, the de-bordering process did not start until 1986, when Spain joined the European Community (EC). Prior to this date, the Pyrenean border was the only French border neighbouring a non-EC member

State (with the exceptions of Switzerland and Andorra). The de-bordering process of the French-Spanish border continued in 1993 with the establishment of the European single market and in 1995 with the implementation of the Schengen Agreement. This process has transformed the French-Spanish border into a permeable border for flows of both goods and people. Like the rest of the EU, however, European integration has not unified political decision-making. Indeed, despite the gradual Europeanization of State policies – whether with territorial involvement or not – they remain the responsibility of the respective States. In addition, as with other EU borders, the Franco-Spanish border has recently experienced a re-bordering process, especially in relation to the control function. This means the de-bordering process has become an up and down process characterized by periods of greater and lesser border functionality. However, the period of time analysed here is mainly characterized by de-bordering forces.

Turning to how borders and landscapes are related, as previously mentioned,

given that political borders interact with other natural elements, they will shape part of the landscape's character and determine its evolution. Consequently, a change in the nature of the border throughout the de-bordering process involves modification of the border landscape and modifies any prior evolution.

Thus, RAFFESTIN and GUICHONNET (1974) suggested an approach to the possible effects borders can have on spatial organization. The aforementioned authors argued that political borders exert three kinds of effects over social groups and their spatial organization: direct, indirect and induced effects. Applying their ideas to the study of landscape, the very presence of the border as a landscape feature is considered to be a direct effect, including the infrastructures needed for the border to carry out its functions (such as customs offices). Indirect effects are the outcome of the juxtaposition between two different legal and economic systems that result from differing biophysical matrices on each side of the border. Finally, induced effects are those linked to the opportunities that the border offers for economic activity; they are closely linked to the process of opening the border, and therefore its control and fiscal function. Induced effects particularly occur in border regions crossed by main transnational roads, which lead to accelerated urban transformation. According to the theory proposed by these authors, indirect and induced effects should be more evident in a closed border context. Consequently, a border's loss of the above functions would result in a reduction of these effects.

As the present paper focuses exclusively on the urban landscape, the border effects analysed here are the induced effects, as they are considered to be the origin of many urban transformations. The particular nature of the French-Spanish border de-bordering process seems to indicate that induced effects have not been reduced with the opening of the border -contradicting the principles posited by GUICHONNET and RAFFESTIN (1974). Rather, the higher level of permeability of flows in people and goods predicts an

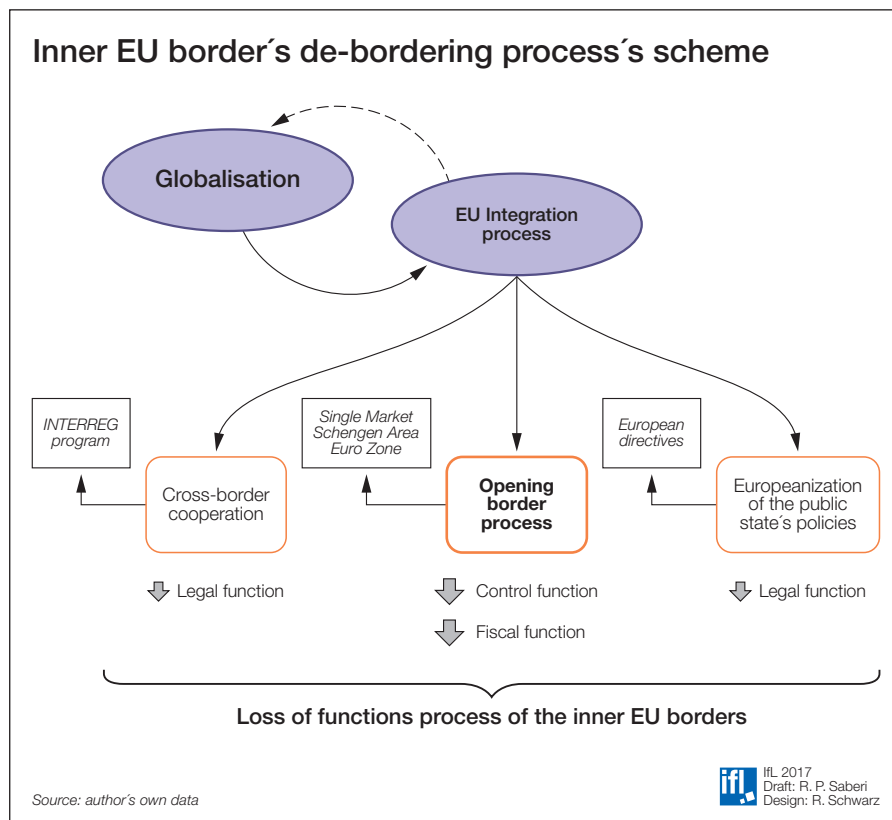


Fig. 1: Inner EU border's de-bordering process's scheme

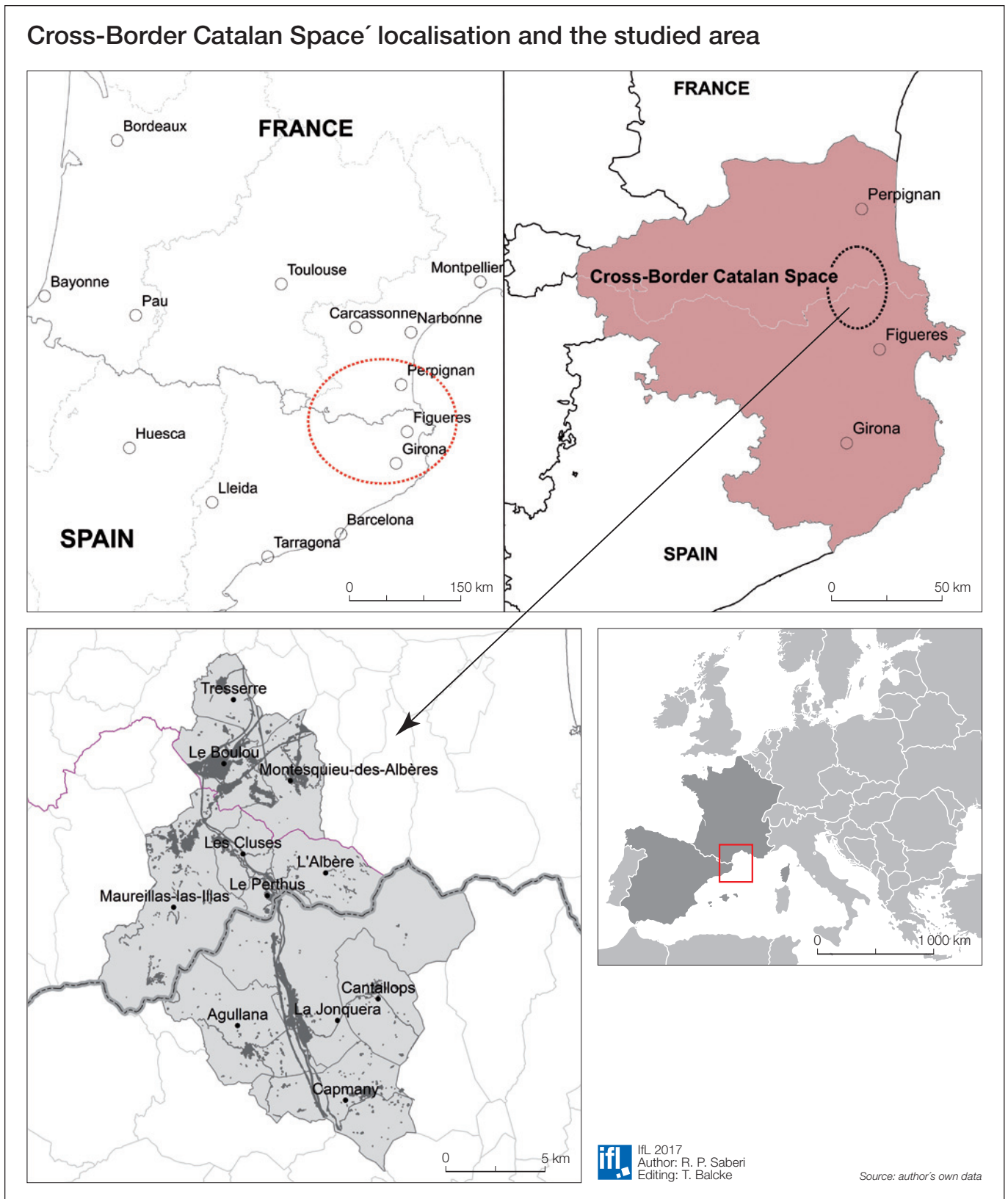


Fig. 2: Cross-Border Catalan Space' and the studied area

increase in induced effects, in a socio-territorial context where there are still border effects due to the presence of different market and legislation conditions.

The central area of the Cross-border Catalan Space

The Cross-Border Catalan Space is the territory composed of the French

department of *Pyrénées Orientales* (part of the *Languedoc-Rousillon* region) and the Spanish province of *Girona* (part of the Autonomous Region of Catalonia).

It covers 10,246 ha and has 1,208,177 inhabitants: 755,674 in the province of Girona and 452,530 in the department of *Pyrénées Orientales*². The two border areas that comprise the Cross-border Catalan Space share a few common cultural characteristics as a result of the times when the two territories formed part of the same territorial authority. Nowadays, the French side has a weak dynamic economy and suffers from marginalization by the French government (VICENTE et al. 2015, p. 118). By contrast, the southern side constitutes a dynamic socio-economic territory and is moreover part of a political and administrative entity (Catalonia) with a strong identity and a great capacity for government.

In terms of physical geography, the two sides of the Cross-border Catalan Space share many similarities and a certain degree of symmetry. Located at the eastern end of the Pyrenees, the central part of the Cross-border Catalan Space is a Mediterranean mountainous area (the *Albera* mountain range). On either side of the range are two large agricultural plains: the *Roussillon* plain (to the north) and the *Empordà* plain (to the south). Connecting both sides of the border, at the centre of the study area, is the *Pertús* pass. Due to its orography, historically this pass has been one of the two main routes for transporting people and goods between the Iberian Peninsula and the rest of Europe. Crossed by a national road, a motorway, a high-speed railway line and an extra-high voltage power line, it has become a major infrastructural corridor on the French-Spanish border.

This paper focuses on the central area of the Cross-Border Catalan Space, which is made up of the eleven municipal areas shown in Figure 2: seven belong to the French State and four the Spanish. The study area covers 24,497.97 ha (11,483.40 ha in France and 13,014.57 ha on the Spanish side), with a total population of 16,075 inhabitants in 2011

(11,143 on the French side and 4,932 on the Spanish)³.

Socioeconomic activities are based on agriculture and green tourism in the inner settlements on both sides of the border and on commercial and logistics activities in the municipal areas located in the infrastructural corridor. The latter are the more dynamic activities in terms of economy and are closely linked to the presence of the border and its cross-border flows. Located in *La Jonquera*, *Le Perthus* and, to a lesser extent *Le Boulou*, over the last 60 years these commercial and logistics activities have imprinted a distinct character on the landscape of the aforementioned areas. *Le Boulou* has boasted the largest logistics zone in the studied area since the establishment of the *Autoport du Boulou* in the 1960s, whereas *La Jonquera* has undergone significant economic development based on shopping centres and other activities such as restaurants, gas stations and brothels – particularly aimed at lorry drivers. Finally, in the binational village of *Le Perthus/El Pertús* (the Spanish side forms part of *La Jonquera*, and is called *Els Limits* district), there is a commercial pedestrian zone accommodating several ordinary, unattractive stores on the Spanish side and only a few bars and shops on the French side.

Data and methods

The main database types used for the study of border landscape are land use and land cover, and we have developed a methodological process to obtain these data. It is based on aerial photographs and ortho-photomaps, and has been divided into the following two steps:

- Ortho-rectification and aerial photograph georeferentiation, performed using ERDAS Imagine 9.1 software with the aim of deleting geometric deformities from images and assigning geographical coordinates.
- Photointerpretation and digitalization of orthophotomaps, performed using eCognition Developer 8.7 software.

This process results in the extraction of information contained in aerial photographs and graphic data editing.

The following table (Tab. 1) shows the cartographic data used for preparing the land use and land cover database.

For the first period, aerial black and white photographs were used (images from 1953 for the French side and 1957 for the Spanish side). In both cases, ortho-rectification and georeferencing processes were required. For the second period⁴, black and white aerial photographs from 1980 were used for the French side, whereas for the Spanish side the 1993 ICC⁵ orthophotomap was combined with the CREAF⁶ land use and land cover shapefile. In this case, only the French images required an orthorectification and georeferentiation process. For the last period, the 2009 IGN⁷ infrared orthophotomap was used for the French side, while the Spanish side was based on the 2009 CREAM land use and land cover database in shapefile format.

The eCognition Developer 8.7 photointerpretation and digitalization methodological process can be divided into two parts:

- Image segmentation into multiple polygons. The resulting segmentation varies depending on the previously established shape and colour parameters.
- Classification, when the image is completely segmented. This consists in assigning corresponding land use or land cover values to each polygon.

After the classification process was complete, all polygons with the same land use or land cover were merged and the resulting cartography was exported in shapefile format. Finally, six land use and land cover maps were obtained for three time periods.

⁴ There is a difference of thirteen years between the French and Spanish database for the second period due to difficulties in obtaining a good quality database for nearer years.

⁵ Institut Cartogràfic de Catalunya (Catalonia – Spain)

⁶ Centre de Recerca Ecològica i Aplicacions Forestals (Catalonia – Spain)

⁷ Institut National Géographique (France)

² Sources: Institut d'Estadística de Catalunya (IDESCAT) and Institut National de la Statistique et des Études Économiques (INSEE).

³ Sources: Institut d'Estadística de Catalunya (IDESCAT) and Institut National de la Statistique et des Études Économiques (INSEE).

Cartographic database			
Period	Year	State	Cartography
1st period	1953	France	Black and white aerial photograph IGN France
	1957	Spain	Black and white aerial photograph Geographical Center of the Spanish Army
2nd period	1980	France	Black and white aerial photograph IGN France
	1993	Spain	Orthophotomap ICC
3rd period	2009	France	Infrared colour orthophotomap IGN France
	2009	Spain	Land use and cover cartography CREAF

Source: author's own data

Tab. 1: Cartographic database

Our analysis of border landscape dynamics and detection of induced border effects have also been based on Raffestin and Guichonnet's principles. In their regional approach, these authors proposed some consecutive comparisons on either side of the border in order to detect morphological differences (when they exist) and establish some consequences of the border's presence or discover whether these are caused by other driving forces. In order to apply Raffestin and Guichonnet's principles, results were calculated individually for each side of the border, enabling us to compare them.

First, results are presented for the regional scale. Percentages were calculated in relation to total land use and land cover on one side of the border. Then, for analysis of the urban landscape, emphasis was placed on the local scale. In this case, percentages were calculated in relation to total urban land use on each side of the border.

Landscape evolution (1950s-2009)

The results obtained for the last 60 years show a general trend in convergent landscape composition on the two sides of the border. In the 1950s, the composition was very different on each side of the border. While in the French landscape there was a fairly wide distribution of surface type (31 % dense forest, 30 % grasslands and herbaceous vegetation, 20 % herbaceous

crops), the landscape on the Spanish side was much more homogeneous, with a clear dominance of dense forest, which represented 62.48 % of the total surface area. The following period (1980 in France and 1993 in Spain) shows a greater similarity in terms of landscape composition due to the decline in grasslands and herbaceous vegetation covers in the French sector in favour of dense forest. There was a less relevant landscape transformation on the Spanish side. The results only display an increase in shrub cover due to a forest fire in 1986 and the subsequent loss of hectares of dense forest. For the last period (2009), a similar proportion of land use and land cover representation was identified on both sides of the border, demonstrating that the compositions of the two landscapes have converged (Fig. 3).

Urban and infrastructural land use occupies a minor proportion of the global surface area of both border landscapes due to the predominance of forest cover, given that this landscape forms part of a natural area. By way of example, in the northern landscape, urban and infrastructural uses covered only 6.47 % of the surface area in 2009, while in the southern landscape they represented only 3.69 % of the total area. However, although urban and infrastructural uses are not significant on a regional scale, they do become more relevant on a local one. The expansion

of these uses since the second period of study has drastically modified the landscape on both sides of the border, making a high impact on a visual level.

Urban landscape evolution (1950s-2009)

During the first period studied, urban land use was not significant (74.03 ha in the French landscape and 42.39 ha in the Spanish one) and was mainly dominated by residential use. Between the first and second period, urban land use expanded on both sides of the border, registering an increase of 139.60 ha to the north of the border and 94.22 ha to the south. In both cases, the urban surfaces that grew most were residential ones. The highest increase was identified between the second and third periods, specifically in the French landscape, where urban uses gained 358.07 ha between 1980 and 2009. In the southern landscape, only 144.80 ha were added between 1993 and 2009. Consequently, the total urban surface area in 2009 was 574.23 hectares on the French side and 281.41 ha on the Spanish side.

In the northern landscape, the largest growth of land use was in residential areas, whereas to the south industrial and commercial uses underwent significant expansion together with residential areas (see Tab. 2). Therefore, urban landscapes have a distinct character on either side of the border. While 80.93 % of urban land was for residential use on the French side in 2009, only 54.29 % of urban surface area was for residential use on the Spanish side (see Tab. 2.). The predominance of residential use in the northern landscape might be attributable to the expansion of the urban areas belonging to *Le Boulou* and *Maurillas-las-Illas* and the emergence of low-density residential areas. In contrast, industrial and commercial areas are much more significant on the Spanish side of the border, where they represent 40.33 % of the southern urban landscape. On the other hand, on the French side only 15.33 % of urban landscape is devoted to industrial and commercial use. Urban growth (more

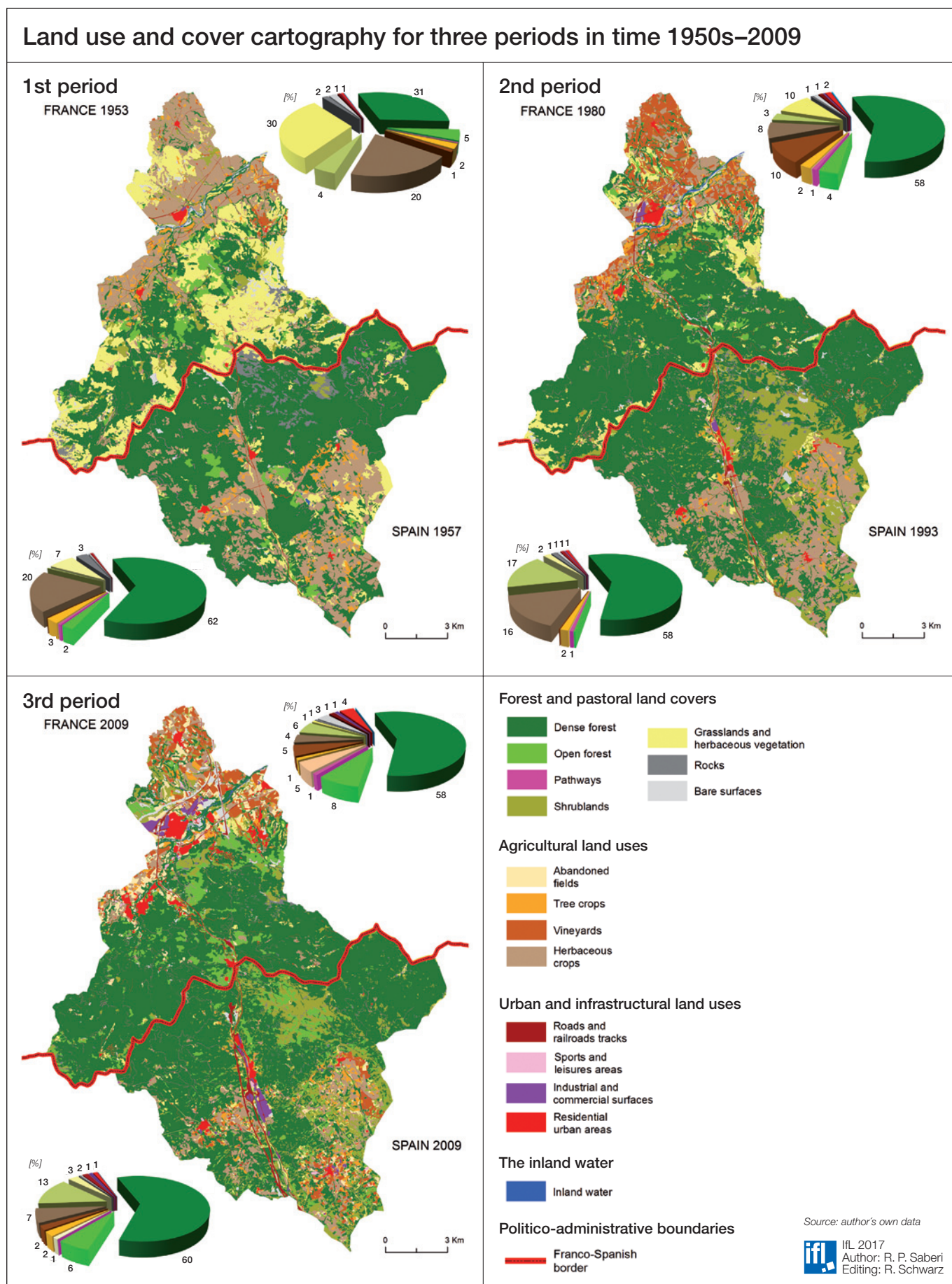


Fig. 3: Land use and cover cartography for three periods in time 1950s-2009

specifically industrial and commercial expansion) is strongly associated with communication infrastructure development. Highway and high-speed train construction contributed to a significant increase in surface area devoted to infrastructural use, mostly in the South. On the Spanish side of the border, infrastructural surface area gained 157.07 ha between 1957 and 2009, with the total surface standing at 199.05 ha by the latter date. On the French side, infrastructural development has been less significant over the last 60 years, although it has registered an increase of 83.48 ha, resulting in a total infrastructural surface area of 169.66 ha in 2009. The difference between the two infrastructural developments is due to the fact that the high-speed train line runs underground on the French side of this border landscape. However, infrastructural development does not only constitute a shared landscape dynamic between the two sides of the border but also a landscape transformation with a major visual impact. This process becomes the most relevant element of the landscape feature. The industrial and commercial developments that have emerged on the southern side have imprinted the landscape with a commercial and logistical character, principally in *La Jonquera*, whereas logistical activity has been developed and confined to *Le Boulou* on the northern side, even if it does not have any significant commercial specialization.

The de-bordering process in the urban landscape: diverging effects in *La Jonquera* (Spain) and *Le Boulou* (France)

The main results for urban land cover reveal distinct landscape dynamics on the respective sides of the border. A glaring example is the emergence of low-density urban developments in the North, a dynamic that has not been identified in the southern landscape. A glance at the regional level is required for a better understanding of these divergent dynamics. The divergence is linked to the differing North-South urban configuration of the global Cross-Border Catalan Space: polarization

Percentage of each urban use typology over total urban landscape of the respective side of the border

	1st period		2nd period		3rd period	
	North [%]	South [%]	North [%]	South [%]	North [%]	South [%]
Sport and leisure areas	0,00	0,00	4,45	11,60	3,74	5,38
Industrial and commercial surfaces	3,30	0,00	13,98	11,03	15,33	40,33
Residential urban areas	96,70	100,00	81,57	77,37	80,93	54,29
Total extent of urban land uses [ha]	76,56	42,39	216,16	136,61	574,23	281,41

Source: author's own data

Tab. 2: Percentage of each urban use typology over total urban landscape of the respective side of the border

in the metropolitan area of Perpignan in the North versus polycentrism in the South. Hence, the low-density residential areas that have appeared over the last forty years on the northern side of the border are linked to Perpignan's centrifugal force. This pushes the population out, as they seek a better quality of life and more affordable housing. The same dynamic has not been reproduced on the southern side of the border, where the existence of a medium-sized urban network has prevented urban polarization and the subsequent emergence of centrifugal dynamics.

The results also show a common landscape dynamic on both sides of the border, namely the shared increase of industrial and commercial surface areas. Although this has been more notable in the South, in both cases industrial and commercial developments are closely linked to the very presence of the border and its significant changes. Thus, we can suppose that without the international border these specific urban developments would most probably not have come about. However, two further observations are required here. Firstly, the industrial and commercial developments stem from distinct territorial strategies. And secondly, even though these uses have been classified under the same land use and land cover category on both sides of the border, evidence found in the field demonstrates the existence of several differences.

Industrial and commercial growth is concentrated in the two municipal areas with the highest demographic weight: *Le Boulou* (France) and *La Jonquera* (Spain). Respectively located on the last flat areas on both sides of the border, they are the closest towns to the border. They are also the only ones with sufficient capacity for accommodating the necessary infrastructures to carry out border functions. Moreover, within their surface area we find the last exits from the A7-A9 motorway. All of these elements have conditioned the everyday lives of the towns' inhabitants whilst also transforming their landscapes, which are the ones most influenced by the border in the study area.

Le Boulou is a French town of 5,498 inhabitants⁸ and a total surface area of 14.4 km². Its economy used to be based on agriculture (more specifically wine growing) and a small cork stopper industry. However, both activities declined during the twentieth century, particularly the cork industry, which eventually disappeared. The existence of thermal waters in the town has also led to the emergence of tourism and health-related activities, which continue to this day. *Le Boulou* has retained its own character, however: its customs and commercial activity stem from the national road that crosses the town, which resulted in traffic jams in the

⁸ Source: Institut National de la Statistique et des Études Économiques (INSEE), 2011.

town centre when vehicles – and particularly lorries – parked while looking for the widely scattered forwarding agencies. A small *Autoport* was therefore finally built in 1966: a small-scale logistical zone with a customs clearance area, a few forwarding agents' offices, small hangars and customs offices. Expectations regarding the soon to be finished A9 motorway – with the town having its own junction – and the proximity of the train station made an enlargement of the *Autoport* essential. Thus, through an initiative of the French government, a new *Autoport* was opened in 1976 in order to cover activities related to customs clearance and trade flows with the Iberian Peninsula. At the same time, the French railway company SNCF⁹ branched off two railway lines to connect the *Autoport* with *Perpignan* and from there *Bettembourg* (Luxemburg).

Managed jointly by the city council, the *Conseil Général du Département des Pyrénées Orientales* and the *Perpignan Chamber of Commerce* as part of the so-called *Syndicat Mixte*, the *Autoport* soon became a success and was the largest in France by 1985. By way of example, in that year it had 140,000 registered lorries, employed 450 people and hosted 30 companies – 20 of which were customs agencies. Due to its success, the *Autoport* was enlarged several times and had supplementary railway tracks constructed for it.

However, Spain and Portugal's entry into the European Community (EC) in 1986 led to local politicians being warned about the possible consequences of the borders opening in 1993. A conversion plan was therefore undertaken to transform the *Autoport* into a *Distriport*. The aim of this was to turn the customs platform into a logistics platform, which would be used for the storage and distribution of goods and developing the rail-road transportation system. This economic restructuring required further expansion, which the *Syndicat Mixte* could not financially afford. It therefore decided to apply for State and regional financial support, despite both administrations

expressing a clear lack of interest in restructuring the *Autoport*. Aware of the socio-economic consequences at local level, namely the possible closing of the *Autoport*, the *Syndicat Mixte* applied for INTERREG I programme (1989–1993), which funded a part of the future *Distriport* expansion (7,000 m²). In the next INTERREG call for the period 1994–1999, the *Syndicat Mixte* asked for further financial support to expand the *Distriport* another 4,000 m² in order that it could accommodate sheds. In both cases, the EEC bore half of the financial costs while the State, the region and the department funded the other half.

Twenty years on, the conversion into a *Distriport* can be called a success. The logistics platform has made its activity more sustainable via the implementation of 5.7 ha of photovoltaic panels, which have been added to the platform's existing 65 ha. Aside from the success of the *Distriport*, however, commercial activity in *Le Boulou* has suffered a slow but progressive decline since the opening of the border in 1993. Differences in VAT rates and alcohol/tobacco taxes and the ease and convenience of crossing the border have favoured commercial development in the South and a decline in *Le Boulou*. The aforementioned success might therefore be considered fragile insofar as different tax regimes could make transport and logistics companies move to the logistics platforms south of the border.

With regard to *La Jonquera*, it has a surface area of 56.9 km² and 3,220 inhabitants and, like *Le Boulou*, its traditional economy was based on the cork industry and wine growing until the mid-1960s. Since that time, the completion of the AP-7 motorway, the tourism boom and the preference among transport companies of carrying goods in Heavy Goods Vehicles (HGVs) – rather than by train – has generated massive vehicle flows. Thus, the town started to be crossed by a significant number of lorries, which required customs facilities. The direct effect of this on *La Jonquera* was the springing up of numerous customs agencies, their number increasing from five in the 1960s to

seventy in the 1980s (LANAO et al. 1990, p. 24). The huge number of lorries that used to park in *La Jonquera* led to the establishment of several local shops, restaurants and some small hotels. The socio-territorial impact was obvious: in 1991, 75 % of the active population of *La Jonquera* lived directly or indirectly from customs activities, which also employed workers from other neighbouring towns (RIERA & DALMAU 2000, p. 62).

Nevertheless, the opening of the border in 1993 represented a turning point for *La Jonquera*. The Single European Act became effective and the suppression of border crossing points took effect. The direct consequence was the closure of most customs agencies. The socio-economic effects were dramatic: while there were 76 people registered as unemployed in *La Jonquera* in 1992, the number was 233 in 1993 – excluding workers coming from other towns (RIERA & DALMAU 2000, p. 62). Given this situation, the municipal council was forced to promote an economic restructuring.

The strategy taken by the local political leaders was initially based on expanding industrial demand (to make it easier for companies to set up in the town) and improving the services offered to lorry drivers and tourists. It was the latter strategy that ultimately thrived. Knowing that lorry drivers had become accustomed to stopping in *La Jonquera* for customs procedures, they decided to focus on the services they needed, namely gas stations, restaurants and stores. This choice took advantage of EU road regulations, whereby lorries are not allowed on the roads from 10pm Saturday to 10pm Sunday. Consequently, *La Jonquera's* lorry parking areas were transformed into compulsory weekend waiting rooms (SANGUIN 2014, p. 199).

The city council bought 8 ha of land from the customs agencies and put it out to tender at a lower price than land designated for building. Despite the fact that the council offered this ground to large commercial chains, it was local entrepreneurs who finally showed interest in developing this area. The entire plot

9 Société Nationale des Chemins de Fer Français

was therefore awarded to local capital. The economic success of some previous businesses (particularly gas stations) encouraged other local entrepreneurs to buy private plots. As a result, since 1995 *La Jonquera* has undergone an accelerated urban transformation due to the construction of large self-service restaurants and commercial areas, all with huge parking areas for lorries. In the last decade, aside from services aimed at lorry drivers, there has been an increase in commercial businesses, which benefit from differences on VAT rates, particularly on alcohol and tobacco products, the lower prices attracting a mass of French customers from the other side of the border. This favourable context has recently allowed a local entrepreneur to open a huge new shopping centre. Finally, differing legislation in France and Spain has also favoured a boom in prostitution, in both public and private spaces. The more permissive Spanish legal framework has transformed *La Jonquera* into the ideal location for brothels, which find potential customers in French citizens from neighbouring towns and cities (SANGUIN 2014, p. 201). Prostitution has found a place in lorry parking areas, but it also has a territorial impact with the establishment of a network of 11 hotels and clubs with associated luxury brothels (SANGUIN 2014, p. 201).

Conclusions

This case study shows the aforementioned impact of the border on the evolution of the urban landscape. Our results confirm the expected acceleration of urban transformations related to the opening up of the border. In accordance with the induced border effects hypothesis, an analysis of the evolution of land use and land cover confirms the expected growth in an open border context.

On each side of the analysed border landscape, the border has played a decisive role in its evolution. Before its opening, in *Le Boulou* the proximity of the border and presence of main roads led to the establishment of a large logistics area and commercial development, whereas in

La Jonquera it involved the emergence of the so-called Shopping Border Landscape (SANGUIN 2015, p. 391). Thus, prior to the border opening, the boundary's breaking effect had already generated induced effects over the landscape.

We have also seen that the de-bordering process has affected each side of the border landscape in different ways. Within the area of study, besides the opening of the border, the existence of different economic and legal systems has played a decisive role and resulted in differences in the availability and cost of services on each side of the border (SANGUIN 2014, p. 199). In the urban landscape of the Cross-Border Catalan Space's central area, legislative and economic differences have fostered the emergence of induced border effects on the southern side, particularly in *La Jonquera*. Our land use and land cover analysis show how expansions to the *Autoport* are the only induced effects in the North. However, these expansions probably would not have been possible if the logistics platform had been located outside the border region, specifically in an area not eligible for INTERREG funding. By contrast, the increase in the urban landscape to the South can be directly linked to the border opening process and its resulting economic opportunities.

Furthermore, we have shown how the strong influence of political forces shapes the border landscape and that it is border landscapes where political action leaves the most visible imprint (SANGUIN 1984, p. 27). On the one hand, the *Le Boulou* case study (and in particular the *Autoport-Distriport*) is a clear example of different scales of political action on the landscape: despite the *Boulou Distriport* being an initiative driven by the French government, its subsequent expansions met a local demand that could not have been possible without financial support from the EU, as well as the French State, region and department. On the other hand, the *La Jonquera* case study illustrates the significant role of local political and economic leaders in socioeconomic restructuring and their subsequent key role in urban landscape transformation

following the implementation of the European Single Market. In this case, local initiative has managed to take advantage of the European Single Market and opportunities arising from the Schengen Area in a globalized world. That said, however, globalization has accelerated particular landscape transformations which are difficult to measure in the land use and land cover analysis but clearly visible during fieldwork. Here we are referring to the establishment of brothels and banal, unattractive stores very much characteristic of the so-called Border Shopping Landscapes.

Regarding the relationship between spatial planning and the evolution of the border landscape, the former has been identified as playing only a weak role in the transformation of the urban landscape during the period analysed here. Spatial planning regulations in general have allowed for urban developments to be generated by the socio-economical dynamics of the border region. It is not until the last decade that spatial planning has become more restrictive on both sides of the border. As a consequence, it would be interesting to analyse the role of these new spatial planning instruments in relation to border landscape dynamics in the current context, especially given the presence of re-bordering forces.

Finally, this case study demonstrates that although the State traditionally determined the configuration of border landscapes, today their evolution has become primarily based on the relationships existing between the local and the global spheres. In fact, the recent evolution of the studied landscape shows that border landscapes are probably one of the best examples of the importance of places in a globalized world. This idea, argued by NOGUÉ (1998), considers that, as contradictory as it may appear, in the current globalized world places acquire a crucial importance as the suppression of territorial barriers forces capital to take full advantage of the minimal differences existing between two places (NOGUÉ 1998, p. 42). In this sense, internal EU borders probably offer one of the best territorial

contexts for today's capital flows: within a relatively reduced area we find places with very often similar physical characteristics but where the fact of belonging to one State or another awards them distinct political and economic characteristics. Thus, local politicians and economic leaders in border regions are increasingly overlooking the role of the State to award more value to the distinctive characteristics of these regions and attract global capital flows at a local level. Theoretically, these local-global relations could only be possible on one side of the border – the one with a more permissive legal system and lower VAT rates. However, both sides of the border display local-global relations – and this is usually the case – when promoting cross-border projects on a local scale using financial resources offered by supranational administrations, mainly the EU. Hence, this case study reveals that border landscapes are most probably one of the places – besides European capital cities – that best illustrate the local-global relations that characterize our world. This change in territorial relations has also made an imprint on border landscapes with the emergence of new and standardized urban areas that coexist alongside traditional urban backdrops.

Bibliography

- ANDERSON, J., L O'DOWD and T. M. WILSON (2002): Introduction: Why Study Borders Now? In: *Regional & Federal Studies* 12, issue 4, pp. 1–12.
- ANTROP, M. (2004): Why the landscapes of the past are important for the future? In: *Landscape and urban planning* 70, pp. 21–34.
- BASCOU, R. (1993): La reconversion de l'autoport du Boulou 1993: de l'autoport au distriport (mémoire sciences économiques). Perpignan.
- DEVOILLE, F. (1996): La reconversion économique et sociale d'un E.P.I.C., l'autoport du Boulou (mémoire droit public). Perpignan.
- VAN HOUTUM, H. (2000): III European perspectives on borderlands. In: *Journal of Borderlands Studies*, 15 issue 1, pp. 56–83.
- LANAO, P., M. TORNOS and C. VINYOLÉS (1990): La mort de la frontera amenaça la Jonquera i Portbou. In: *Revista de Girona* 140, pp. 22–28.
- LEIMGRUBER, W. (1991): Boundary, values and identity: the Swiss-Italian transborder region. In: Rumley, D., J. Minghi (eds.): *The Geography of Border Landscapes*. pp. 43–62. London.
- NEWMAN, D. (2006): The lines that continue to separate us: borders in our 'borderless' world. In: *Progress in Human Geography* 30 issue 2, pp. 143–161.
- NOGUÉ, J. (1998): *Nacionalismo y territorio*. Lleida.
- NOGUÉ, J. and J. VICENTE (2001): *Geopolítica, Identidad y Globalización*. Barcelona.
- PALE, P. (1993): La station thermale et climatique du Boulou: moteur du développement économique et social de la commune. Perpignan.
- PAÜL, V. and J.-M. TRILLO (2014): Discussing the Couto Mixto (Galicia, Spain): Transcending the territorial trap through borderscapes and border poetics analyses. In: *Geopolitics* 20, issue 1, pp. 1–23.
- RAFFESTIN, C. and P. GUICHONNET (1974): *Géographia des frontières*. Paris.
- RIERA, J. and A. DALMAU (2000): *Girona en el canvi de mil·leni*. Girona.
- SANGUIN, A.-L. (1984): Le paysage politique: quelques considerations sur un concept réurgent. In: *Espace géographique*, 13 issue 1, pp. 23–32.
- SANGUIN, A.-L. (2014): The schengen effects at the EU's inner borders: cheaper stores and large-scale legal prostitution: The case of the La Jonquera Area (Catalonia – Spain). In: Bufon, M., J. Minghi, A. Paasi (eds.): *The new European frontiers. Social and spatial (Re)Integration Issues in Multicultural and border regions*. Cambridge.
- SANGUIN, A.-L. (2015): Paisagens de fronteira: variações em um importante tema da geografia política. In: *Boletim Gaúcho de Geografia*, 42 issue 2, pp. 389–411.
- VICENTE, J., PASTOR, R., MARTÍN, J. and VILLANOVA, J. (2015): Borders and boundaries of Catalonia. Present and future in a new state' scenario. In: Janczak, J., T. Branka (eds.): *Boundaries Revisited. Conceptual Turn in European Border Practices*. Berlin, pp. 113–24.
- WHITTLESEY, D. (1935): The Impress of Effective Central Authority upon the Landscape. In: *Annals of the Association of American Geographers*, 25 issue 62, pp. 85–97.

Dr. Roser Pastor Saberi
 Dr. Margarida Castañer i Vivas
 Dr. Diego Varga Linde
 University of Girona
 Department of Geography
 Plaça Ferrater i Mora nº1
 E-17071 Girona
 Spain
 roser.pastor@udg.edu
 mita.castaner@udg.edu
 diego.varga@udg.edu

Резюме

РОСЕР ПАСТОР САБЕРИ, МАРГАРИДА КАСТАНЬЕРИ ВИВАС, ДИЕГО ВАРГА ЛИНДЕ

Процесс упразднения границ в урбанизированных регионах. Исследование землепользования и застройки земельных участков в приграничном регионе Пиренеев: Центральная часть приграничного региона Каталонии

Наличие государственной границы оказывает влияние на ландшафт. Влияние границы на пограничный ландшафт может быть результатом сопоставления двух политических и экономических систем, а также экономических возможностей, которые предоставляет граница. Эти воздействия зависят от характеристик границ, открытость которых в рамках ЕС может изменить и влияние на ландшафт. В приведённой работе сравнивается развитие ландшафта по обе стороны границы в центральной части приграничного региона Каталонии. Исследование основано на данных землепользования и рассматривает три периода с 1950-х по 2009 гг.

Приводится сравнительная оценка различных пространственных стратегий, разработанных муниципальными органами по обе стороны границы, с упором на преобразование городского ландшафта. Кроме того, оценивается как демонтаж пограничного режима франкистской Испании повлиял на изменение динамики развития городского пространства, особенно в коммунах Ле-Булу *Le Boulou* (Франция) и Ла-Жункера *La Jonquera* (Испания). Поскольку граница по-прежнему разделяет две муниципальные администрации разных стран, важно констатировать наличие определённых ландшафтных различий. Ускорит ли открытая граница в сочетании с возникающими благодаря этой границе экономическими возможностями урбанизационные изменения для потока людей и товаров? Другими словами, возникнут ли с окончанием изолирующего влияния этой границы изменения в городском ландшафте? Первоначальные результаты показывают рост трансформации городского ландшафта в тесной связи с процессом открытия границы. Также имеются глубокие изменения в городском пространстве на южной стороне границы из-за наличия различных политических и экономических систем в связи с открытой границей и глобализацией. Окончательные результаты также свидетельствуют о том, что политические решения оказывают значительное влияние на динамику ландшафта, особенно те, которые принимаются на местном уровне.

Городской ландшафт; урбанизированное пространство; государственная граница; пограничные ландшафты; землепользование и застройка; процесс открытия границ; франко-испанская граница; трансграничный регион Каталонии

Résumé

ROSER PASTOR SABERI, MARGARIDA CASTAÑER I VIVAS et DIEGO VARGA LINDE

Le processus de défonctionnalisation des frontières sur les paysages urbains. Une analyse des usages du sol d'une région frontalière des Pyrénées: la zone centrale de l'Espace Catalan Transfrontalier.

La présence d'une frontière politique dans une région a un impact sur le paysage. Les implications de la frontière sur les paysages transfrontaliers peuvent être la conséquence de la juxtaposition de deux systèmes politiques et économiques différents et au même temps, le résultat des opportunités économiques qu'offre la frontière. L'empreinte de la frontière sur le paysage dépend de sa nature, de sorte que le processus d'ouverture de la frontière dans l'UE devrait modifier ses impacts sur le paysage. Dans cette recherche, nous comparons l'évolution du paysage de part et d'autre de la frontière dans la zone centrale de l'Espace Catalan Transfrontalier. L'étude se base sur l'analyse de l'utilisation du sol pour trois périodes sélectionnées entre 1950 et 2009.

En mettant l'accent sur les transformations du paysage urbain, à travers la comparaison des paysages, on évalue les différentes stratégies territoriales des communes de part et d'autre de la frontière. Par ailleurs, on cherche à déterminer comment la perte des fonctions de la frontière franco-espagnole a-t-elle changée les dynamiques du paysage urbain, notamment dans les communes du Boulou (France) et de La Jonquera (Espagne). Étant donné que la frontière est encore la limite entre deux administrations politiques différentes, il est important d'observer l'existence de différences paysagères. L'ouverture de la frontière aux flux de personnes et marchandises, va-t-elle accélérer les transformations urbaines liées aux opportunités économiques engendrées par la frontière? Autrement dit, la fin de l'effet de rupture de la frontière, va-t-elle augmenter les transformations du paysage urbain?

Les premiers résultats montrent un accroissement des développements urbains étroitement liés au processus d'ouverture de la frontière. Ils témoignent aussi de la présence de changements urbains majeurs sur le côté sud de la frontière. Ces changements sont dus à la juxtaposition de différents systèmes économiques et légaux dans un contexte d'ouverture des frontières et de globalisation mondiale. Les derniers résultats montrent l'importance des décisions politiques sur les dynamiques du paysage, particulièrement celles prises à l'échelle locale.

Paysage urbain; frontière politique; paysages frontaliers; usages des sols; défonctionnalisation de la frontière; frontière Franco-Espagnole; Espace Catalan Transfrontalier