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Building landscape memory through combined sources: commons afforestation in Portugal

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Abstract

Mountain landscapes have changed drastically during the 20th century. The knowledge of changing patterns and processes is currently considered a key element for conservation and management. This integrative study combines different data sources, methodologies and representations that contribute to the history of common property land in Leomil highlands (Beira Alta, Portugal). The evaluated material of environmental history includes old maps, recent land-use maps, non-published technical reports, official statistics from the 1950s up to now and writings of a well-known Portuguese writer (Aquilino Ribeiro, 1885-1963). The novel *When the Wolves Howl* (original title *Quando os lobos uivam*, Ribeiro 1958) illustrates processes, meanings and thoughts, both from the local people and the writer, about the

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appropriation of the commons and the 1950s pine-tree afforestation. The paper analyses socio-economic implications and landscape dynamics, identifying the main driving forces of landscape change and the resulting patterns. It discusses the implications of this new understanding for future management and sustainable development.

Keywords: environmental history; landscape management; sustainable development

Introduction

In relation to landscape and memory, Lowenthal (1975) states that insights of the past embody the character of places and yet elude when dealing with the shifting present. Our ecological cognition of the landscape is improved when we are able to identify its changes (Silbernagel et al. 1997). Past interaction between humans and the environment is a key basis for interpreting the inherent complexity of nature, as well as for conservation, resource management and planning (Antrop 2005; Foster et al. 2003; Poudevigne and Baudry 2003).

Landscape is a complex concept understandable by the interaction among five dimensions: the spatial entity, the mental entity, the temporal dimension, the nexus of nature and culture, and the systemic properties of landscapes (Tress and Tress 2001). Because of that, research on landscape changes needs an integrative approach, either exploring different material sources that join disciplines, or investigating methods for combining information. When practitioners of qualitative, quantitative, analytical or interpretative approaches achieve an evolved theory, this is interdisciplinarity (Tress, Tress and Fry 2003). Yi-Fu Tuan (1979) recognizes differences between space (which is described by scientific knowledge) and place (which is about experience and meaning). He states that knowledge about space increases the appreciation of landscape, using abstractions but removing people from their personal involvement with landscape or nature.

Appleton (1975) expresses the same thoughts: the overall view of landscape and our experience of it require an essential rapprochement between arts and sciences. About “bridging the gulf between the two cultures of the sciences and the humanities” Love (1999) urges practitioners of ‘ecocriticism’ (i.e. ecological thinking about literature) to re-examine and reinterpret the descriptions of nature in the canonical works of the past. Some of these texts are classified as nature-writing, defined as “a form of the personal, reflective essay grounded in attentiveness to the natural world and an appreciation of science but also open to the spiritual meaning and intrinsic value of nature” (J. Elder, quoted by Armbruster and Wallace 2001, p. 2).

Several researchers have envisioned past landscapes with the use of narratives or other representations as material for ecological and geographical studies, as well as for management purposes (Debussche, Lepart and Dervieux 1999; Robertson et al. 2000; Foster 2002; Brace 2003).

‘Commons’ (*baldios* in Portuguese) are lands managed by local people who hold their rights in common. These have been traditional properties in Portugal since the Middle Ages, created by national regulations mainly for the benefit of people who did not have their own land. During the 19th and 20th centuries, the use and ownership of these lands was often a controversial subject. Among other actions, a 1938 Forest Law recognized the afforestation interest of commons in mountain areas of the centre and north, and appropriated them as State properties: villagers no longer had rights to those lands. This measure had severe impacts on landscape dynamics and on local social and economic conditions, as commons were an important component of the

poor rural economy of mountain villages, used mainly for grazing livestock and cutting brushwood. Adverse reactions from the commoners against these events of appropriation are historically testified. Existing research about the history of the commons in Portugal focused on political, social and economic subjects (Estevão 1983; Brouwer 1995). No studies interlinked these driving forces with the resulting patterns for landscape or biodiversity.

The aim of this paper is to describe the history of a specific commons area during the second half of the 20th century. This study is part of a broader research on landscape changes faced in a rural mountain area of Beira Alta (Portugal). It combines different sources of data, methodologies and representations of the same area through an integrative approach.

The study area

Moimenta da Beira municipality (Beira Alta, NE Portugal) has 25% of its land in a common-property system, which represents one of the highest rates in Portugal. Within this region, a study area of 2500 ha was defined on the plateau of Leomil highlands (900 to 1000 meters a.s.l.), a very rough and rocky land, surrounded by small villages (Figure 1).

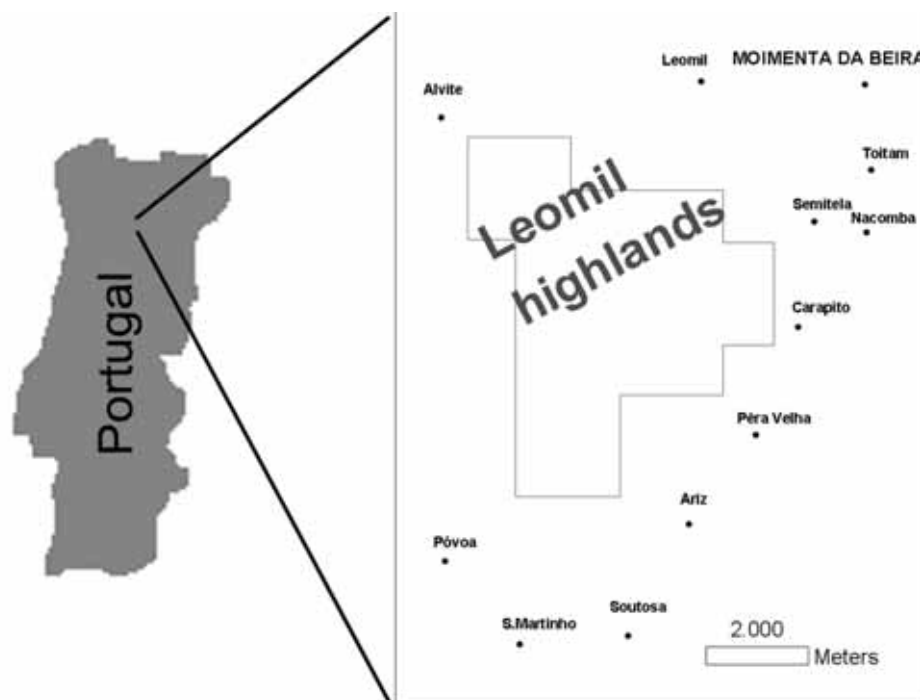


Figure 1. Map of Portugal and the location of the study area. The polygon represents the limits of the study area in the Leomil highlands (Beira Alta, Portugal). The location of the main villages around it is also shown

Material and methods

Data on natural and cultural features, land use and landscape dynamics were gathered from several sources.

***Quando os lobos uivam* (1958), Aquilino Ribeiro's writing**

The writer Aquilino Ribeiro (1885-1963) was born in Beira Alta (NE Portugal) and lived in Soutosa (Moimenta da Beira) part of his life. In his numerous novels, he sensitively explored rural problems and people's characters. He offered a set of landscape descriptions, useful for approaching socio-economic issues and dealing with drivers of landscape change, such as forestry policy. His narratives also contain thoughts, meanings and values that the writer shared with the people who inspired his main characters.

Quando os lobos uivam (1958) is a nature-writing text about commons and the controversy of pine tree (*Pinus pinaster*) afforestation. In brief, it tells the story of a returned migrant from Brazil, Manuel Louvadeus. As Manuel arrives at his village, the implementation of a new forestry policy – the state submission of the local commons for pine-tree plantations – is starting and causing a strong negative reaction by local people.

Excerpts that mention species and describe landscapes or processes of resource exploitation were recorded and classified according to taxonomic and ecological descriptors. Attitudes, views and judgments related to nature were also retained. In this paper, citations or paraphrases refer to the English translation (Ribeiro 1963).

Land-use maps

Based on an available land-use map from the 1950s (1:25,000 scale) (SROA ca.1950), a contemporary map of the area described by Aquilino Ribeiro was built in a GIS, using ArcGis 8.1 Esri. Each parcel was classified according to land use in one of the following three classes: areas covered by farmlands (*ager*), semi-natural areas (*saltus*) and forested areas (*sylva*). Applying the same legend to a land-cover map from 1990 at the same scale (SNIG, COS 90), a comparable map was obtained in order to describe the main land changes.

Statistics, reports and geographical information

Throughout the 1950s, the State produced two main reports about that area: one with agriculture and forestry information (Lobo and Pires 1956) and another one with highlands afforestation-project areas (DGSFA 1953). Statistics for the forested areas in 1975 and burnt areas from 1980 until now, partially as digital geographical information, were obtained for the Forestry Service (DGRF, Portuguese Ministry of Agriculture). The Environmental Impact Assessment for a wind-farm plan in Leomil highlands provided flora, fauna and natural-habitat inventories (Martins 2002; Neves et al. 2002).

Fieldwork

In 2004, fieldwork checked the latest land-use changes in the study area. In particular, three large forested patches identified in the 1990 map were visited in order to confirm their present vegetation cover.

Results

During the 20th century, based on documental sources analysed, one can identify three different periods in which the main shaping landscape forces were (1) agriculture and pasture, before the end of the 1950s; (2) afforestation, between 1960 and 1975; (3) wildfires after 1975. An analysis of each period is detailed below.

The period of agriculture and pasture

Commons were complementary to private-property exploitation, characterized by small-scale farming – in some areas, 50% of the farms were less than 5 ha (Lobo and Pires 1956). They were also the sole land resource for the poorest people who did not have their own land: in 1950, 54.5% of the Moimenta da Beira peasants were offered a day-to-day salary as employees (Martins 1973).

In the novel, the villagers' representative summarized the situation: "It's the highlands which give us milk and wool because it's there we graze our livestock. And as for timber, if we who live here on the horns of the moon did not have the highlands at our disposal, we would die of cold in winter" (p. 45). Brushwood was also a key element taken in the commons. Used during winter to cover the stable floors, it was distributed and integrated in the fields' soil as almost the sole fertilizer. The brushwood-cutting activity is described as an intense exploitation of the resource: "Nothing escapes the sharp, scythe-like edge of the hoe" (p. 133). The text suggests that a cut-grow cycle dominates the *saltus* land-use dynamics.

During the 1950s, *saltus* covered 82% of the area; *ager* (mostly represented by poor agricultural lands, typically rye) represents 17%; *sylva* is less than 1% (Figure 2a).

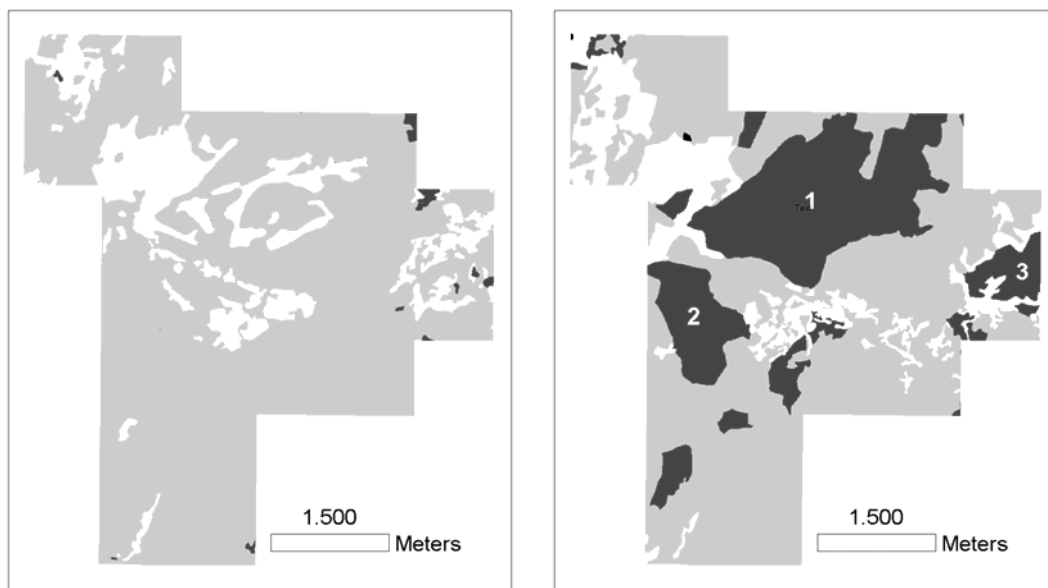


Figure 2. Land use ca 1950 (left) and 1990 (right) in the plateau of Leomil highlands (Beira Alta, Portugal). *Ager* (white patches) corresponds to farmland, *saltus* (light-grey patches) corresponds to semi-natural areas, *sylva* (dark-grey patches) corresponds to forested areas. Areas 1, 2 and 3 represent the biggest forest patches in 1990

The State considered this area 'unproductive' land. Local poverty, water supply constraints and soil erosion justified the massive forestation with pine trees (DGFSa 1953), which was also believed to produce "climatic and health improvements" (p. 43). The writer spoke against the measure: "If you plant trees on the highlands you may be sure that you will dangerously unbalance the highlanders' way of life" (p. 43). But his arguments were not against the afforestation itself but about the method: "State should raise the level of development of the villages to such a degree that, instead of looking like plundering the poverty of the highlanders, afforestation would seem an imperative and a way forward into a better and more progressive life" (p. 193-194). Aquilino Ribeiro's descriptions also pointed out the natural value of the

area, namely the richness in small game species that benefit from the mosaic of open lands. Hunting and poaching were described as common activities. All the bird species (with one exception) Aquilino Ribeiro described were recently confirmed in agricultural fields or rocky habitats of Leomil highlands (Neves et al. 2002). The wolf (*Canis lupus*), extensively mentioned by the writer, was very common 50 years ago and can still be found in the area, but it lives in a critically endangered population of less than 10 individuals (I. Barroso, pers. comm.).

The period of afforestation

Afforestation occurred mostly through sowing pine seed and reached an important proportion of the commons territory: 30 to 50% of the commons area and 13 to 22 % of total municipality area (DGSFA 1953). In the Leomil highlands, it began in 1956 – only two years before the publication of *When the Wolves Howl* – and finished in 1972, covering 5957 ha with pine trees (Rego 2001). According to the official inventory of forested areas, Moimenta da Beira municipality had 6449 ha of forested area (29.3%) in 1974 (DGRF, Portuguese Ministry of Agriculture), which suggests woodlands then covered most of the Leomil highlands.

Such large-scale landscape change had relevant social and demographic consequences. In the last 50 years, population decreased by 30% in the Moimenta da Beira municipality (INE 1960; 2001), due to migration to other European countries (France and Switzerland), partly as a consequence of the resulting worsening of living conditions. Because of its long duration and the extensive area affected, Estevão (1983) considered this forestation programme a hastening factor in the changing process that took place in the rural mountain communities.

Afforestation also had direct and indirect ecological impacts, changing landscape and affecting species distribution and abundance. Previously, pine forest existed mainly in small patches of some units to tens of hectares around villages. In the 1960s, more extended patches were planted in the highlands, and some agricultural fields and pastures too were partially abandoned due to the demographic decrease of villages. This new design led to a decrease of biological diversity. Bird-breeding assemblages studied in Montpellier (France) (Preiss, Martin and Debussche 1997) show that where the cover of woody plants increased significantly, open-habitat Mediterranean bird species decreased, and the increase in wooded areas favours a pool of forest species widespread in Western Europe. Similar conclusions were reached by Moreira et al. (2001) in Minho (Portugal): many of the species with narrow niche breadth (specialists) were associated with agricultural areas and deciduous forests; conifer forests have a low richness and diversity: only burnt areas or scrublands have a lower diversity.

The period of wildfires

The cumulative result of massive afforestation and wildfires is shown in Figure 2. In 1990, *saltus* was still the most extensive land-use category (58.2%), although it lost 23.2% of its area to forested areas; *sylva* represents 27.4 %; *ager* represents 14.2%). The large increase in forest cover could be explained by 23.2% of the 1950 *saltus* area and 4.1% of the 1950 *ager* area having changed. Areas signalled by 1, 2 and 3 constitute large pine-tree patches of 410, 115 and 53 ha, respectively.

None of the material compiled for the 1950s mentions fire, neither as a regional or local constraint nor as a common practice. However, Aquilino Ribeiro envisaged the role of wildfires in the future of that area. Close to the novel's end, an impressive description of an extensive fire seems a premonitory picture of what would occur two

or three decades later: “The nightfall the Milhafres highlands was a frightful sea of flames. The heat was suffocating and the first ashes were already polluting the atmosphere, exhaling poisonous fumes that it hurt to breathe” (p. 282).

The statistics of burnt areas in the Moimenta da Beira municipality (only available since 1980) record large fires (>200 hectares) in 1982 (270 hectares), 1984 (408 hectares), 1985 (1062 hectares), 1986 (232 hectares) and 1989 (1473 hectares). After 1990, available digital geographical information allows a view of the impact of wildfires in the study area (Figure 3). Fires occur mainly in *saltus* and *sylva* whereas *ager* is burnt less frequently. Today’s landscape is profoundly shaped by the fire-return cycle that destroyed the design imposed by the afforestation policy of the 1950s.

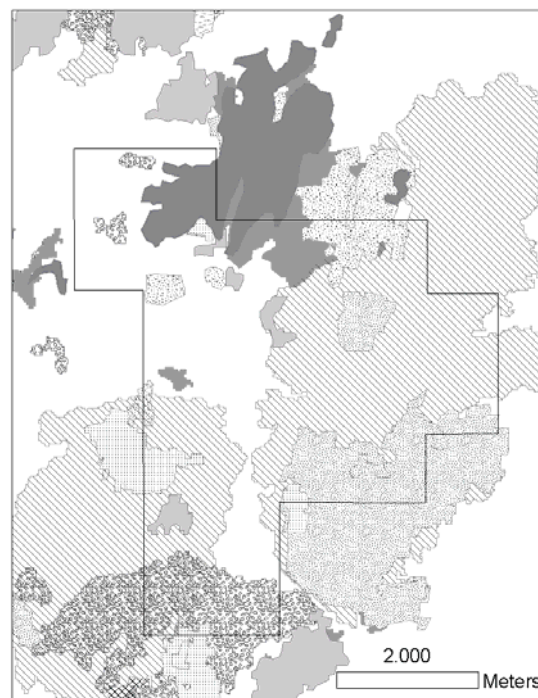


Figure 3. Burnt areas in Leomil highlands (Beira Alta, Portugal) between 1990 and 2002. Patches with different patterns represent burnt areas in each year (adapted from DGRF, Portuguese Ministry of Agriculture)

Currently, none of the forest patches identified in the 1990s map exists. These areas are currently covered with low shrublands with scattered pine trees and recovered bushes of *Quercus pyrenaica*. An open stony land, with a few small semi-natural pastures and dry crop fields, dominates the plateau landscape. Valuable grassland and shrubland habitats from the EU Habitats Directive were recently identified in the area (Martins 2002).

Discussion

Combining different information sources from the same time period and geographical area did not result in a set of alternative or opposite facts but in a complementary historical description achieved by joining coherent information details. Maps contributed with quantitative information about landscape patterns, a high vertical panoramic view, a fixed scale and a fixed date for each image; the other sources (particularly the literary texts) dealt also with landscape processes, place

meanings, sensorial perception including visual reading, ‘soundscapes’ and ‘smellscapes’.

If maps were the sole source of information, only landscape patterns were analysed and it could be concluded that the current landscape is similar to that of the 1950s. But in spite of similar patterns, different processes have shaped these landscapes. In the past, farmers and livestock maintained open fields. Currently, wildfires act as the substitute for the former agents of clear-cut vegetation. *When the Wolves Howl* symbolically links the controversy of the commons to the Moimenta da Beira region. Its importance lies not only in recording natural, social or political facts but in retaining the interlinked processes that were drivers of landscape change in Beira Alta during the 20th century: decrease in pasturing and livestock occupancy of the highlands, pine afforestation, migration of residents and wildfires. Traditional land use and stories of controversy and the mobilization of populations maintain a strong sense of place, explaining the local people’s attachment to the common property. The memory of Aquilino Ribeiro is still there in many local stories and places: e.g., a cave used as a hiding-place by the writer, or the appropriation of *Terras do Demo*, the title of a novel (which means ‘Devil’s land’), to designate such a different range of things as a social game area, a local wine, a restaurant and a regional newspaper.

All over the world, a set of natural damages and overexploitation characterize the last century’s history of the commons. Hardin (1977) argued that only by “closing the commons” could Earth be protected. That understanding found its expression in the environmentalists during the 1970s but is no longer generally accepted or a relevant concern in relation to European countryside. The above narrative, which describes an overexploitation of land resources in the 1950s (by intense pasture and agriculture in extremely poor and vulnerable soils), reinforces the socio-economic and political importance of involving local people in the decision-making and it warns of the harmful consequences of massive forestation with the pine tree in that biogeographic region.

In Portugal, commons controversy still appears from time to time but it is no longer a central subject on the political agenda. However, the countryside faces a challenging future. National legislation grants the management task of the common properties to a council of community members (now, parish elected authorities) but the extinction of commons status could be imposed after three years of ‘ostensive abandonment’. Ecological thinking about the landscape should raise awareness of the importance of participatory planning in mitigation measures on the effects of abandonment, scrub encroachment, the establishment of fire-prone environments, and the conservation of local wealth and nature.

A broader sustainable development strategy should guarantee the maintenance of villages and the quality of life of their inhabitants and, at the same time, the preservation of rural heritage. Aquilino Ribeiro and his ‘literary landscape’ are cultural values of this area, which people and authorities could emphasize in local management, for example, in promoting tourism and leisure activities. Areas that constitute extensive common properties have an opportunity to use knowledge from their history and benefit from the non-allotment and the common-property system to make resource management decisions jointly. Still, nature conservation, archaeological protection and valuation, social hunting, forestation, pasturing and the establishment of wind farms are newly proposed opportunities for the plateau of the Leomil highlands. Local, national and even global options will determine the future of this landscape. As Bowman (2001, p. 558) wrote, “past, present and future landscapes are fluid in response to human actions, perceptions and choices”.

Acknowledgements

This study is part of the PhD project “Literatura e memória ecológica – Contribuição para a História Ambiental da Beira Alta”, supported by the National Foundation for Science and Technology of Portugal (FCT, BD 8132/2002). Thanks are due to Maria Teresa Andresen for supervising, Miguel Repas for his patient help with GIS, Francisco Moreira for daily enthusiastic support and text revision, and Tonia Payne for language and grammar improvements. Janet Silbernagel and Gunther Tress, my dedicated tutors, very much helped in reorganizing and improving an early version of the manuscript. All are gratefully acknowledged.

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