

Landscape within the architectural design pedagogy. Recent experiences

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ABSTRACT: Architectural design pedagogy requires special attention to the relationship between place and object to design. Landscape seems link these two fields. The student's approach to the territory as workspace requires a specific attitude. The analysis of the place and its perception will be preceded by a preliminary task to identify the various components of landscape. The paper refers a comparative analysis among several processes developed in Spanish and Portuguese Faculties of Architecture, as a first step of an integrative project among Mediterranean High Education Institutions. The conclusions reflect the most interesting methodology to apply can be mixing the free hand and the computer graphics systems. A third path could be very helpful to mix them.

KEYWORDS: Architectural Design pedagogy, landscape, graphical representation.

RESUMO: A pedagogia do projecto requer uma atenção especial para o lugar em relação ao objecto a desenhar. A paisagem poderá ser o elo de ligação entre estes dois elementos. A aproximação do estudante ao território como espaço natural de trabalho exigirá uma determinada atitude. A identificação das diversas componentes da paisagem é a fase preliminar face à análise do lugar e a sua percepção. Este *paper* refere uma análise comparativa dos processos seguidos em duas faculdades de Arquitectura de Espanha e Portugal acerca deste tema. Trata-se dum primeira fase dum projeto mais integrador que abrange os resultados obtidos noutras Instituições similares no Mediterrâneo. As conclusões referem que a metodologia mais interessante a aplicar poderá cruzar os desenhos a mão levantada e o desenho por computador como terceira via.

PALAVRAS-CHAVE: Pedagogia do projecto arquitectónico, paisagem, representação gráfica.

Introduction

Throughout the own pedagogical path it was found that learning of architectural design is a complex process, even within this involving global culture.

This universality allows us to understand a number of features that have been systematically repeated in all schools of architecture I have known so far:

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-A progressive detachment from reality was happening, prevailing virtuality as its replacement.

-An alarming loss of the notion of scale was verified. The drawings, the proposal, end up being mere virtual objects in many schools, supported by progressive laziness to make a mere printing on paper.

This forces us to think about the most appropriate method for teaching / learning the discipline of architectural design. There has been an increasing phenomenon that is the sacredness of all that exists in the virtual networks, as irrefutable and undeniable “truth”: students usually part of graphic materials that someone has done for other purposes, taking it as a question, as decontextualized axiom.

Faced with this situation, in the educational architectural research’s field, educators have been taking different poses. One of the positions is the extreme advocate of the need to represent the territory as a base for a later project (MAGNAGHI, 2003)¹. Andrea CASALE (2009) refers “*design is drawing and drawing id design*”².

More conciliatory positions are given, such as Oriol Bohigas, recognizing the need to incorporate tools to design process.³

Certainly new possibilities for development of the project have been opened. SALAMA Ashraf (2008) has been noting when reaffirmed by this idea ⁴.At the same time, a stream closer to the need to redraw the territory or place, under various scales,

¹ MAGNAGHI, Alberto:”La rappresentazione identitaria del patrimonio territoriale” in: in G. Dematteis, F. Ferlaino, *Il Mondo e i Luoghi: geografie delle identità e del cambiamento*, IRES, Torino 2003 “La ricerca sull’identità dei luoghi perde il suo sapore archeologico, museale, divenendo ricerca sul futuro possibile dell’insediamento umano. In questa ricerca incontriamo molti problemi.La rappresentazione dei valori territoriali e ambientali diventa un elemento fondamentale del progetto. Evidenziare, descrivere questi valori significa produrre una rappresentazione orientata alla loro trasformazione in risorse, qualora la società li sappia “trattare” e utilizzare in modo durevole e sostenibile”

² CASALE, Andrea.2009: “La didattica nel corso di lauree in design2.UdRR design representation.Dipartimento INDACO,Politecnico di Milano: “Il compito più difficile per noi insegnanti di disegno è convincere lo studenti che il progetto é il disegno e il disegno è il progetto.Il disegno e il progetto vivono lo steso tempo criativo e sono totalmente legati,l’uno con l’altro da non poterli distinguere”

³ BOHIGAS, Oriol. (2009). Interview into CONTEPOMI, Gustavo Adolfo. “El país fértil. Notas para una pedagogia del proyecto”. Universitat Politècnica de Catalunya. Departament d’Expressió Gràfica Arquitectònica : You can’t dictate to the computer without a previous idea, and that is what is unresolved to computer, manual drafting is irreplaceable, as an act of reflection. One cannot ignore its importance and be so naive as to believe that if we fill the schools computers we will have solved the problem of drawing

⁴ SALAMA, Ashraf(2008) “A theory for integrating knowledge in architectural design education” in International Journal of Architecture Research IJAR, vol.2 issue 1 ISSN 1994696: “Developments in CAD, visualization, and digital modeling coupled with the advanced technology to communicate data, images, and life action design experiences, have enabled virtual dimensions in studio instruction”

defends this method as an effective way to introduce students to the architectural design process.⁵

FERRER Forès' words can be assumed:

*“The notion of the place is another key concept in the development of the design process. The draft establishes a system of relations with the place for linking with the nature’s territory or city. These links with nature, that Kahn called connection architectures, are the forecourt, the yard, the garden, the square ... and establish a system that provides through paths the itineraries and the liturgy of access to the designed object. Project must understand the place and highlight their specific qualities”.*⁶

The place is an enclosed endowed space with identity. It is transformed due to the location human action over time. It is revealed and activated through links established by the project.”

Face to the diversity of ideas we understand that there is a convergent point in all these opinions: We can say that the drawing of the place, the context of the project, is an effective method for the development of learning design process, with a certain level of objectivity.

The hypothesis

Architecture is a difficult knowledge for being classified within the scope of sciences and, consequently, into a certain field of research. One of the most complex issues in the development of research related to Architecture is caused by the difficulty of engaging the design process as a research act. There are many subjective factors in this process to prevent its appreciation within the sequential logic of conventional scientific process. The process of developing a draft is not clearly the result of solving a mathematical equation.

However, Sara L. Concepción CENTENO Espinoza refers into her graduate work *“...teaching of architectural design in the workshops, must not only be seen as a cognitive activity but as a process as well as being grounded in reality must*

⁵ Both of them, Juan Luis Dalda Escudero and Felipe Peña Pereda, developed this idea in his long teaching experience in the school of Architecture of La Coruña, as will be seen later in the development of this work.

⁶ FERRER FORÉS Jaime J. (2009) *“Proyectos arquitectónicos: la lenta y paciente búsqueda”* II Congreso Internacional Claves para la implicación de los estudiantes en la Universidad. "Univest 09 II Congreso Internacional Claves para la implicación de los estudiantes en la Universidad". Universitat de Girona (UdG). Servei de Publicacions, 2009, translated from the original version in Spanish

have a scientific character because without it you lose the objective basis of the structure learning”⁷

According to Felipe PEÑA Pereda⁸:

“To suppose the fact to cope with a place is always the beginning of design process is simply a way of looking at the design process. Often, the source of a building or the project is another, such a program, a need, a plastic idea, an obsession.”

We conclude that the territory can be the catalyst for a process of territorial architectural proposal. This territorial redraw can be understood, at the same time, as a revisable process, with some objective basis, as a part of the assessment of existing territorial and contrastable reality. In a certain number of conditions are converging here, letting the approach of the design process to the scientific one.

Based on previous written, we define the following hypothesis: The territorial representation is an effective and necessary tool for the start of the design process.

Methodology

Proposed methodology was made between academic years 2009-2010 and 2011-2012⁹. It was a previous personal experience developed in the chair of Professor Juan Luis Dalda Escudero within the course of Urbanism-II at the Faculty of Architecture of La Coruña-Spain, along the academic year 1982-83. On that occasion Carnoedo parish (municipality of Sada-La Coruña-Spain) was the reference. This municipality reflects the characteristics of any of the lands that make up the Galician *Rias Altas* region with a significant housing density¹⁰. The landscape shows a remarkable territorial complexity from a continuous process of anthropization.¹¹ It was therefore about the small-scale agrarian context, typical of the regional settings of Galicia and, by extension, of the northwest cornice of the Iberian Peninsula. On that occasion the methodology was based on hand redrawing the territory at scale 1/1000 to surrender a final version of the work to scale 1/2000. The study aimed, among other objectives, the

⁷ CENTENO Espinoza, Sara Concepción de L. “Evaluación de la metodología de la enseñanza en los talleres de proyectación arquitectónica de la carrera de arquitectura de la Universidad de El Salvador, Facultad multidisciplinaria de occidente, en el periodo comprendido entre octubre y noviembre del 2010” Abril 2011, Universidad de El Salvador. Translated from the original spanish version

⁸ PEÑA PEREDA, Felipe (1986). “El territorio, sus enseñanzas y su aprendizaje” Boletín Académico. Escola Técnica Superior de Arquitectura da Coruña, 3: 26-35. ISSN: 0213-3474. Translated from the original spanish version

⁹ The work was done within the Master Program of Architecture and Urbanism at the University Fernando Pessoa in Porto.

¹⁰ Available data for this area in 2011 defined a density of 540.92 inhabitants /km²

¹¹ 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

definition of the primary territorial elements. The terraces and *agras*¹² are among these elements as territorial configurative elements completed by a road structure allowing high permeability.

Property system and the capillary structure of water were analyzed in relation to these elements. They are vital for the understanding of agricultural cadastre reflecting tensions between terraces, *agras*, roads and water mains.

Built elements are at the end of this analysis, overlaid to territorial construction. It was caused by a strong relationship. Architectural typologies and building dialogue between territory and built through the various modes of occupation on the parcel were not outside.

Description of works

The work consisted of territorial redrawing taking recognition through aerial views and countless visits to the place as support elements. The existing conventional mapping was ignored. It was understood it could be a disturbing element in the search for relationships in the analysis process. Thus, a direct link between the territory and the observer was established.

After the location of certain primary elements, understood as formal constants appearing in the shape of territory, one of these areas was defined as landscape unit to study.

The choice was based on the topography and the existence of *agras*. Thus, the student was approaching the overall understanding of the territory where the trinomial, Sea, *Agra* and Mount summarized 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.

Finally the forest scale, as the extension of this road, defined the *corredoiras*¹³ going to the communal mount. The focused analysis area explains the development of the road. It appears as the necessary balance between the various platforms that make up the successive terraces¹⁴ towards lower levels. The preexisting *agras* are still recognizable in the defined access to the various properties. It was assumed that the

¹² *Agra* is a specific spatial agricultural structure related to sharing accessibilities and internal paths by a plot's concentration, developed in the north-west Iberian Cornice. Elliptical forms are related to these spaces, especially in Rias Altas region.

¹³ Galician term refers specifically to the cart path.

¹⁴ Later, this term, used for land analysis in Portuguese territories will assume the local meaning "socialco"

rural or municipal road was the most accessible setting *rueiros*¹⁵ thus the road or subsequent relationship with the mount. Even the *corredoira* assumes its formal relationship with the carriage as traditional means of transport, as a result of reduced accessibility.



Fig. 2. Aerial picture. Carnoedo 22nd-August-2005. From: google-earth

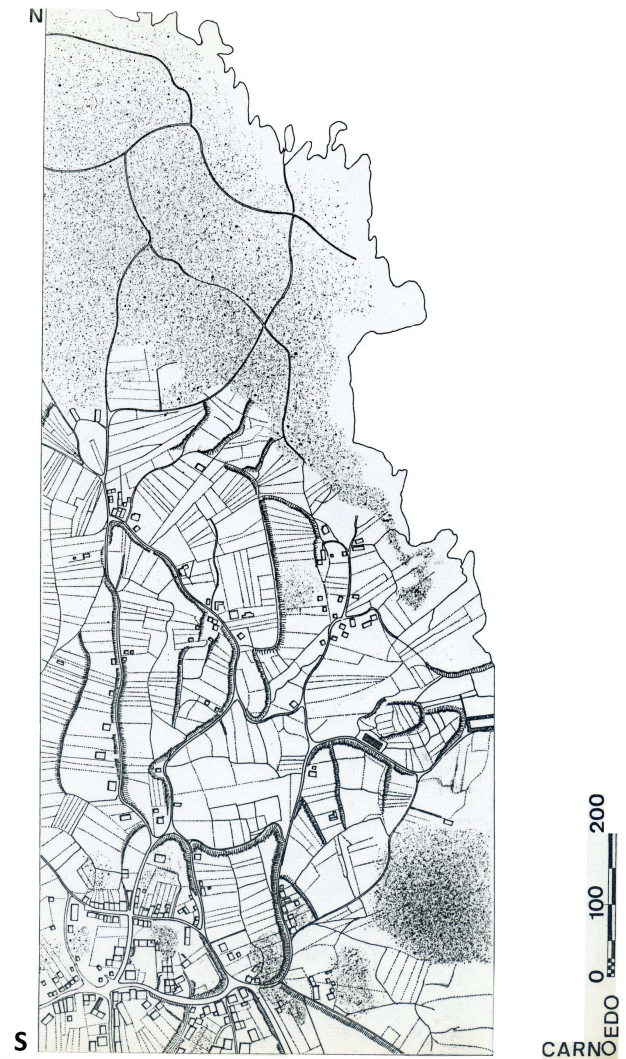


Fig. 1. Territorial redrawing. Carnoedo. Original scale 1/2000
Author: José Manuel Pagés Madrigal

¹⁵ Galician term refers to groups of houses that form a separate set of the place or the other of the town

A later stage allowed a detailed analysis of *Cruz da Pega*, linked to exerted *agra* as landscape unit. Its analysis reflected the relationships between built objects, as elements for the configuration of the place.

This work was conducted in the personal learning years in this school. It allowed an approach to the profound country's territorial reality. Knowledge of the relationships among the several elements and territorial training levels assumed, at the same time, a valuable tool for future project phases.

The territorial redrawing 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 this country and they deserved representation, assuming a first level of analysis. There were thus identified the primary territorial elements. Secondly, learning techniques of representation required for recycling of previous knowledge and identifying the relationship between territorial primary elements. Finally, the comparison of collected data from the first phase were corroborated or rejected after the site visit, as a complementary and obliged form of knowledge of the local. In this way contributed to the breakdown of exclusive knowledge through the plan (standard error of architecture student) and attributed direct relationships between the plan and the third dimension. For example, a shadow in the aerial photograph contributed greatly to this knowledge and assumed values for height, defining "per se" of this third dimension.

The following statement of Felipe PEÑA thus took on its true dimension:

*“The best field for this game also appears as a tool, the territory (or place), a support for an architectural design. The territory and place are the best vehicle and pretext, for all the cultural and historic images and analogies in the country.”*¹⁶

Bárrio

Previous experience served as a reference for the development of the second work¹⁷. We are talking about Arrestim (Igreja) and Ponte Nova, both sites within the parish Bárrio- Municipality of Ponte de Lima-Portugal, near the border between Galicia and Alto Minho. The morphology responds to the characteristics already referred to northwestern cornice of the Iberian Peninsula. In this case it is a more rugged

¹⁶ PEÑA, Felipe. (1986): “El territorio. Sus enseñanzas y su aprendizaje” Boletín Académico. Escola Técnica Superior de Arquitectura da Coruña, 1986, 3: 26-35. ISSN: 0213-3474 Universidade da Coruña

¹⁷ Work done by students Rachel Campos and Rogério Soares under supervision of the author of this paper

topography, predominantly terraced structure with the "socalco" as a structuring element for the territorial construction. Road schemes and water mains interact resulting in an agricultural system in which wine architecture, in its various types, define the dominant landscape. The case study prevents in a first phase the study of the building phenomena in the area, although no longer be evident in no time. It was only in the characterization influence of agricultural land, avoiding interference from built elements. The following targets 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.

The development of the work took place as follows:

We started with the municipal graphic bases of 1/5000 in digital format. It was established a set of site visits to define at first, with the support of existing aerial photography, the "landscape unity" study based on the following factors:

Topography, paying special attention to existing land parcel boundaries.

Water structure, and natural and artificial joint through various *levadas*¹⁸ and the respective plots were affected by the irrigation structure.

Road infrastructure linking all the above items.

So, we proceeded to the individual recognition of the terrain and extensive data collection of the unit. This confirmed the structuring role of *socalcos* and wine architectures in its various variants studied before.¹⁹ It was also noted the role of water structures, both natural and artificial, formed by San Gens, Labruja and Mestre streams. This project, integrating the *levadas do Caneiro, do Testado, do Correlo* and *do Casal*, developed in previous decades to proceed to irrigate the studied plots.

¹⁸ Portuguese term defining a water pipe structure in the open for the irrigation of a given land area.

¹⁹ For further detailed information: PAGÉS MADRIGAL, J. M y MALAFAYA BAPTISTA, F "(2011): "Territórios como laboratórios. Territories as Laboratories" Ed List Trento



Fig. 3. Freguesia de Bárrio. Municipality of Ponte de Lima – Portugal June 29th -2011. From: Google earth



Fig. 4. Territorial re-drawing of *Freguesia* de Bárrio-Ponte de Lima-Portugal. Original scale 1/1000. Authors: Raquel Campos and Rogério Soares. University Fernando Pessoa. Porto-2011-12

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

We think this issue is an improvement with respect to previous work. Correction facilities introduced in the process and the ability to interrelate two or more levels of information mechanically are clear advantages when comparing with the other methodology.

The third path: The reinterpretation of the landscape

It was developed in a parallel way the possibility to have an initial comprehensive idea about the landscape in other case study. In that case, the site was Praia da Memória in Freguesia de Lavra-Matosinhos the students must do a previous exercise of reinterpretation of the landscape and territories. Site is over Porto metropolitan area in a hybrid space where heavy industries, storage areas, first and second residences and some memories are sharing the same space. In that case the students decided to link some artistic production with the general territorial comprehension, and it is really awesome the provoked relationship, in that case the author re-drawing landscape overlaying two concepts of contemporary art to reinterpret the landscape. The figure 6 shows an interaction between the territory and works from Mondrian and Pollock.

After these results, it can be interesting to make a comparative study of both processes.

1.- CAD applications for the redrawing of the territory have the following advantages:

a. - Versatility and ability to copy repetitive processes and the possibility to choose several mechanical editing modes.

b.- Capability for assignment to the respective levels of information layers, leading to the possibility of establishing instantaneous relations between the various levels of information.

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.

OBTAINED RESULTS

The proposed site analysis was presented in all its extension, not as a finished object, but a series of relationships explained through the various levels of selected information (layers within the CAD application). Thus we proceeded to search for hidden but apparently existing relationships, being one of them the relationship between terrain's altimetry and the location of the built object. This relationship reflects the microclimatic conditions of the area in relation to levels of the areas' isolation. The most built elements were located between the elevations 125m. and 225m. Below this level, there would be a clear conflict with the lands watered by the various *levadas*.

Upper bounds would mean worst weather conditions and accessibility issues.

One of the consequences of this study is a series of basic design's decisions in terms of the location of the built in relation to the context, guidance and even relationships with other elements of the plot, in the countryside.

A lack of study and a flawed approach to the place have caused decharacterization of architectural production with respect to the environment. In this sense casts of the plots and the execution of retaining walls out of scale, have been a constant in this region in recent decades.

Tensions between the plot (represented by certain topographical conditions) and its owner (represented by shared interests sometimes incomprehensible) maintain an unequal struggle. The end result is the lack of adaptation of the architectural object on the place. A better trained architect, with a deeper knowledge of ground adaptation techniques may be better able to undertake the proper interpretation of a territory and the proper implementation of the object in it. Also with better arguments may rebut the constraints of a client unaware of such relationships.



Fig. 5. Freguesia de Lavra. Municipality of Marosinhos – Portugal June 22nd -2012. From: Google earth.

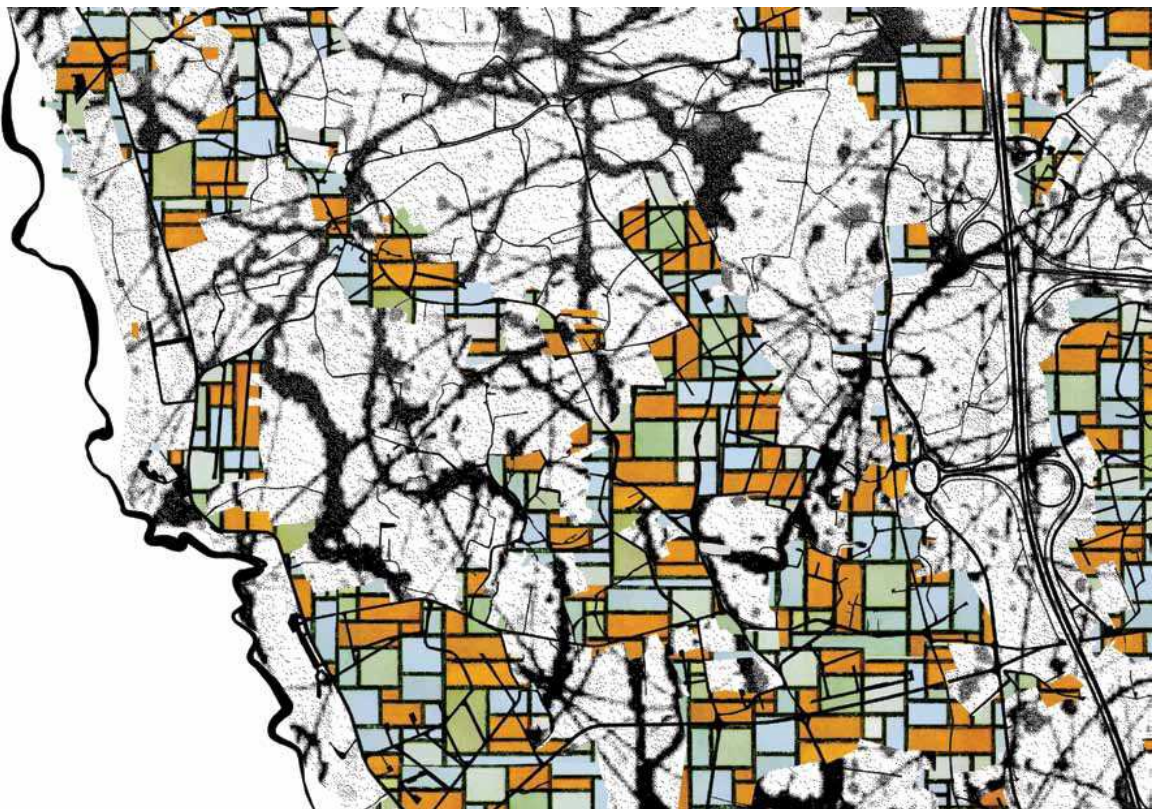


Fig. 6. Territorial re-drawing of *Freguesia* de Lavra-Matosinhos-Portugal. Original scale 1/7000. Based on Piet Mondrian "Gray brown" e Jackson Pollock "nº1" Author: Rui Pedro Silva. University Fernando Pessoa. Porto-2009-10.

Through this case study we can prove that there are relative unexplored areas where the computer graphics can be very interesting, as shown in the Praia da Memória case study. This way deserves a major attention in the future as a conceptual representation of the landscape.

In regard to the findings in the educational field, it is important to remember that all the information that implied the substitution of personal effort was obvious to the student. It is understood that the process must be done individually to generate the personal analysis transferable to territorial redrawing. It is thus avoided pedagogical approach from a mechanistic position as defined by Ashraf SALAMA²⁰:

“In traditional teaching practices, architecture students are typically encouraged to conduct site visits and walkthrough the built environment in order to observe different phenomena.

Unfortunately, research indicates that these visits and exercises are simply casual and are not structured in the form of investigation or inquiry (Salama, 1995, 1996, 2005 b, 2006). As a result, students do not know what to see and what to look for in the built environment. The case would be worse when educators attempt to offer students ready-made interpretations about the physical world in lectures and seminar classes, leading to students’ inability to think critically or develop their intellectual skills.”

Local visits of students were at all times without the presence of the individual teacher. There was a single group visit in the middle of the process, once it had made a first delivery of work and in order to resolve a number of doubts about the decisions related to the representation of the analyzed topics.

CONCLUSIONS

The territorial redrawing favors the self student's criticism. He will be able to ask for the keys of territorial structure and find the answers to the key developments in this area resulting from the addition of an architectural new object.

At the same time, this re-encounter of the student with their habitat is real. Many students have this bipolar relationship shared by the urban and rural scenarios in northern Portugal. The "*aldeia*"²¹ is the original environment from which most of them have departed. Social practices within this environment are so familiar and unknown.

²⁰ SALAMA is really critical of the mechanistic position, whereby, “The mechanistic orientation of pedagogy results in the treatment of students as if they were machines with the combined properties and characteristics of tape recorders, cameras, and computers. The student is evaluated with respect to his/her ability to reproduce what he/ she has been told or shown”, de SALAMA, op.cit.

²¹ Portuguese term used to define a village

The experience was commented that re-encounter: a deep understanding of the genetic reasons of territory.

This redrawn, although not direct, handmade, requires such survey data that leads to greater adaptation of the scale of the object to project and greater apprehension of the true spatial dimensions. In this case there will be not a silent answer from the student when the design's scholar is questioning about certain dimensions in the project. The plot, within the computer, is becoming a virtual issue and is dominated by the lack of scale. The analysis is part of the project consequently a part of the future building process. In fact analysis involves making judgments and judgments that affect the projects to be undertaken. Even though referring to the city, CASTEX words are clear:

*"...urban analysis is a condition of the project by itself, determines the sentence, the method and the theoretical location of the project, provides the material on which the project is carried ..."*²²

APPLICATION POSSIBILITIES

The territory is the repository of the memories of the previous societies.

Although the starting point of the design process can be varied and multi-causal, according to Felipe PEÑA claims:

"No less interesting is this humbler and literal approach which consists of redrawing the territory as a method of knowledge on the one hand and the material homogenization intervene in the design process."²³

The approach to the territory is applicable to all types of academic exercises for design's learning. And this approach is even more palpable; more committed, the smaller the spatial scale, the more you will find an area built. These levels are further in Atlantic cornice within the Iberian Peninsula's.

This procedure is an attempt to approach from the conventional techniques of representation of the territory, with the CAD techniques' aid. Its applicability would now be desirable and necessary. Thus the continuous practice of virtuality is balanced by a mix of actions that require a visit to the site and ongoing data collection as symbiosis between project and place.

In terms of pedagogical findings, mean that the only effective way to overcome the difficulty of recognition of the scale is the student's continuous approximation to reality. But this approach must be assumed in the investigational architectural context:

²² CASTEX, Jean(1983), "Elementos de análisis urbano. Urgencia y necesidad del análisis urbano". Foreword to the book written by Panerai, Depaulle, Demorgeon, Veyzeneche. Instituto de Estudios de la Administración Local. Madrid

²³ PEÑA, Felipe. 986):op.cit.

“The teaching of the subject of Architectural Design in the first cycle of studies is a learning architecture as a cumulative research and comprises two key notions: the construction and location.”²⁴

Touch, feel, palpate the land helps to overcome the virtuality of the project, as a process that must be felt, experienced, internalized.

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²⁴ FERRER FORÉS Jaime J. (2009) op.cit.

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Aerial images come from Google-earth and drawings used are the following authorship:
Referred to Carnoedo (La Coruña), are authored by José Manuel Pagés Madrigal
Referred to places of Arrestim and Ponte Nova (neighborhood-Point of Lima), the authors are students and Rogério Raquel Campos Soares, who especially appreciated the work done.

Referred to the place of Lavra-Matosinhos, the author is Rui Pedro Silva.