

## **THE TEACHING OF PHYSICAL GEOGRAPHY THROUGH THE STUDY OF LANDSCAPE IN HIGH SCHOOL TEXT-BOOKS**

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### **OBJECTIVES OF WORK**

The textbook has become, for years, a fundamental tool for teachers in the teaching of Geography. Therefore, and according to the possibilities offered by these books for teachers and students, we propose an analysis of textbooks in the second year level. At a time of change and thorough review of the teaching model through the emergence of new technologies, which often replace the printed textbook and sometimes also the book in digital format, it should be assessed the role of the textbook through the iconic, educational, social, ideological and political functions. In a context of transformation and educational reform remains to be seen if the changes are applied in textbooks and specifically, in Physical Geography, since, as already expressed by some researchers of didactics in Social Sciences, just a renewal is observed of the contents in high school textbooks.

In this way we want to see, on the one hand, if the academic level of the contents of textbooks corresponds to the curricular level at which target these books, and, on the other, if the information processing, both graphic and written, has a scientific level according to the teaching of Geography. To proceed accurately it has been selected one of the aspects that most interest raises geographically, such as biogeographical landscapes, because not only it analyzes the composition and distribution of these landscapes, but also it includes aspects that have to do with the relief, climate and soil.

The aims that we want to achieve are three. First, we want to highlight the fragmentary and incomplete analysis of the Spanish plant landscapes in Geography textbooks of 2nd year, with an educational support that is very little appropriate to the level concerned. Secondly, it has been focused on the analysis of the high weight given to the botanical

study of plant landscapes and its impact on the understanding of plant landscapes. We think that this analysis has been imposed to the detriment of the more logical biogeographical analysis, probably because of the heavy weight of the phytosociological school in the Spanish scientific landscape. Thirdly, we suggest a synthetic proposal, in line with the principles of the current biogeographical science, for the correct understanding of the reality of the Spanish plant landscapes.

## **METHODOLOGY**

The study proposal has consisted, first, of the analysis of a total of nine 2nd year textbooks, which are broadly representative of the diversity of publishing offer at this level. Through them we have been comparing aspects of the vegetation, which, in turn, is confronted with the actual reality of the landscape and the image that students have after several years of studying Geography. Then, we have analyzed the didactic approach followed in each case to confirm whether the successive legislative changes that have taken place in Spain in a short period of time, have benefited or not a pedagogical renewal of the 2nd year textbooks.

At this point a renewal of the teaching of plant landscape is proposed to adapt it to modern trends of teaching of Geography, which are beginning to be increasingly applied in primary and secondary levels. In the Baccalaureate level publishers, surely conditioned by the Selectivity Test, they have mostly opted for conservative and traditional methods. This focus has been welcome by teachers seeking a the success of their students, whose objective is to pass the feared access exam to the University. Only in specific cases nuances are observed that tend to more advanced proposals in the transmission of a model of plant landscape in which the student is the protagonist.

## **THE SPANISH PLANT LANDSCAPE: A COMPARATIVE ANALYSIS OF ITS TREATMENT IN TEXTBOOKS**

The first aspect we see is a very superficial treatment of the scientific study of plant landscapes, something that has to do with an extension of between five and twelve pages that is given to the study of plant formations, depending on the publishers. This causes a necessary simplification that hinders an analysis with sufficient accuracy that deserves the complex Spanish plant reality. This 2nd year level distorts the correct understanding of a vegetable medium comprising more than 50% of the Spanish surface according to the Third National Forest Inventory.

Plant landscapes are always studied as a separate item after the topography and climate; in this regard there are no exceptions. It is usually included an epigraph within

plant landscapes regarding soil landscapes, either as an extensive section or as a simple heading within the determinants of natural landscapes; but it does not always happen so, and some publishers have chosen to omit any reference to soils, certainly in the interests of simplification.

Second, it is frequently detected little careful analysis and sometimes a lack of scientific accuracy in the study of landscapes covered in textbooks. This seems linked, on the one hand, with the lack of interest that has traditionally existed in universities when approaching the educational panorama of secondary education, from which these have been generally disconnected. On the other hand, it has to do even more with the generic nature that has had the study of geography in high school.

It is not often reflected on textbooks an adequate scientific update regarding the latest developments in geographical research; and this happens even when resorting to references of university manuals to explain the contents of 2nd year Geography, ignoring the fact that these students have had three years of study of Geography, at the elementary level from 1 to 3 of the ESO, although only one of the courses is exclusively of Geography, while in 1st and 2nd of ESO the subject corresponds to Social Sciences (History and Geography), and then in the classroom students no longer have contact with the Geography neither in 4th of ESO nor in the 1<sup>st</sup> year of high school.

Third, studies have lacked the teaching of Physical Geography dealing with the Biogeography to be used in schools, at the level of both compulsory education and post-compulsory, in high school. Frequently, there are studies that have little projection at the textbook level and therefore they are hardly known in the Schools at a Baccalaureate level; the reason is that publishers set their own guidelines to be followed from official regulations, and do not depart from the beaten path. This makes it easy to understand the few terminological references of biogeographical use that are adopted in the manuals, being preferred the more generic and neutral landscape expressions rather linked to ecology, such as Nature, natural environment, or the more generic one related to landscape, since it can be both natural and humanized landscape.

In connection with all these shortcomings it is not surprising that the study that is done in textbooks is very generic, to try to make sense of all aspects of the natural environment, and in addition it has errors and analysis that lead to confusion. Furthermore the treatment granted in textbooks to plant landscape contains large amounts of originality, so to speak. Thus, in some cases the vegetation itself is completely omitted from the analysis. In other cases the vegetation is reduced to a minimum expression, in devoting special attention to the study of the potential vegetation and the meaning of the landscape as a resource and to its transformations. At other times, finally, studies of plant landscape itself are more complete indeed.

## **REPRESENTATION OF PLANT LANDSCAPE: BETWEEN IMAGE MAP**

The study of plant landscape is linked to its mapping, which allows a fixation of vegetation in the territory. They are always thematic maps of distribution of vegetation, either general or some specific forest species. In all cases it has chosen the color, which makes when the colors are not sufficiently differentiated, it is not easy to see the locations of the various tree species. The maps include the distribution of all vegetation there are two options, either to include a general typology of potential forests, complete with a map of the distribution of forests, allowing simplified map of vegetation or present maps with the main forest species separately. The result of this process are the various plant landscapes that are characteristic of the Spanish natural environment.

In short, by trying to provide a lot of information is achieved that at small scales the detail level is very low, and to avoid saturation is chosen species which in the opinion of the authors are most important in each area. This causes errors since certain areas are not formed by a single species, as generally multi-species Mediterranean forests are the result of partnerships between different forest species. Moreover, the distance between species is not always clear, and in areas of cork trees there are also large tracts of oak forests. By resorting to this type of representation a species, which, in the territory may be a minority is raw, but that it can form forests in certain areas.

The use of representative images of plant landscape is widespread, although the number varies widely, from three to a maximum of 24. It has opted for a strong preference for images that illustrate the text, as a simple addition, but not attached properly the explanation of the characteristics of the plant landscape. This misleads during reading, it gives the impression that there is a contradiction between the analysis in the text and reality in the image, which could belong to landscapes types used to characterize, for example, Mediterranean or Atlantic landscapes, but not for the Spanish reality.

## **TOWARDS A RENOVATOIN OF THE TEACHING OF LANDSCAPE PLANT**

The didactic approach of textbooks in baccalaureat, with slight variations, is based on the idea of transmitting the duality of two different plant landscapes on the one hand the Green Spain North (incorrect aptly named Atlantic) and on the other hand opposite and next, which is the Mediterranean Spain o brown Spain. This is completed with an appendix of the uniqueness of own plant landscape of the Canary Islands.

Indeed, the teaching resource to the duality of the two vegetables and natural Spains with corresponding cliseries is a reductionist and too rigid reality of plant landscapes in Spain approach. This is the reason that from the natural point of view it should be noted that the tree species of the Green Spain exist with broad representation in the mountains of Mediterranean Spain, as well as its riverbanks. The latter happen to be also plant

landscapes with high levels of biodiversity, with great vitality and remarkable territorial representation, although human intervention to agricultural and urban uses has greatly reduced the extent of forests and river groves. This high plant (and fauna) biodiversity must highlight its ecological and scientific value and also link it to the highest biodiversity of what is often observed in the whole of the Spanish plant landscapes, as indicated by recent studies with work field in inland provinces of Spain.

Moreover, the long human intervention in Spain has modified the aforementioned supposedly natural cliseries, because afforestation has affected large areas and have been made with various tree species. And besides, they have been very notorious deforestation for reasons of agricultural plowing or grazing, which have generated vast landscapes of scrub, of grasslands and of shrubs: *landes* in Green Spain and *maquis*, *garrigue* and *pseudosteppes* in the Mediterranean Spain. As for the repopulation, except those made with eucalyptus and radiata pine or Monterrey in the Green Spain, the vast majority in surface o the others have been made with native species, both deciduous and, especially, evergreen, oak , cork oaks and pines.

## **DISCUSSION AND CONCLUSIONS**

A Geography that claims to be the height of the demands of society can not ignore the necessity of to put in order a curriculum that incorporates the advances that have occurred in the geographical science in recent years, and apply them consistently to teaching in high school. Thus, a change of direction is necessary to provide a biogeographical analysis of plant landscapes. This should be done by introducing tools into this process provided by the new currents of geography teaching, curriculum conveniently applied to the level at which the teaching-learning process is developed.

An interpretation consistent with the reality of the plant Spanish landscape should start in the first place, with the study of soils, as a determinant physical factor; secondly, it can be perfectly in relation to the climate distribution, since it is the basis of that part students of 2nd year, but then it is necessary to direct the attention to large forest formations that take on a character, not as always linked to climate as it is presented. For example, we can not overlook the fact that the beech forests dominant in the Atlantic domain, are also present in the Mediterranean climate domain, in mountain areas, or cork oak rooted not only in the West, Southwest and northeast peninsula, but also in specific areas of the interior.

Thus attention should be put to large trees, shrubs and bushes formations and their distribution over the territory, to understand the complexity of the plant environment. This is the result of a process in which human intervention, today, is difficult to dissociate natural species and those introduced at different times. It is even more frequent coexistence

of the same species with natural character in a place but introduced in another one. The bushes come from the degradation of forest or shrub formations, which at the inability to regenerate have allowed the use of soil by species that require direct sunlight and well adapted to poor soils.