Chapter 3

Architectures on Territories – Methodologies for the Graphical Representation

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Additional information is available at the end of the chapter

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1. Introduction

Territories were always referred to their architectures in a continuous transformation's process. These architectures were based on natural materials, as a direct consequence of the agricultural functions and are essential for a right perception of the logic of territorial structuring.

This perception is always important for a territorial planning.

This chapter deals problems of the scales' study and its validity in certain areas and small-scale landscapes. Some case studies are being compared and analysis proposal prior to the territorial drafting.

The proposal is to individual redraw of territories, as a method of knowledge appropriate for the planning level. Comparisons are made between the performed methods in similar territories. In the first case an entirely hand survey is done, and in the second one the survey is based on the knowledge of computer applications. The conclusions summarize the pros and cons of each of the cases we have studied. Also the basis for a territorial approach proposed small-scale landscapes are defined.

2. Topics for a chapter

The main argument of this chapter is based on a certain number of topics we are introducing.

Our initial point into this discourse is the idea of considering there are architectures without architects.

From our point of view, territories were made by the Man, as the real architect of them, in a continuous process, as a dialogue between him and the surrounding environment. The

result of this dialogue was, and continues to be, the creation of objects on these territories. This idea is not really new. It was implicit in the definition of the landscape of Webster dictionary on 1913: "A portion of land or territory which the eye can comprehend in a single view, including all the objects it contains" [1]

The identification and characterization of environments and landscapes in Europe was made taking in consideration such scale of the landscapes. In fact the European Landscape map showed us Europe as a conjunct of 2682 different landscapes as the result of a classification among the 202 types of detected landscapes. Two thousand and six hundred of theselandscape units were a dimension larger than 2500 Ha. This quantity lets know the large diversity of landscapes characteristic for specific regions as one of the key cultural-heritage elements of Europe.[2]

It is important to remember that this dimension (2500 Ha) is equivalent to the size of all Carnoedo[1] (Spain) It is one of our case studies will be presented. This dimension represents five times the extension of Bárrio[2], that is the other case study into Ponte de Lima Municipality, northern region of Portugal.

These numbers can synthesize the problem we have in front of us. These two spaces are representative of so many areas into the European continent. They are so rich from a landscape point of view that so many things and changes are experimented into them. In our opinion the small scale landscapes are clearly out of the considered dimension. This chapter is based on this idea: the need to consider the various scales involved in the process of territorial structure.

The second topic we must underline is the idea of considering the territorial analysis as the ideal tool to understand their internal structuring. Each analysis has an adequate dimension, according to its goals. And this dimension is directly associated to the scale of the territory. When territories to be analyzed are out of the conventional dimensions they are usually applied we can risk to lose an important number of elements into them, not recognizable by the tools are used for developing the analysis.

The third topic is related to the existence of constants, as elements able to explain the different territorial configurations of the place. The temporal dimension becomes as a reference into it. We can confirm the existence of a number of constants that occur in any territory.

These elements, in combination, cause the different architectures on these lands, in a continuous process, in a process of transformation of the territory. It is the place where the Man is the real protagonist.

Medium and short sized scales in territories are the basis for a right perception of extended areas and regions in all around the world. We can find these characteristics in western European territories within countries as Ireland, Great Britain, Holland, Spain and Portugal.

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[1] Carnoedo's dimension is 27,49 km^2

[2] Barrio is a place into Ponte de Lima Municipality with an extension of 5,31 km^2

But this scale can be found in other territories. Lebanese country presents a clear morphological division (fig. 5):. The waterfront facing to Mediterranean Sea and the inlands. All these two regions reflect the small-medium sized scales.

Figure 1. Bárrio-Ponte de Lima-Portugal , by author.

Figure 2. Correlhã-Ponte de Lima-Portugal, by author

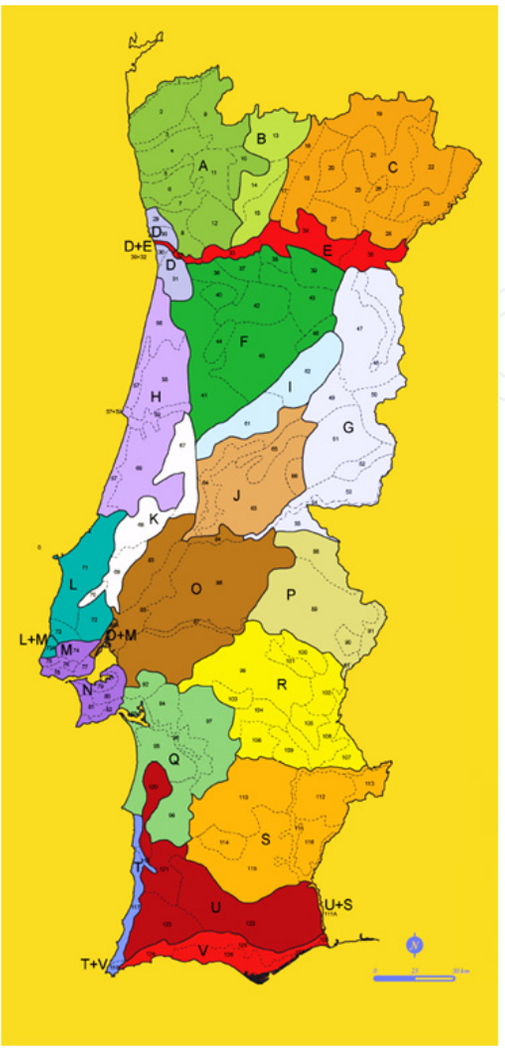

Figure 3. Landscape's Portuguese Atlas, from "Contributos para a identificação e caracterização da paisagem em Portugal continental"

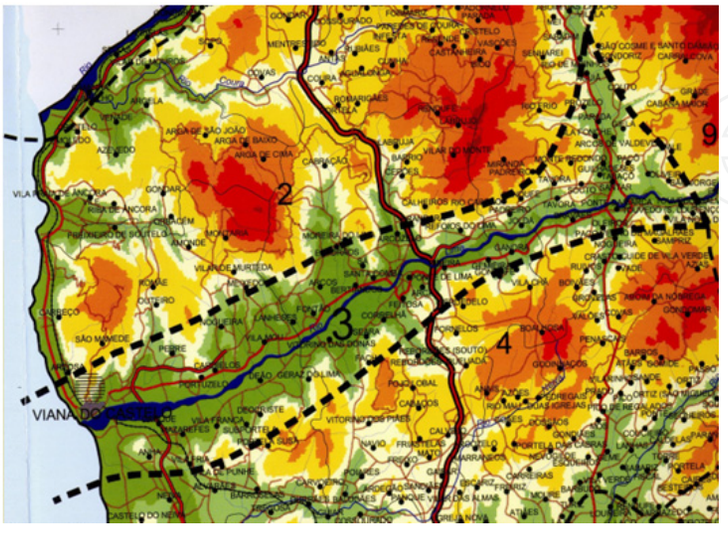

Figure 4. Lima Valley's landscape units-Portugal, from: "Contributos para a identificação e caracterização da paisagem em Portugal continental"

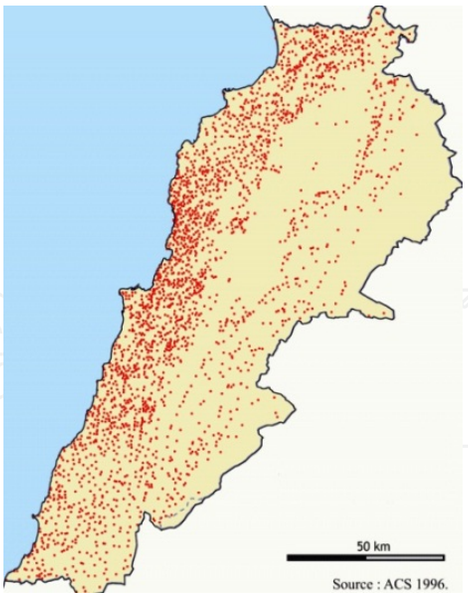

Figure 5. Lebanon's population distribution

Several actions in the way of considering the specificities of these kinds of territories can be appreciated in the last five years. We highlight last international seminar in Refóios do Lima[3]-Ponte de Lima-Portugal on May 2011 "Small scale landscapes in Western Europe, methodological developments in habitat recording and monitoring". (fig.6) It was possible there to identify certain alternative studies to fill the existent lacks in the normal scale for the CLC maps for Europe, when compared with other European initiatives.

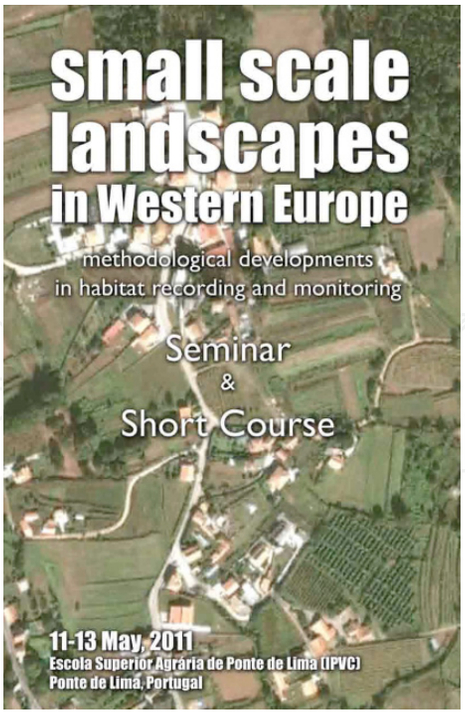

Figure 6. Flyer for the seminar

[3] Escola Superor Agrária. Instituto Politénico de Viana do Castelo (IPVC)-Portugal

3. CLC studies: The problems related to the land use and land cover analysis

One of the most direct reflections of all these patterns into the landscape is the land use.[4] The land use patterns in Europe could be seen as an expression of centuries of human intervention on its environment, an expression of the continuous transformation process previously referred. Historically, the development of rural areas has depended heavily on the exploitation of its natural resources

But social components are not the unique elements to define the land use patterns. Other external elements as the geographical context and the capability to produce enough resources must be considered. In a parallel way the economic evolution of the territories and the societies linked to them will depend of these concepts and its demographic evolution.

The interim report of the EU-LUPA[5][3] describes the process using the work from SOER[6], as follows:

> "Land use specialization (urbanization, agricultural intensification and abandonment, natural forestation) decrease of arable land and permanent crops and land artificialization (residential, economic sites and infrastructures) are major trends that could be identified in the last decades (SOER, 2010). Those trends are the result of interacting driving forces including policies."

Land uses and land covers are the trend topics for the CORINE project[7]. The basis of this project is the grid of 1 km^2 dimension applied over all the European territory, analyzing the several functions develop on this square grid trying to identify the dominant uses can characterize this cell. Technical reasons were supporting it.

Comparative studies about the evolution of the land use in the partner countries are a reality today. Analysis on 1990, 2000 and 2006 were a strong contribution. At the same time the major image resolution has improved the analysis capability detecting a bigger and more detailed number of topics.

Use changes are always linked to several aspects, where human activities work as the engine for the changes in the economic field.

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[4] We must remember that Land Use Functions (LUFs) express the goods and services that the use of the land provides to human society that are of economical, ecological and socio-cultural value and likely to be affected by policy changes In EU-LUPA six LUFs have been identified considering the following criteria:

- The main uses of the land in Europe are represented (i.e. agriculture, forestry ,nature conservation, tourism, urban settlement, transport and energy infrastructure);
- Ensure that all three dimensions of sustainability (economic, environmental and societal) have an equal representation;
- The functions are likely to be affected by European policies

[5] EU-LUPA is the acronym of ***Eu**ropean **L**and **U**se **Pa**tterns*

[6] The European environment — state and outlook 2010 (SOER 2010)

[7] CORINE project (**C**o-**OR**dination of **IN**formation on the **E**nvironment) was launched in 1985 as an EU initiative. The main goal is to provide the information on the status and changes detected in the environmental fields. One of the databases integrated within this project is the CORINE land cover database (CLC). The working area is a encompassing most of the European countries

The right evaluation of the detected changes about the land uses must consider these aspects.

Problems are coming for the small scale territories when the applied grid (1 km* 1 km) is too big to be identified with a unique dominant use. This classification is hiding other important functions being developed on the same grid. The relations among the several functions into territories with a high density use are complex and complementary.

Such of these small scale landscapes have linked their characteristics to national or regional identities[8]. The main characteristics of these landscapes can be summarized as follows:

- The existence of a large number of small lots
- The extent and number of linear features.
- The overlaps between lines and areas
- The number of different habitats present within a certain agrarian unit

The property structure is helping to consider this diversity into the small scale. This heterogeneity is supported by the small patches and the different interpretations about the landscape concept. This system runs the risk of disappearing some centuries after this basic heterogeneity.

Figure 7. Bárrio-Ponte de Lima-Portugal- 1 km² grid

Figure 8. Évora-Portugal- 1 km² grid

[8] Ireland case study can be a clear example about the national identity. Porto and Douro river are identified with a specific territory where the terraces' landscape play an important role as a "territorial branding"

Figure 9. Bárrio-Ponte de Lima-Portugal-250mx250m grid

4. Small agricultural landscapes - The vision of the planner

Studies of local history, regional history, rural geography and archaeology itself reveal the strong relationship between agricultural use of the various areas and continuous transformation. In Europe we see the existence of a secular agrarian structure tied in large parts of the continent. We must look for these phenomena into an dispersed ownership structure that caused the existence of small-scale agricultural landscape. This small scale has been disappearing for several reasons. In some cases this change was abrupt: at this point a broader political project have converged with a landscape incidence. We can see it in two countries: Czechoslovakia and Portugal. In the first case, we must remember the landscapes' consequences of the socialist revolution (Fig.10) with the change of the economic system. In th second case, it is clear the Estorãos'(Portugal) and its new land parceling. On the opposite side, the fragmentation of the landscape has been seen in the new irrigation systems in the river Guadiana (Spain). In general terms, abundant water and small property usually go together.

Figure 10. Sejby-Czech Republic

Central Bohemia region experienced great changes which occurred during the 40 years of socialist collectivism. The changing process of the property structure reflected important

landscape transformations. The images below are expressing the radical different points of view about the landscape changing (fig. 12) This process was filled within a 50 years period. Aerial photographs show the effects of this controlled planning when comparisons between both sides of the border, as in the case of Sejby and Moorbad-harbach in the border between the Czech Republic and Austria (fig12) [9]

Figure 11. Moorbad-harbach- Austria

Figure 12. Border space between Moorbad-harbach and Sejby. From Google earth

Estorãos is the first developed project about the land reparcelling in Portugal, into 60's. The changes were experienced in a short period, between 1961 and 1969 (fig.13, respectively on the left and on the right). These changes were based about the maintenance of the infrastructures but grouping the smallest lots where extreme difficulties to apply new technologies for the agricultural functions existed.

Landscapes tried to be adapted to the new scale. Actors were the same, primary elements[10] into the memory of the social practices continued to be the same ones. Scale alteration was

[9] For a more detailed information Works published by Zdeněk Lipský de Czech University of Agriculture Prague, Faculty of Forestry can be consulted.

[10] We take this concept from the different Aldo Rossi's works about the city, applied to territories

enough for the landscape transformation. The work consisted of checking how the primary elements, once recycled and reinterpreted after the redistricting process parcel, are still conditioning the final layout of the landscape. This hypothesis was not confirmed. However it was found that the elements shaped the landscape were still present in the new landscapes resulting from land redistribution although relations were altered depending on the change of scale. This time the political territorial planning caused effects similar to found in the case of border space between Czech Republic and Austria(fig. 12).

Finally, the new process of land redistribution experienced in Badajoz-Spain province was a part of a global strategy: the new irrigation of a large tract of land along the Guadiana river.

This program included the construction of new villages and the displacement of several thousand people, the new colonists of the twentieth century. More than 40.000 colonists spread on 59 new settlements,[11] together with the irrigation infrastructure, were transforming totally these territories as perceived in the comparative pictures.(fig 14 and 15).

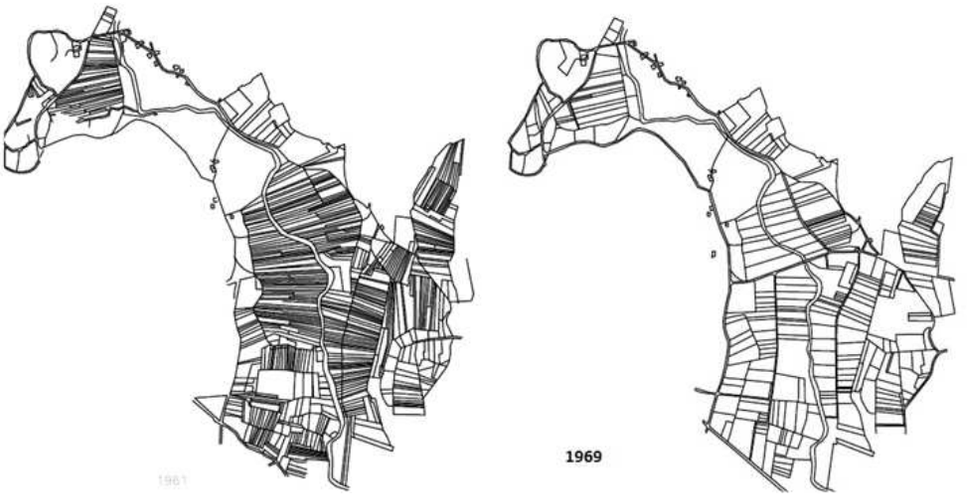

Figure 13. Estorãos-Ponte de Lima-Portugal, Land registry 1961-1969

Figure 14. Badajoz's surroundings.2011

[11] Data on 2009, but the first settlements were built on 1956

Figure 15. Badajoz's surroundings.1956

We must resume that small scales present a heterogeneity only compared between them, with own dynamics. Too many things are happening on these territories where the distance between two places can be around 200 meters. Correlhã is paradigmatic. We can see these changes occur all along the Portuguese *Caminho de Santiago*[12], as a sequence of places. Original representation at 1/500 of this continuity may reflect it.[13] (fig. 16). Done work expresses the characteristics of the relationship between domestic space and land.

Through all the referred case studies we can repair that the initial situation, identified as heterogeneity, is decreasing, turning to a specialization caused by the low rates of employing in the agricultural sector and the low activity in the last years

This specialization is based on the urbanization, mixed with the short number of fixed residents, converting some areas into a second residential area, more active during the week-ends.

These questions are helping to provoke important changes in the identities of these places.

Identities are tied closely to their respective territorial morphologies. The understanding of identity cannot be separated from its territory, as tangible reference point for the development of the social practices. The maps, as mere and accurate mapping, do not express these relationships.

The conventional maps use the same criteria of intensity and representation, merely expressing formal characterizations. They confirm the reiteration of facts in one place.

But the intangibles are hardly expressed in an automatic way, impersonal, thoughtless.

The characterization of these identities is vital in order to act over these territories, regardless of the scale of the performance.

But, at the same time, this scale will be always essential for choosing the adequate tools.

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[12] Caminho de Santiago is the Pilgrim's Route from Portugal to Santiago de Compostela

[13] Correlhã is a *freguesia* close to Ponte de Lima was studied by the students of University Fernando Pessoa in the years 2010-2011 and 2011-2012, with the goal to identify the rural morphologies understood as primary elements.

Figure 16. Portuguese Caminho de Santiago (Pilgrim's route)

5. Small landscapes and landscape-characters

Such Atlantic Europe small scale landscapes are known by their rich biodiversities, but their capability to define "per se" the elements are defining the Landscape character[14]. Some of these elements are related to the definition of "primary element". We understand them as the elements able to define the basic structure of a territory; basic elements are repeated within the territorial morphologies.

The small scale is capable of receiving therein a larger number of events than other larger scales, a greater number of elements. A huge variety of scenarios can be checked. They are created within a small area. This phenomenon provokes a greater distinctive appearance and amount of agricultural products, into the agricultural landscapes' small scale.

These characteristics are coinciding en several cases with the definition of a national or regional identity[4]. The image of the small landscape is an important component of this identity[15]). Marketing Porto wine's example was referred previously. But this example is not the only one. "*Vinho verde* region" is a concept exclusively linked to Alto Minho(NUT III) region. (fig. 17) In the same way, but with specific characteristics we can talk about the virtual region of Maronite sanctuaries in Lebanon, almost all of them dedicated to the wine's culture as an identity signal confronted to other religions at Lebanon.

The heterogeneity of these spaces is coming from the numerous actors on a short space. This heterogeneity is the core of the identity. A few primary elements are composing the several visual scenarios. Monitoring of these spaces is normally more complicated than larger scales: several habitats and patches are sharing almost the same spaces; the multi-functionality of the spaces is a normal solution with two levels of agricultural practices in the Minho-Galicia region.

We can resume the general characteristics of this scale:

- [1] A relative important number of habitats in a short space
- [2] The overlapping between lines and areas, especially talking about the fences where the grape is defining the different types of fences.
- [3] A larger number or small lots (smallholding).
- [4] The extent and number of linear features, when compared with the small areas.

The knowledge of all these realities is clearly harder and more difficult. The tools for achieving this knowledge must be more precise, according the territorial scales.

The solutions coming from a right planning must be in the same level.

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[14] Landscape character is an English term used for defining what makes an area unique. It is defined as "a distinct, recognizable and consistent pattern of elements, be it natural (soil, landform) and/or human (for example settlement and development) in the landscape that makes one landscape different from another, rather than better or worse". The Countryside Agency (2002) defines the Landscape character as "a distinct, recognizable and consistent pattern of elements in the landscape that makes one landscape different from another ,rather than better or worse"-

[15] Works about this issue from Natalino Martins (coordination), Estela Domingos, Félix Ribeiro and Paulo de Carvalho can be a good reference about it.

Figure 17. Territorial branding with landscapes through the different wines in Northern Portugal.

This adequate relationship between the previous concepts is crucial for the perception of these territories. Certain tools are unreflective in these processes. The 1 km² grid used in CLC is very criticized in such small scales. Too many things are happening in these territories within this grid, where the antropization process is more evident. The choice of one dominant function, not coincident with the key one sometimes, reduces the possibilities to observe the multi-functionality of small scale landscapes.(fig. 18) This limitative problem suggests the proposal of smaller grids able to identify the several functions or characteristics into these spaces. The 0,625 km² area (250m * 250 m grid) on fig. 9 seems more adequate to the scale and its needs. We must remember, as a reference, that the typical *eira*[16] in some places of this region is 220 m². (fig. 19-20) The fragmentation of these territories provokes this variety, normally associated to these phenomena:

- The existence of a strong rural concentration.
- A very scattered property structure.
- A high antropization process during a long period.

Into the opposite side we can repair the Alentejo case study. Alentejo region occupies most of the southern half of mainland Portugal. Its extension is equivalent to 35.44% of all mainland Portugal. Its 128 units are grouped in 22 sets. Five of them refer totally or partially Alentejo. Both the extent and homogeneity landscape, despite their variety, only 19.5% of the national total units are in the region.

[16] *Eira* is the name for the minimal agriculture unit normally close to the house, as a result of smallholder ownership structure

Figure 18. Several cultural on the same space. Correlhã. Ponte de Lima-Portugal

Figure 19. The formal results of the several *eiras* with several properties and cultures. Correlhã. Ponte de Lima. Portugal

Figure 20. The *espigueiro* appears in the middle of this small scale as architectural reference into these landscapes

The application of 1 km² grid is logic in certain parts of the region, especially in the landscape units whose primary elements are related to ecosystem "montado".[17] We can

[17] *Montado* is a Portuguese word refers the Mediterranean grassland.

repair in these aspects in the comparative photography of an Alentejo landscape, where it is clear that small grid is unnecessary to be applied for these purposes. Figures 7 and 8 reveal this contrast between Évora region and Ponte de Lima.

6. Territorial design and its scales within the small landscapes

Territorial Design is about generating value to a territory through establishing and reinforcing its identity, while revitalizing the strength of existing icons in the area.

Territorial design aims to develop a relationship among cultural, social, and economical processes, searching for references in architecture, urbanism, anthropology and design. This methodology is considered a "project approach" of strategic design, building scenarios for dealing with innovation and sustainability aspects in a territory.

We understand the need to define appropriate tools on a right approach to the problem of the various territorial scales.

It has raised the need to address the problem of small-scale with greater detail, involving more physical approach to this reality. However, we must remember that this small scale, usually in very sensitive situations, depends in turn on its regional context. In the specific case of Ponte de Lima, one can observe that the territorial branding is based on the small scale in turn survives by the peculiar structure of existent relationships between the various scales. The wine stands as a region's economic engine[18], which in turn is defined by primary landscape elements associated with this activity.

But the survival of this land is related through a system of competitive territories to the existence of a territorial strategy, a territorial project. At the same time this strategy should be very respectful with the small scale, where branding marks of this land are, as the primary elements that support. It is, therefore, a two-way process. Need two parallel actions: we must get to the small-scale project from the upper levels, and proposed solutions to this small scale should be taken into account in structuring the territorial project. Applying these design tools, based on the analysis in the project, is essential to achieve these objectives.

The question would be which is the architect's role in this process. In the same way of other design's scales and maybe in a stronger and a deeper level we need to consider the identity signals as the basis for this territorial design.

The identification of these primary elements will not be enough but the perfect understanding if the relations among them.

There will be an adequate territorial design if the primary elements are preserved and improved. And this improvement must be related to the correct utilization of the existent resources. These resources must be ready to be used or recycled into regional competitiveness, but identity signals can survive.

[18] The *Adega Cooperativa Ponte de Lima* is a coop based on the wine's product of more than 200 families of the region.

This is the reason why some actual problems need specific solutions.

One of these problems is the progressive abandonment of the "traditional" cultures. (fig. 21) This question must be lethal for the landscapes were created by day. And this problem is much better in the small scale where the accessibility to the different spaces is "enlarging" the visual impact of the problem. This problem is clear in the landscapes based on the continuous hand work of the Man. This man is not already exists. Demographics data of these areas indicate there is no generational renewal capacity. (fig.22).

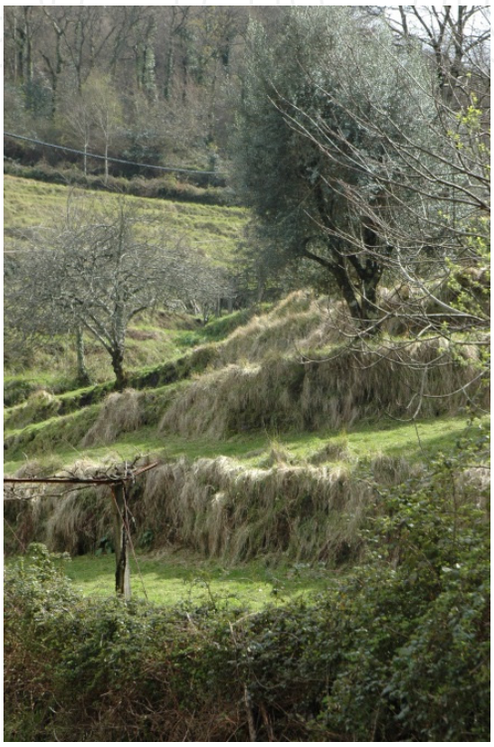

Figure 21. Abandoned lands into Bárrio *freguesia*.Ponte de Lima.Portugal. From the author

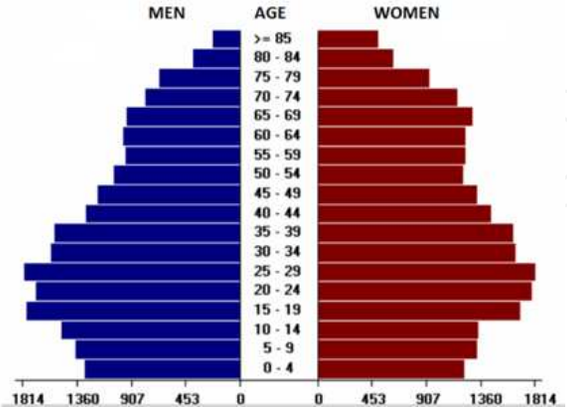

Figure 22. Populational pyramid. Ponte de Lima.2001, from Diagnostico social Conselho Local de Acção Social Ponte de Lima, 2008, adapted

But at the same time, crisis times are more reflected in the urban field. It implies a good chance for the rural areas, especially for the small landscape areas where the proximity to

the urban areas can be a call for the return of younger population and becoming the future generations for these lands.

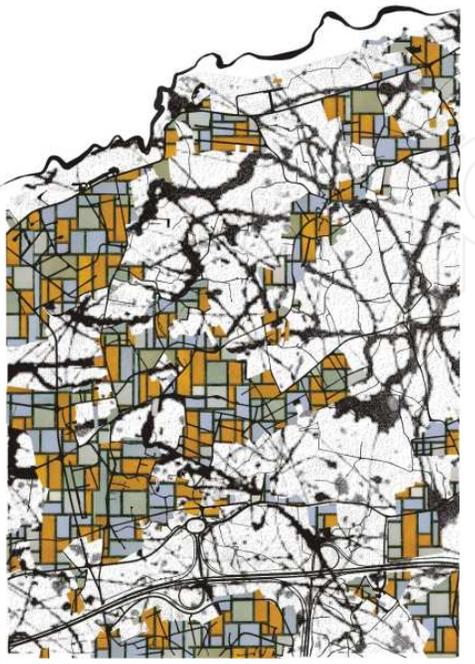

Figure 23. Territorial representation into Projecto V course. University Fernando Pessoa-Portugal-2009-2010. Author: Rui Pedro Silva. Original scale:1/7000

Figure 24. Anta-Correlhã.Ponte de Lima.Portugal. Representation 1/500 scale in original drawing.

There seems to be a clear statement on the issue of small-scale: the approach between the territory and the Man is greater the smaller the spatial scale of perception. And many of the

relationships are channeled through this relationship between man and land and it implies. And these group relations, as social animal that is man, implies the possible evaluation through social patterns of behavior. In 1977 Christopher Alexander published "A Pattern Language: Towns, Buildings, Construction"[5] justifying it.

These books tried to define new structure for the understanding of the three levels were considered:

> "At the core... is the idea that people should design for themselves their own houses, streets and communities. This idea... comes simply from the observation that most of the wonderful places of the world were not made by architects but by the people".[19]

At the same time this idea is linked to the definition of social patterns, including the anthropologic ones. "These are patterns in what people do, with or without interfaces designed for those purposes. These patterns are interesting and fun to talk about and they help us understand what's likely to happen,… "[6]

6. Re-drawing territories

Drawing territories, its representation was an obsession from earlier times. The feeling of control about territories was feeding the need to know about the form, about the conditions and potentialities form all the points of view.

Antoine Picon[7] evokes the earlier meaning of territory for administrators, architects and engineers. They considered territories as lands that were integrated into nations or colonies by the early modern European countries. This obsession about administrative separation were dominating the perceptions of territory specially within the 18th- and 19th-century. This obsession led to a continuation of the ideas in the case of American colonization by the Spanish military engineers [8]

This desire to represent the territory as its control element is evident in the figure 25. The author relates the main elements of territorial characterization, not as an actual approach, but as a way of understanding of the difficulties involved in Mexico's relationship with water, through the port of Veracruz, in Mexico.(Fig.26) Maps and different territorial representations were orientated in these lines. This rigorous representation was vital for achieving the referred goals.

Working on actions for territorial planning obliges to use specific tools, because territorial planning means at this case territorial project. The key steps for a right process can be the graphical representation of this territory, where the small details are so important. The various scales determine the use of specific tools of representation.

Drawing must be considered as a rational activity, basic for the development of the creative acts into a design activity. The communication of an idea would be different without this tool.

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[19] From the book flap in the original version of this book

Figure 25. Almeria. Spain. 18th century from Archivo General de Simancas-Spain

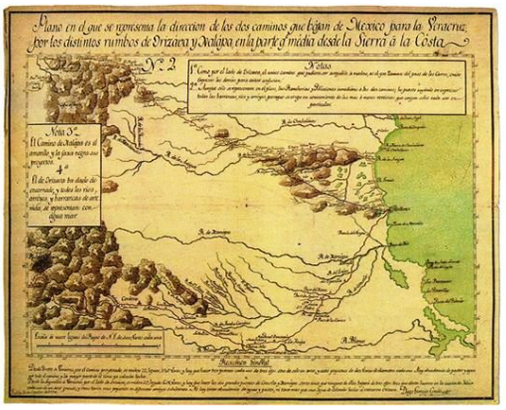

Figure 26. Diego García Cinde-1798- Plano dirección de los caminos de bajan de México a Veracruz. Biblioteca Nacional. Madrid. Spain

A methodology for the site analysis has been developed during last thirty years as the basis for an adequate territorial planning. This analysis was firstly applied to the Carnoedo case study, in northern Galicia-Spain, using a hand drawing system (1982).

The aerial photography as a first approach to the reality, confirmed or rejected by the personal ocular inspection to the place, is a classic methodology related to the hand drawing as the best way to represent the several aspects of this reality. At the same time, the representation of intagible appears when the individual interpretation of aerial photography arises from a process of personal analysis.

The drawing tells us the concept. One classical pedagogic activity into the Faculties of Architecture during the 60's and 70's was redrawing the images of the most important works from some sacred architects. When the pen was going up photograph analysis of the

work was more effective as a rethought drawing, as a rational act that increased the student's analytical skills.

Taking in consideration this idea, we can apply this technique to the territorial analysis. T will be a way to feel territory, overwriting territories over maps or aerial photos.

Figure 27. Carnoedo. Spain.From Google-earth

Figure 28. Path to Lobos' beach-Carnoedo-Spain

7. The methodology

The work consists of taking territorial redraw as support recognition through numerous visits to the lot and the aerial photography. It dispenses with the existing conventional mapping. We understand it could be a disturbing element in the search for relationships in the analysis process. Thus establishing a direct link between the territory and its observer.

The redrawing of the territory (fig. 29) through exclusive data extraction from aerial photography work involved two levels. First, the careful observation of this photograph allowed a selection of elements that made up this country and they deserved representation, assuming a first level of analysis. There were thus identified territorial primary elements. (fig. 30)

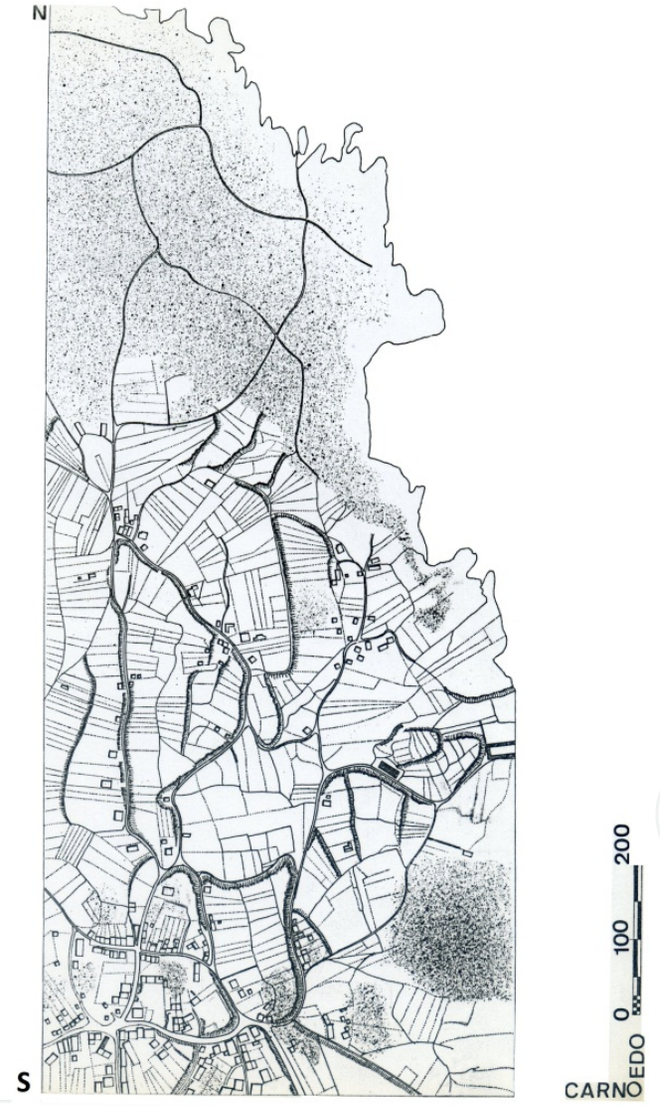

Figure 29. Handmade graphical representation Original scale 1/2000.

Second, learning techniques of representation required for recycling of previous knowledge and identifying the relationship between territorial primary elements.

Finally, the comparison of data collected from the first phase were corroborated or rejected after the site visit, as a form of complementary knowledge of the local.

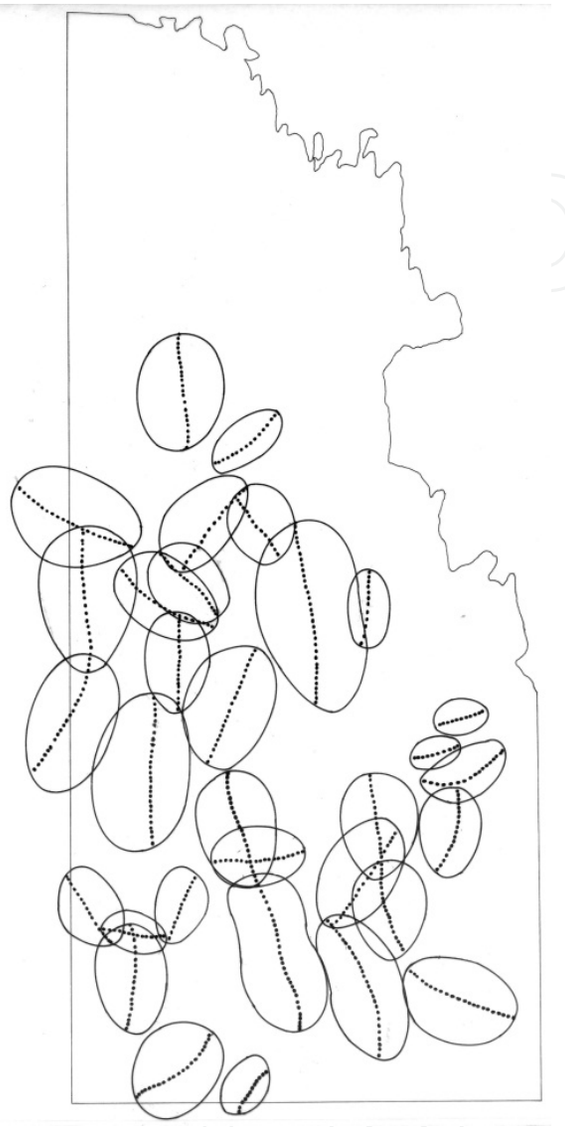

Figure 30. Identification of the primary elements Original scale 1/2000

This process contributed to the breakdown of exclusive knowledge through the plan (standard error of architecture student). Direct relationships between the plan and the third dimension were attributed through this method. For example, a shadow in the aerial photograph contributed greatly to this knowledge and assumed values for height, defining per se he third dimension. After the location of certain primary elements we define one of these areas as a landscape unit to be studied.

The choice is according to the existent topography and the primary elements previously identified. Thus, the student approaches the overall understanding of the territory where the primary elements in its structure constants, abstract territorial complexity.

The proposed work includes a number of stages, referred to below:

- Visual recognition case study
- Personal data collection on-site.
- Understanding the process of territorial transformation, coming from the transversal knowledge.
- The identification of the primary elements
- Understanding the territorial syntax, as a result of the combination and interaction of the various primary elements previously identified.
- The definition of the forms resulting from this combination.
- Eventual classification of the various combinations detected.
- Global understanding of the territory, as the resulting object of a complex process. In this process, the man appears as an actor in this transformation slowly but steadily.

This work enables deep personal approach to the country's territorial reality. Knowledge of the various relationships between the various elements and levels of training implies territorial, while a valuable tool for future project phases.

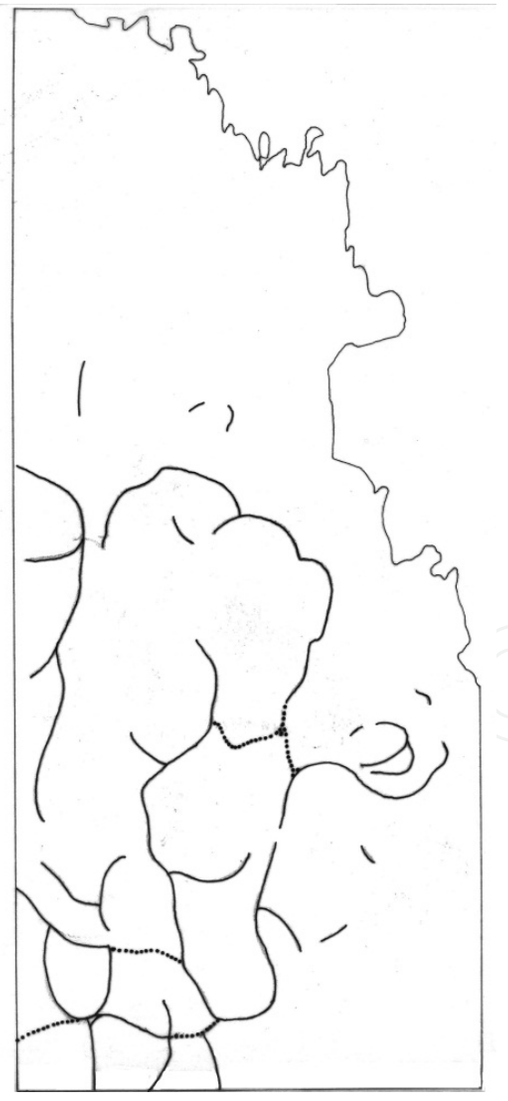

Figure 31. Interaction between primary elements and path's net.

Figure 32. Detail of the whole elements, included terraces. Original scale 1/500

The different proposed stages are shown in the following:

Visual recognition case study

This first step is basic for all the process, happening after an initial analysis about the place, according the observer´s background. It must occur in parallel with the second stage, as a way of approximation from the tangible, which tries to identify the fundamental joint elements of the territory. The always individual data collection is completed with the identification of these elements on the aerial photo of the site and the use of the camera as the main ally.

Personal data collection on-site.

Data relating to the territory under study, both statistical and anthropological level, are important. Knowledge of the various social practices is essential in personal and sensitive approach to the intangibles. Knowledge of these data helps the development of the state of the arts over the territory.

Understanding the process of territorial transformation, taking knowledge of science or knowledge cross.

This process arises from the combination of two strong concepts. On one side we have the knowledge collected in the state of the arts. On the other side territorial representation will be present. This phase helps the understanding of how the territory as a single complex reality.

The identification of the primary elements

The identification of the primary elements is a direct consequence of the previous phase. Primary elements concept were previously defined. In practice, the relationship between the respective elements having primary and the other elements helps perception of a first order formed by the set of elements. It was established around them a set of relationships that allow identification of relationships which typically repeat as a constant.

Understanding the territorial syntax, as a result of the combination and interaction of the various main elements identified above.

In that sense, the primary elements are not really the most important thing in these cases, but the relationship between them. It is about understanding how to configure and interact with each other, and how they feel and express these relationships.

This issue is contrary to the consideration of individual elements. The student knows eventually that these relationships allow consideration of a territorial system, a landscape unit.

The definition of the forms resulting from this combination.

After having defined these formal systems such as landscape units, the resulting set of forms must provide a first global perception of the territory under study. This vision must come previously reinforced by the existence of different transition elements. This transition will depend on the relative position origin of the linkage to perform functions and their appearance over time. The transition elements are also subject to possible classification.

Global understanding of the territory as the resulting object of a complex process. In this process, the man appears as an actor in this transformation slowly but steadily.

We present in this chapter two versions of territorial representation. The first example draws on Carnoedo parish in the municipality of Sada (La Coruña) - Spain).This municipality reflects the characteristics of any of the lands that make up the Galician Rias Altas with significant housing density[20]. The landscape shows a remarkable territorial complexity from a continuous process of anthropization[21] .(fig. 33)

It was therefore a small-scale agrarian context, typical of the locale of Galicia and, by extension, of the ledge Northwest of the Iberian Peninsula. On that occasion the methodology used was based on hand territorial redraw at scale 1/1000. The final layout is presented at scale 1/2000. The study aimed, among other objectives, the definition of the primary territorial elements analyzed.(fig. 30)

Among these elements relate the terraces and *Agras* as territorial configurator completed by a road structure which allows high permeability. In line with both elements property system and the capillary structure of the water were analyzed.

Both elements are vital to understand the agricultural cadastre reflecting tensions between terraces, *Agras*, roads and water mains. (fig. 31) Last step of this analysis will refer constructed elements, superimposed to territorial building. Every stage was following a strong relationship to the outside .In the beginning there were not architectural typologies but dialogue between territory and built through the various modes of occupation on the parcel were not absent. (fig. 32)

[20] Available data for this area in 2011 defined a density of 540.92 inhabitants /km^2

[21] Technical term from the Italian (*antropizzazione*) that relates the work of transforming the natural environment applied by humans to meet their needs and improve quality of life, often at the expense of the ecological conditions

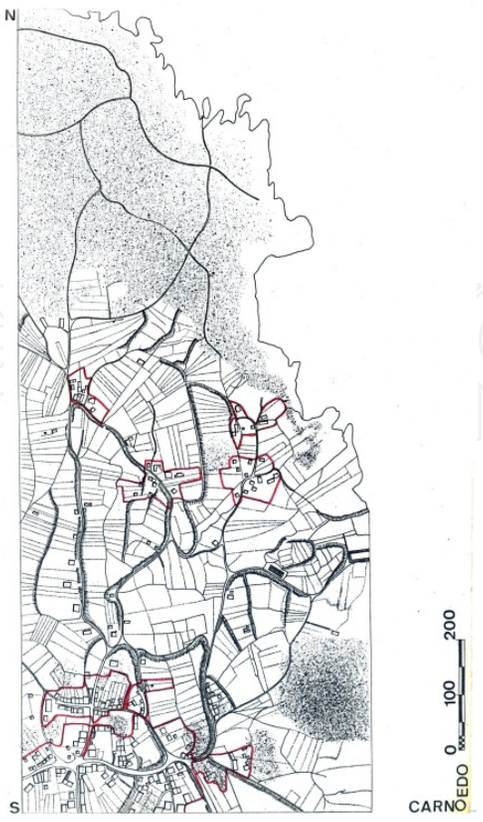

Figure 33. Whole graphic representation, with the different definition of the places.

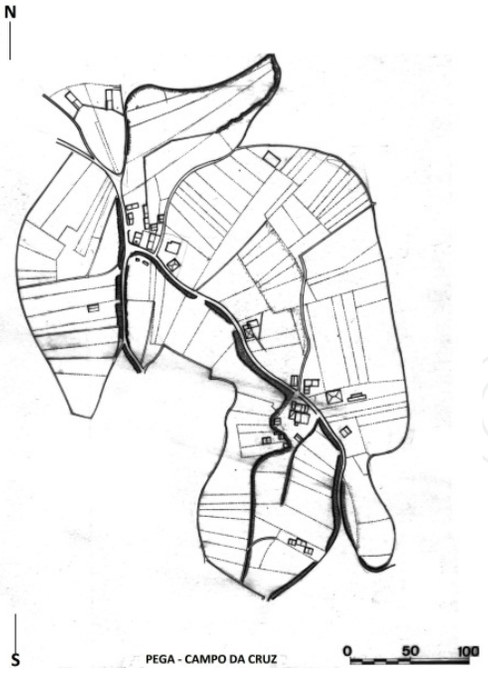

Figure 34. Campo da Cruz place.Carnoedo

Thus, it was established a direct link between the territory and its observer. After the location of certain primary elements, such as formal constants appearing in shaping the territory, one of these areas was defined, such as landscape unit to study.(fig 34)

The choice was made based on the topography and the existence of *Agras*. (fig 33) Thus, the student approached the overall understanding of the territory where the trinomial, Sea, Agra, Mount summarized to territorial complexity. Road structure converged on it. It was the three scales running along only one path: The urban scale, as the road assumed his relationship with Sada; the agricultural scale, when the road was associated with the various *agras* and plots that make up the landscape around the different places of the Carnoedo parish and finally the scale when the extension of this road towards formalizing the *corredoiras*[22] going to communal forest area.

Previous experience served as a reference for the development of the work done thirty years later [23]. This territorial representation is about Arrestim and Ponte Nova (Igreja) sites, in the parish of Bárrio - Ponte de Lima,(fig. 35) a Portuguese town near the border between Galicia and Alto Minho. The morphology responds to the characteristics already referred to the ledge northwestern Iberian Peninsula. In this case it is a more rugged topography, predominantly terraced structure with "socalco"[24] as a structuring element for the construction of the territory.

Figure 35. Bárrio-Ponte de Lima.Portugal from Google-earth

[22] Galician term refers specifically to the cart path.
[23] Work done by students Rachel Campos and Rogério Soares under supervision of the author of this article
[24] *Socalco* is the Portuguese name for the terraces.

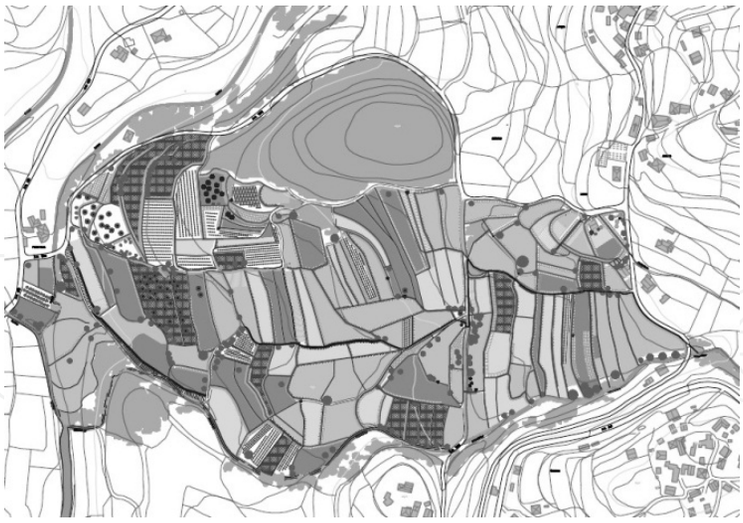

Figure 36. CAD graphical representation about Bárrio-Ponte de Lima. Portugal

Figure 37. Topography and water structures

Figure 38. Primary elements into Bárrio.

Figure 39. Topography,water structures,terraces and built elements

Figure 40. *Socalco* and *ramada*, as primary elements in Bárrio.

Road's scheme and water mains interact resulting in an agricultural system where wine architecture, in its various types, define the dominant landscape. The case study prevents the study of the phenomena of construction in the area in a first phase. It was only in the characterization influence of agricultural land, avoiding interference built elements. The following objectives were defined:

a. The student's approach to the territorial level, where it is expected he will develop his future professional career.
b. The identification and subsequent analysis of territorial primary elements, ie elements that make up a presence and / or lack of the territory, in turn distributed in different layers or levels of information.
c. The knowledge of syntax territorial modes how territorial these primary elements already identified are interrelated, and the results from these interactions.
d. The transdisciplinary understanding of relationships existing in this territory allowed keeping certain territorial structure till now.
e. The development process of the project. It was based on the knowledge of the scale of action and its location, as a direct consequence of the previous work.

Figure 41. Whole graphical representation for Bárrio.

The development of the process took place as follows:

We started working on the municipality digital format as graphic bases at 1/5000. Several visits to the site helped define at first the landscape "unit" study, with the support of existing aerial photography, always based on following conditions:

- Topography, existing land parcel boundaries
- Water structure, and natural and artificial joint are various levadas and plots affected by irrigation.(fig. 42)
- Road infrastructure linking all the above items.
- Identification of the primary elements of the study area territorial configurators

Based on the foregoing, we defined a perimeter defined by paths that are directed to the lowest point defined by the course of the riverbank Labruja[25] in at Ponte Nova. So, we proceeded to the individual recognition of the terrain and extensive data collection unit and considered. This confirmed the structuring role of architectures socalcos and wine in its various variants studied before.[9] It was also noted the role delineation of water structures, both natural, formed by the banks of San Gens, Labruja and Mestre, and the artificial one. This project, integrating the Levada do Caneiro, do Tested, do run it and do Casal, developed in previous decades to proceed to irrigate the plots studied.

The analysis took advantage of the characteristics of the CAD application to designate layers for the different levels of information.

[25] Labruja is the main left stream of Lima river. (Limia, while running through galician lands)

This issue is an improvement with respect to previous work, given the correction facilities introduced in the process and the ability to interrelate two or more levels of information mechanically.

Given these results, it seems logical to make a comparative study of the two processes.

Figure 42. Levada in Bárrio-Ponte de Lima . Portugal

Figure 43. Detail of ramada in Bárrio-Ponte de Lima. Portugal

Figure 44. Ramadas in Bárrio-Ponte de Lima.Portugal

1. The use of CAD in the redrawing of the territory has the following advantages:
a. Those are known in CAD drawing, its versatility and its ability to copy repetitive processes, and choose from several editing modes mechanically.
b. Assignment to the respective levels of information layers, leading to the possibility of establishing relations between the various levels of information in a direct and immediate.
c. The ability to reach scales of analysis hardly achievable in manual drafting
2. On the contrary, the use of these computer applications led to a series of difficulties or disadvantages with regard to analysis or manually territorial redrawing:
a. The interposition of the computer between the territorial redraw and final expression. It is a mechanical device incapable of interpreting by itself.
b. Failure to express the author's subjective attitudes into the formal territorial analysis, reducing the freshness of the final result.
c. The inability to ensure entirely personal processes. Redrawing can be the result of a joint action that disrupts the production of educational goals facing the approach to architectural design. Only except personal commitment of the students goals would be achieved.
d. The lack of agility in non mechanical processes was confirmed, where the manual process was more advantageous.

8. Conclusions

We can define a set of initial findings in all this work:

1. The conventional territorial representation involves a process that necessarily reduces the provided information.
2. This reduction is an important obstacle to the development of territorial project.
3. This problem becomes more complex in the small and medium scales.
4. Solving such problems can be obtained through an individual complementary survey work. Intangible items must be included somehow in this work.
5. The manual or computerized surveys methods developed according this methodology are equally valid, with specificities.
6. The manual method allows a greater voice, especially when talking about qualitative aspects of the territory, but is slower. This method allows rapid consideration of the interactions between the various layers of information.
7. The computer method loses freshness of expression, but is very effective as far as regards interaction layers.
8. In any of the cases we have studied, the method allows a very efficient approach to define the guidelines of design.
9. The method reveals its effectiveness for small and medium scale. In these cases the dimensions have ranged 27,39 km^2 for Carnoedo and 5,41 km^2 for Bárrio.
10. The limitations come from the spent time in performing a conventional project planning, making it difficult to extrapolate to higher dimensions.

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Pictures are from the author of this cahpter, except other indications

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