Perceptions of Ecological and Aesthetic Quality by Natural Resource Professionals and Local People. A Qualitative Exploration in a Mountainous Landscape (La Rioja, Spain)

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Abstract

This research analyses how aesthetic and ecological evaluations of the landscape studied overlap and interrelate in the attitudes of local people and natural resource professionals. The analytical framework adopted, built on Canter's Theory of Place, explores the people-place relationship by examining the interaction of three components: physical attributes, conceptions and activities. The findings show that the two groups differed in how they ascribed meaning to landscape and how they interpreted its ecological and aesthetic qualities. Both groups expected managed landscape to appear well cared for and to some degree understood this appearance as a sign of good ecological management. However, while they shared a positive perception of some signs of care, they differed in their evaluation of other characteristics. Several implications for landscape management, especially in the detected areas of conflict and synergy, are identified.

Keywords: aesthetics, landscape management, qualitative approach, ecological quality, Canter's Theory of Place

1. Introduction

The complex relationship between aesthetics and the ecological quality of landscape may have important implications for landscape management. Since human responses to the environment are shaped partially by aesthetic experiences, the appearance of ecological phenomena may influence people's opinions and attitudes and translate into decisions and actions that can direct landscape change and ultimately impact both the ecological function and the aesthetic experience of landscape. This transactional relationship raises questions about the need and opportunity to consider the potential of perceptual factors to affect the ecological qualities of landscape (Fry, Tveit, Ode, & Velarde, 2009; Gobster, Nassauer, Daniel & Fry, 2007). However, the interplay between the two dimensions has received scant attention in landscape management (Ryan, 2011).

Several studies have revealed the difficulty of dealing with this relationship (Sheppard, 2001; Steinitz, 1990). Although some cases of alignment and disjuncture of ecological sustainability and aesthetics have been identified, a wide range of cases or aspects subject to a significant uncertainty may be encountered (Fry et al., 2009; Gobster, 1999). Among other reasons, the uncertainty exists because the appearance of ecosystems often does not directly reveal their ecological qualities, and people perceive, interpret and judge a landscape differently depending on the significance and meaning they attach to what they see (Kimmins, 1999; Nassauer, 1992). The aesthetic experience of ecosystems is affected by the interaction of the type of landscape and the situational context in which it occurs: the different perceptible characteristics of landscape evoke different aesthetic experiences and expectations. In addition, the observer's personal and social factors may emphasize particular social norms and personal intentions, affecting what features of landscape and the setting are more salient, what is perceived as appropriate or attractive and what actions are most likely (Gobster et al., 2007). To reach more reliable management decisions, we therefore must improve our understanding of how people perceive, experience and react to the processes and dynamics of ecosystems under these conditions.

Extensive empirical research has analysed which landscapes are visually preferred and the physical attributes that contribute to such a preference (e.g., psychophysical preference models; Wherrett, 2000). Valuable and useful as these experiences are, their interpretative and exploratory power is limited: knowing what is preferred is only one step in the process of understanding the interaction between aesthetics and the perception of ecological attributes. The affective bonds and the significance of landscape in people's lives are dimensions of human-landscape experience that turn spaces into places,

conferring a meaning on the environment that encompasses not only physical attributes but also ideas, values, beliefs or expectations of appropriate behaviour (Cheng, Kruger, & Daniels, 2003; Scott & Canter, 1997). When dealing with a multifaceted phenomenon that is so closely related to values and attitudes, asking how and why the two dimensions interact seems a more relevant issue (Carlson, 1993). The approaches that allow respondents to express their opinions and concerns have a greater potential for the identification of these underlying causes and meanings of perceptions. This information may reveal a significance of the evaluations of landscape made in terms of liking/disliking that may be particularly useful to decision makers (Van den Berg, Vlek, & Coeterier, 1998).

Canter's Theory of Place (1977) states that the environment must be understood as a place formed by cognitive, emotional and behavioural dimensions that are connected to form, meaning and function. People do not tend to think of the physical environment as separate from the social context, the actions they take or the perceptions they hold. Therefore, Canter proposed to analyse the significance of our surroundings by examining the interactions between the three major constituents of a place: the physical attributes of the environment, our concepts of the place and the activities or behaviours associated with the place. The studies based on this three-component model have revealed it as a powerful method for identifying the physical aspects that link to the other components, making explicit the drivers of perception and behaviour (*[author(s)]*, 2009; *[author(s)]*, 2004).

This research adopts Canter's perspective to undertake a qualitative analysis of the interplay between the evaluation of the ecological features perceived in landscape and its aesthetics. The study analyses the perceptions of two social groups that are of strategic interest because of their influence on the management of landscapes: local people and natural resource management and conservation professionals. While local people and professionals have significant impacts on landscape by means of their daily activities and technical decisions, their interpretation of its ecological and aesthetic qualities are often missing from empirical studies and discussions. Some researchers have evidenced differences in the way landscape experts, land managers, local inhabitants and the general public view landscapes: each group perceives different landscape features as important and finds different functions appropriate (Dandy & Van Der Wal, 2011; Gómez-Limón & Fernández, 1999; Rogge, Neves & Gulinck, 2007). These different views and their underlying causes merit further exploration since the roles of the two groups are particularly relevant in the case of landscapes for which special attention is given to conservation and recreational use.

This study therefore aims to explore the following subjects:

- The similarities and differences between local people and professionals regarding the aesthetic and ecological evaluation of landscape, and the reasons for these.

- Attributes and factors that affect the assessment of the aesthetic and ecological quality of landscape and how they are related to the conception of landscape.

- How the preceding factors may impact daily practices in landscape as well as landscape management decisions.

2. Materials and Methods

2.1. Case study area

The case study area is situated in the upper valley of the River Iregua, which is located in the Sistema Ibérico mountain range in La Rioja (north-central Spain). The valley includes the Sierra Cebollera Natural Park and the surrounding municipalities, encompassing over 440 km^2 (Figure 1). The landscape is mountainous (reaching elevations of more than 2000 m in some places) and predominantly forested with a Mediterranean climate and Atlantic influence (Figure 2).

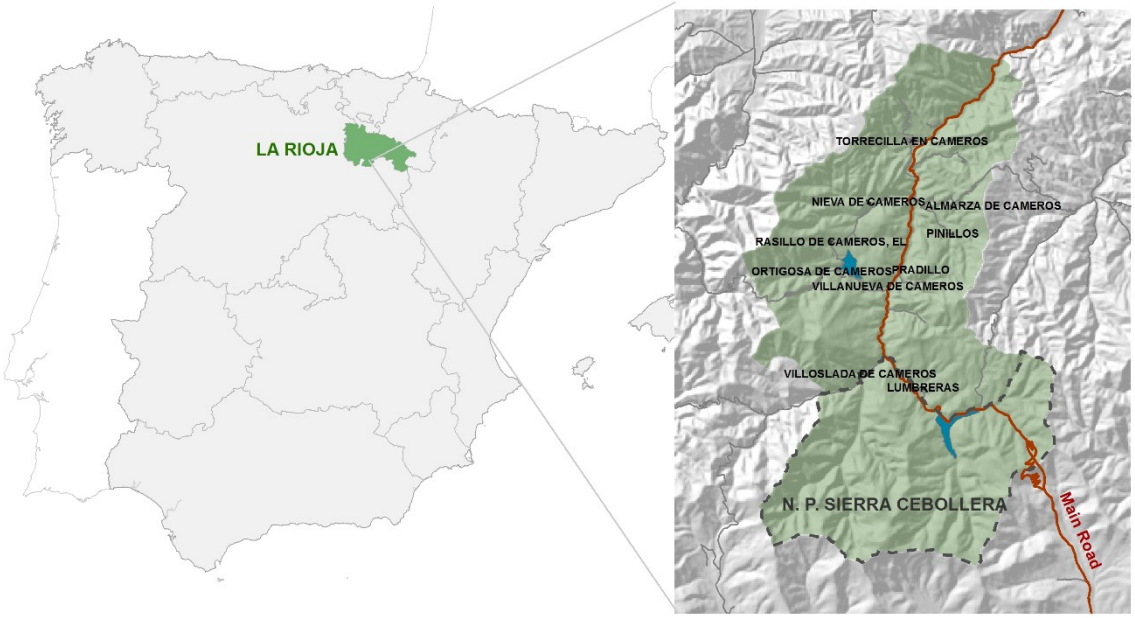

Figure 1. Location of the area studied

There are 5 villages in the area (with a total of approximately 1500 inhabitants; the largest village has 530 inhabitants). The area is subject to population decline due to rural migration. The local economy was and still is linked to extensive livestock farming, forestry and a small amount of agriculture. Currently, it is also based on tourism and outdoor recreation. The land is mostly municipally owned, and the planning and management of natural resources are led by the Environment and Nature Conservation Regional Office.

Figure 2. Typical scene in the area studied.

2.2. Analytical framework, interview design and data analysis

As this research aims to gain insights into the ways participants perceive and interpret the aesthetic and ecological features of landscape, a qualitative approach was adopted. Face-to-face interviews and focus groups were chosen to facilitate interaction and explore in depth the individual and group understandings and perceptions. This is a particularly useful approach for the stated objectives, as it aims to obtain the maximum understanding of a phenomenon by discovering the underlying causes and relationships (Bryman 2004).

The perspective of Canter's Theory of Place (Canter, 1977) and the three-component model that explains the people-place relationship (physical attributes of the environment, human conceptions and activities/behaviour) was adopted for the interview design and analytical framework. The procedure was then grounded in the identification of places in response to the studied features, the analysis of the descriptions of physical attributes, the explanation of the understandings and expectations associated with these places and the actions or activities that are tied to them. This approach enables a combination of descriptions and evaluations, thereby connecting the perceptual with the mental process in a transactional way to build up a complete picture of how people make sense of, evaluate and cope with their physical surroundings.

Three focus groups (average length 2 h) complemented by individual in-depth semistructured interviews (average length 1 h, ranging from 45 to 80 min) were conducted between October 2013 and February 2016. One focus group was composed of 4 professionals from the Environment and Nature Conservation Regional Office, another by 5 professionals from the same office and a member of the local administration and another by 2 farmers and a member of the local administration. The sessions occurred either at the villages or the workplace of the participants. They were performed by 1 or 2 of the authors, who intervened only briefly, explaining the aims of the interview, asking for further explanations or redirecting the conversations.

All the sessions were based on the same interview design. The participants were asked to indicate, on a simple map, locations that they considered typical of each of these four categories: high and low landscape ecological quality and high and low landscape aesthetic quality. They then explained the characteristics of these places and the reasons for their choices. This interview guide was complemented by a series of open questions related to their perceptions of landscape management, their view of their own activity, their relationship with other activities or how they envisaged the evolution of landscape. The interview was designed to provide a flexible framework for participants to talk freely and at length about the issues that were most important to them while maintaining a focus on the ecological and aesthetic landscape issues and the three-component model used as the analytical framework. A key point was that interviewees expressed their perceptions through specific examples selected by themselves from the study area. This procedure helped them explain their general perspective in connection with the physical landscape they knew. The map was used as a conversational stimulus and to facilitate thinking about and selecting specific geographical elements.

All the sessions were digitally recorded and subsequently transcribed. Data analysis was conducted by coding statements and searching for patterns, similarities and differences in the participants' discourse based on the three interacting components included in Canter's Theory of Place. This approach made it possible to uncover the main themes, meanings and concepts that emerged from the research.

2.3. Participant selection

A purposive sampling strategy was used to select the participants, who were chosen to reflect the diversity of social backgrounds and livelihoods of those living in the landscape, as well as the professionals, who had backgrounds in the field of natural resource management. The participants were separated into two groups: 'professionals' and 'local people' (Table 1).

Table 1. Descriptive summaries of the participants who composed each group.

GROUP/ N° OF INTERVIEWEES		OCCUPATION	GENDER	AGE	EDUCATION	CONTACT WITH LANDSCAPE (professional/personal)
PROFESSIONALS	18	Environment and Nature Conservation Regional Office: ▪ Forestland management: 3 ▪ Environmental quality and land planning: 6 ▪ Environmental education: 1	Male: 6 Female: 4	<35: 2 35-50: 3 51-65: 5	Higher	Work at regional scale and in the landscape; part-time resident-personal connection: 1 Work near the landscape; part-time resident-personal connection: 1 Work in the landscape; not resident: 1 Work at regional scale; not resident: 7
		Environmental education: 5	Male	<35: 2 35-50: 3	Midlevel technician: 3 Higher: 2	Work in the landscape; resident: 1 Work in the landscape; part-time resident-personal connection: 2 Work at regional scale and in the landscape; not resident: 2
		Forest ranger: 1	Male	35-50	Midlevel technician	Work in the landscape; resident
		Consultant in forestry / environmental management: 2	Male	<35 50-65	Higher	Work in the landscape; not resident, no personal connection
LOCAL PEOPLE	18	Livestock farming: 5	Male: 3 Female: 2	35-50: 1 51-65: 4	Primary: 3 Secondary: 1 Midlevel technician: 1	Resident
		Forest management worker: 4 (1 also related to livestock farming)	Male	<35: 3 35-50: 1	Primary: 3 Secondary Midlevel technician: 1	Resident
		Local administration (main occupation not related to farming/forestry): 3	Male: 2 Female: 1	50-65: 1 >65: 2	Primary: 1 Secondary: 2	Resident: 2 Part-time resident: 1
		Others: 6	Female: 3 Male: 3	35-50: 2	Secondary:2 Midlevel technician: 2	Resident: 4 Part-time resident: 2

		(4 also managing a rural holiday house, 1 also related to livestock farming)		51-65: 2 >65: 2	Higher: 2	

The group of professionals was formed by the participants with specific skills and formalised knowledge of environmental protection and natural resource management who were involved in the public management of the studied landscape. It consisted of managers working for the regional administration at different levels and in different areas (forestry, wildlife and natural conservation, planning, recreation or environmental education). Thus, they had a trained expertise and a technical responsibility in the management of landscape. The group of local people was composed of participants from the local community who worked or lived in the landscape. In most cases, the members of this group worked on the land in farming or forestry, either as a main occupation or as a part-time or family activity. Some worked in the hostelry/tourism or local services sector or were retired. They had a direct, frequent and mostly empirical experience of the landscape and natural dynamics. They were also familiar with the social conditions and day-to-day interactions within the studied communities.

Although some participants from the professionals group also had residential and personal connections to the local landscape and community, the key distinguishing characteristics of the professionals were their training and formalised knowledge of environmental issues and their influence on landscape through public administration action.

3. Results

The type of landscape selected by the participants in each category and the related attributes they expressed as relevant in their evaluations are summarized in Table 2. The variations between and within the groups and the observed reasons for them are described below, following the analytical framework provided by the three main attributes of Canter's model (1977).

Table 2. Summary of the types of landscapes and attributes related to each category. The data show the percentage of participants who selected each type of

landscape (note that each participant selected several types) and the percentage of choices that corresponded to each type of landscape.

	ENVIRONMENTAL/NATURAL RESOURCES PROFESSIONALS GROUP						LOCAL PEOPLE GROUP			
HIGH LANDSCAPE ECOLOGICAL QUALITY							**HIGH LANDSCAPE ECOLOGICAL QUALITY**			
TYPE OF LANDSCAPE	**FORESTED AREAS** 61% part. (11/18) 39% choices (17/43)	**HIGH MOUNTAIN LANDSCAPE** 67% part. (12/18) 28% choices (12/43)	**RIVERSIDES** 67% part. (12/18) 19% choices (8/43)	**SILVO-PASTORAL SYSTEMS ('dehesas')** 17%part. (3/18) 7% choices (3/43)	**OTHERS (rocky cuts, karstic formations)** 17%part. (3/18) 7% choices (3/43)		**FORESTED AREAS** 55% part. (10/18) 75% choices (21/28)	**HIGH MOUNTAIN LANDSCAPE** 17% part. (3/18) 11% choices (3/28)	**LAKES AND PONDS** 11%part. (2/18) 7% choices (2/28)	**OTHERS (pastureland, 'dehesas', surroundings of villages)** 11% part. (2/18) 7% choices (2/28)
ATTRIBUTES	▪ Diversity (commented 10 times) ▪ In good state of conservation (7) ▪ Low human impact/naturalness (6) ▪ Mature trees (2)	▪ Low human impact/naturalness (7) ▪ Uniqueness (5) ▪ In good state of conservation (1) ▪ Diversity (1)	▪ Low human impact/naturalness (3) ▪ Diversity (3), ▪ Uniqueness (2) ▪ Water quality (1)	▪ Diversity (2) ▪ Mature trees (2) ▪ In good state of conservation (2)			▪ Good upkeep, active management (9) ▪ In good state of conservation (3) ▪ Diversity (3) ▪ Mature trees (2)	▪ In good state of conservation (1) ▪ Low human impact/naturalness (3)	▪ In good state of conservation (3) ▪ Uniqueness (2)	
	LOW LANDSCAPE ECOLOGICAL QUALITY						**LOW LANDSCAPE ECOLOGICAL QUALITY**			
TYPE OF LANDSCAPE	**ARTIFICIAL RESERVOIRS** 55% part. (10/18) 33% choices (14/43)	**AREAS WITH INTENSIVE LIVESTOCK ACTIVITY** 39% part. (7/18) 23% choices (10/43)	**NEW HOUSING DEVELOPMENTS** 17% part. (3/18) 7% choices (3/43)	**QUARRY** 17% part. (3/18) 7% choices (3/43)	**FORESTED AREAS** 22% part. (4/18) 9% choices (4/43)	**OTHERS 21 % choices**	**FORESTED AREAS** 78% part. (14/18) 77% choices (17/22)	**CULTIVATED LAND AND PASTURES** 17% part. (3/18) 14% choices (3/22)	**VILLAGES SURROUNDINGS** 11% part. (2/18) 9% choices (2/22)	-
ATTRIBUTES	▪ Fluvial dynamics perturbation (7) ▪ High human impact, artificial character (5)	▪ Intensive use (6) ▪ Pollution (6) ▪ Soil/vegetation cover degradation (4)	▪ Artificial character, lack of coherence with natural conditions (3)	▪ Soil/vegetation cover degradation (3) ▪ Pollution (1)	▪ Lack of diversity (3) ▪ Inappropriate management (1)		▪ Lack of active management (8) ▪ Shrub encroachment, spontaneous reforestation (5)	▪ Shrub encroachment, spontaneous reforestation (3)	▪ Inappropriate waste management (2)	-

	▪ Soil/vegetation cover degradation (3) ▪ Area occupation (3)						▪ Inappropriate management (5)				
	HIGH LANDSCAPE AESTHETIC QUALITY						**HIGH LANDSCAPE AESTHETIC QUALITY**				
TYPE OF LANDSCAPE	**HIGH-MOUNTAIN LANDSCAPE** 78% part (14/18) 41% choices (20/49)	**FORESTED AREAS** 55% part. (10/18) 27% choices (13/49)	**VILLAGES AND TRADITIONAL LANDSCAPES** 33% part. (6/18) 18% choices (9/49)	**RIVERSIDES, ARTIFICIAL RESERVOIRS** 22% part. (4/18) 8% choices (4/49)	**ROCKY CLIFFS** 17% part. (3/18) 6% choices (3/49)		**FORESTED AREAS** 55% part. (10/18) 36% choices (16/44)	**RIVERSIDES, ARTIFICIAL RESERVOIRS** 55% part. (10/18) 27% choices (12/44)	**HIGH MOUNTAIN LANDSCAPE** 55% part. (10/18) 23% choices (10/44)	**VILLAGES AND CULTURAL SITES** 11% part. (2/18) 9% choices (4/44)	
ATTRIBUTES	▪ Panoramic/scenic views (11) ▪ Low human impact/naturalness (7) ▪ Diversity (6) ▪ Uniqueness (6) ▪ Cultural elements integrated in a natural context (3)	▪ Diversity (8) ▪ Mature trees (4) ▪ Uniqueness (3) ▪ Low human impact/naturalness (2)	▪ Traditional character, cultural elements integrated into a natural context (8) ▪ Uniqueness (1)	▪ In good state of conservation (3) ▪ Presence of water (2)	▪ Uniqueness (3)		▪ Presence of trees (9) ▪ Diversity, seasonal change (5) ▪ Mature trees (2)	▪ Presence of water (8) ▪ Uniqueness (6)	▪ Panoramic/scenic views (8) ▪ Roughness (2) ▪ Diversity (1)	▪ Traditional character and cultural significance (4)	**OTHERS 5 % choices**
	LOW LANDSCAPE AESTHETIC QUALITY						**LOW LANDSCAPE AESTHETIC QUALITY**				
TYPE OF LANDSCAPE	**ARTIFICIAL RESERVOIRS** 50% part. (9/18) 27% choices (11/41)	**AREAS WITH INTENSIVE LIVESTOCK ACTIVITY** 44% part. (8/18) 24% choices (10/41)	**NEW HOUSING DEVELOPMENTS** 44% part. (8/18) 24% choices (10/41)	**QUARRY** 17% part. (3/18) 7% choices (3/41)	**FORESTED AREAS** 11% part. (2/18) 7% choices (3/41)	**OTHERS 11%**	**FORESTED AREAS** 50% part. (9/18) 48% choices (10/21)	**ARTIFICIAL RESERVOIRS** 17% part. (3/18) 14% choices (3/21)	**NEW HOUSING DEVELOPMENTS** 17% part. (3/18) 14% choices (3/21)	**LESS FORESTED AREAS** 11% part. (2/18) 10% choices (2/21)	**OTHERS 14 %**

ATTRIBUTES	▪ High human impact, artificial character (7) ▪ Soil/vegetation cover degradation (4)	▪ Soil/vegetation cover degradation (6) ▪ Intensive use (6) ▪ Pollution (2) ▪ Lack of coherence and care (1)	▪ Artificial character, lack of coherence with natural conditions (10)	▪ Visual impact (3)	▪ Lack of diversity (1) ▪ Inappropriate management (2)		▪ Inappropriate management /effects of logging (6) ▪ Shrub encroachment, spontaneous reforestation (4)	▪ Soil/vegetation cover degradation (2) ▪ High human impact, artificial character (1)	▪ Lack of coherence (3)	▪ Lack of forests (2)	

3.1. Selected places and physical attributes determining landscape quality

The professionals predominantly associated the concept of high ecological quality with attributes related to naturalness, diversity, good conservation status, uniqueness or maturity. Consequently, they chose mainly the diverse, mature and less modified forests; the high-mountain ecosystems; and the riversides (39%, 28% and 19% of choices, respectively). Naturalness, or low human influence, was highlighted as the key factor for ecological quality; 67% referred to it, using in their descriptions terms such as 'less intervened', 'more natural', 'without human influence', 'less visited', 'remote and wild' or 'less accessible'.

It's more difficult to walk through that area (high-mountain area)*; it's less visited, less accessible. It's a rough area that is hardly used [...]. When you walk through it, you feel a different sensation, wilder, less modified [...]. I consider it has a little of what are the less modified zones with a high ecological quality. [PROFESSIONAL]*

In most cases, these places (basically high-mountain and forested landscapes) were said to be of the same high aesthetic quality. The aesthetic attributes were related to the lack of human impact, the variety of elements, the maturity of the vegetation or the presence of unique elements (panoramic or scenic views were frequently mentioned as an attribute in the case of the high-mountain landscapes). The terms used to describe the qualities of these landscapes illustrate the evaluations: 'far from civilization'; 'more natural'; 'well-conserved'; 'rough, lonely landscape'; 'it has everything'; 'there is a variety of trees and colours'; and 'there are the glacier cirques, which are very emblematic'.

Of the interviewed professionals, 72% chose these landscape types as having both a high ecological and aesthetic quality. Many commented that for them, the attributes of these places had a positive impact in both dimensions. Moreover, several of them intermixed the two dimensions and unintentionally used terms and considerations related to aesthetics when eloquently expressing an ecological evaluation.

I think that the ecological and aesthetic quality is a whole. To me, the landscape quality is what surrounds a person and gives them a certain degree of pleasure and well-being. So to me, it has a lot to do with natural elements and little presence of the artificial ones; they shouldn't stand out or be integrated into the landscape. For example, here you can see the variety of species and ecosystems depending on the ecological conditions, the holm oak forests in the lower band, then the marcescent oak and beech forest and

immediately the pine forests. That's visually also interesting, seeing the transition. [PROFESSIONAL]

When the professionals group commented about the positive influence of humans on the ecological and aesthetic quality of landscape, it was associated with how their activities were integrated into a natural context and with the traditional character of these activities. Conversely, when they evaluated the low-quality cases, they mainly associated low quality with human interventions such as large or nonintegrated constructions (artificial reservoirs, new housing developments), intensive farming or quarries. Seventy percent of them associated these features with a patent human impact that caused an artificial effect, the disturbance of the ecological dynamics, soil and vegetation cover degradation or pollution. Eighty-one percent also referred to the negative impacts on aesthetics, such as 'the contrast of the artificial character in a natural context', 'the bad impression of a degraded area because of overgrazing' or the 'lack of integration with traditional practices and materials'. The following conversation held by the professionals in a focus group is representative of these conceptions:

Prof1: The first filter would be the human intervention. The impact of infrastructures, for example. That they wouldn't exist or that they were integrated.

Prof2: Of course, if there were (infrastructures), *that they were integrated*

Prof3: But that's not human intervention in the sense of ... I mean, sometimes the human intervention results in very beautiful landscapes.

Prof1: Yes, yes, of course! But it must be integrated.

Prof2: The Dehesa El Rebollar (a silvopastoral system)*, for example; I've chosen it as a high-quality ecological and aesthetic landscape.*

Prof4: The clearest case of lack of integration of a human intervention is, for example, El Rasillo (a new housing development).

Prof1: Or the quarry. That would be the key, the nonintegrated human intervention. Because a village integrated into the landscape can be very beautiful.

[...]

Prof1: I think we all like the humanized landscape, right? Like dehesas, meadows. The whole landscape here is humanized; there's nothing that is untouched.

Prof4: The meadows of the Pineda is one of the landscapes that I've chosen, and all of this place is created because of human intervention.

Prof3: Sure, but it isn't an alteration but something traditional, a traditional use.

Prof2: But in which the naturalness is maintained in a certain way, isn't it?

Prof1: Or even if it isn't maintained or it's partially maintained, right?

Prof3: Of course, it doesn't maintain naturalness because if there weren't humans, it would have only trees, obviously, but the quality that humanized landscape transmits is positive. [PROFESSIONALS, FOCUS GROUP]

The professionals and local people converged in the selection of some types of landscapes. For instance, both groups chose the forested areas, high-mountain landscapes and riversides or ponds as places with high ecological and aesthetic quality (>70% of the choices in both categories). However, they differed in the attributes and considerations that determined their evaluation.

The local people did not consider naturalness (the lack of human influence) to be the most important attribute of ecological quality. They chose mainly managed and/or exploited forests as having a high ecological quality (75% of choices). The natural character was mentioned by the local people only when commenting on the ecological qualities of the high-mountain ecosystems (11%). Their ecological and aesthetic evaluation was based on the perception of nature more as wisely and carefully controlled ('well-cared-for', 'more maintained', 'good upkeep' or 'tidy and clean') than as untouched.

Loc1: La Pineda forest is in the best condition, no doubt; more resources from the timber harvesting are invested in forest management; they have done it for a longer period of time.[...] It's balanced and nicer, and you can walk through it.
Loc2: And you can notice the work quickly; it's very grateful land.
Loc1: Actually, in the county, there's nothing in bad, bad condition.
Loc2: Yes, there isn't any area that has been left, that is totally neglected.
Loc1: They have cleared the tracks, they have expanded the pasture area, they have cleaned up, and now there's more area for livestock grazing; it's better. [LOCAL PEOPLE, FOCUS GROUP]

In contrast to the professionals, the local people concentrated on the lack of maintenance as a problem affecting the ecological and aesthetic quality of landscape.

The importance of this attribute was connected to the perception of the rewilding process that is due mainly to the decline of livestock farming and the evaluation of the consequences. They identified increasing shrub density in the forests and spontaneous reforestation as negative physical evidence of rewilding. The ecological impact of the homogenization of landscape, loss of open areas and increase of wildfire risk were mentioned. Landscape showing these conditions was perceived as ecologically 'unbalanced' and uncontrolled and was described as unattractive ('untidy' or 'not clean' in the sense of derelict and not well-maintained, 'neglected', 'ruined', or 'not beautiful').

> *Where there isn't livestock, it gets shrubby; the pastures are covered by thorn bushes, which are absolutely useless. That's the worst area I see. I don't like how it looks; I prefer the pastures with some scattered trees but not the pastures with shrub encroachment. [LOCAL]*

The professionals did not comment as frequently and clearly on this process and when asked seemed to have more complex opinions. Some of them evaluated the rewilding process as negative, reasoning that the fine-grained landscape mosaic and visual variety would disappear, leading to homogenization and simplification of landscape as well as the disappearance of some valuable or scarce habitats. Others considered it simply a change, leading to different qualities. In fact, many selected human-made landscapes as high-quality ecological and aesthetic cases (silvopastoral systems, villages and surrounding meadows) but always highlighted the traditional character of these places and their integration into the more natural landscape. Some of them said that the ecological qualities of the area arose precisely from the lessening of human presence.

3.2. Activities and the perception of the resulting managed landscape

3.2.1. *Livestock Farming*

Hardly any of the respondents from the local people group thought livestock farming had any significant ecological or aesthetic negative impact. In contrast, it was considered an important form of landscape management (88% made this explicit connection, directly or indirectly). For them, livestock farming was essential for avoiding the negative effects of rewilding (shrub encroachment, spontaneous reforestation), for controlling and conserving the forest (upkeep, low risk of fire), and for making landscape appear well-cared-for ('tidy', 'not looking ugly and neglected because the shrubs were not cleared'). These conceptions and perceptions reflect how the local people related their own activity to the qualities they valued in landscape.

I think livestock grazing is what maintains forests. It's always been like that. The forest was clean when livestock were in it, as otherwise it gets full of undergrowth. In El Serradero, there's higher livestock activity, and the landscape looks better. [LOCAL]

The professionals acknowledged the positive influence of livestock farming on the ecological dynamics and its social importance. However, they frequently referred to some of the negative ecological and aesthetic effects of concentrated livestock grazing (39% commented about the ecological negative impacts and 44% about the aesthetic result). Criticism focused on the way livestock farming was practised: they perceived that carelessly managed grazing resulted in water contamination and soil removal combined with an appearance of degradation or neglect. They mainly found more valuable ecological benefits and aesthetics of landscape subjected to traditional and extensive livestock grazing actively and laboriously managed by a farmer.

People see the overgrazed areas as degraded, and so do I. Because of the livestock concentration. The cattle are always near the farm. I think the farmer should move them and liberate the area, make them graze in different zones. The problem is the permanent trampling. The ground is bare, and you have at least half a metre of mud. Even if there are few cows, they're always in the same place, and the place becomes ruined. [PROFESSIONAL]

3.2.2. *Forestry*

Forestry was considered a necessary activity, not resulting in any unacceptable ecological impact or even seen as beneficial for forest dynamics. Nearly all the respondents reasoned that conservative thinning was practised and, importantly, that logging benefitted villages. The negative effects were associated not with logging itself but rather with the way it was applied and the means used.

The use of feller-processors and cut-to-length logging was believed to diminish ecological quality, causing soil removal and damaging the residual trees. The negative effect on aesthetics was judged more critically. This type of logging was considered a careless system that resulted in a 'messy look of the remaining forest' due mainly to the presence of unstacked logs, branches and tops. In addition, the artificial effect of the forest road network was mentioned as an aesthetic impact ('*the forest looks like someone has run a comb across it*').

The only places you will see that are ugly when you go to the forest are the sites where the logging machine has been cutting trees. They leave all the branches and tops on the ground. It looks destroyed and neglected. I think the timber harvesting is good, but they should remove the entire tree. The pine forest still stands, but how they leave the ground! The trees may die or fall because of the wind, and you see the logs from time to time, but the slash that the human interventions leave on the forests looks worst, ugliest. [LOCAL]

When a lot of pine trees fall because of a storm, I don't consider the resulting landscape to be degraded; well it's natural, trees are always falling; it's the forest dynamic [...] (referring to mechanised thinning) *the remaining timber isn't crushed, and it creates a landscape that isn't more open but much more dirty, dirty in the sense of branches and logs lying around. It's not pretty. [PROFESSIONAL]*

Many of the participants believed that traditional and less mechanised harvesting operations (hand-felling using a chainsaw, skidding or horse-logging) were more respectful alternatives and a way to minimize the evidence of intervention and the negative effects of harvesting on forest aesthetics.

When feller-processors are used, the forest is shattered. When they use the little machines (skidders)*, that's wonderful! [...] And it would be good if the remaining timber was extracted in order not to let it rot and cause health problems. And if they logged with horses, it would be even better and more beautiful. [LOCAL]*

To me, the impact is not the felling of trees itself but the way you do it, the damage to the soil, hauling trunks, and especially the artificial effect of extraction paths. The slash is left at the site, and I don't like it, but, well, they rot down. However, if you use the skidder and horses, you don't even realize that the forest was logged recently [PROFESSIONAL]

The participants were especially critical of what they considered the careless work of logging contractors and operators. They were judged as external agents who were not involved in landscape conservation and were not interested in performing their work carefully.

Maybe in a natural park, where the value of the landscape and the tourism are important, you have to suppress the mechanised logging. [...] It's better not seeing a forest harvested using feller-processors until 3 years have passed! It's devastating, even for us (the forest engineers)*. And when a gale fells even more trees in these areas, it's worse. (*Other commenting: *And that's in addition to the bad state the loggers left the forest in!) [PROFESSIONALS, FOCUS GROUP]*

Cutting down trees is good if it's done thoughtfully. But extraction ruins the land. Well, after all, it's about economic benefit for the people in charge. The faster they work, the greater the profit, and that's better for them. Logging contractors don't think ecologically; they come, they log, they leave and that's all. But their machinery destroys the forest, the roads. They promise to fix it, but you have to control their work. [LOCAL]

4. Discussion

4.1. Different interpretations of a landscape's meanings and attributes

The analysis of the results of this study shows that the conceptions and perceptions of the ecological and aesthetic qualities of landscape vary between the groups. These differences are reflected in the places selected, the attributes described and the terms used to express their evaluations.

While the professionals concentrated in their assessment on naturalness and minimal human impact, the local people preferred a 'tidy' and well-maintained landscape and were especially sensitive to the effects of rewilding. These results suggest that the former tend to conceive landscape as a nature reserve with scenic properties and the latter relate to it as a managed environment. These two different ways of ascribing meaning to landscape imply an association between different notions of the place of humans within landscape, the functions and uses of landscape, the type of landscape experience and the attributes reflecting these expectations.

Similar attitudes have been encountered in previous studies. Generally, a clear preference for naturalness emerged in studies that compared the perception of professionals working on landscape issues to that of other social groups (Dandy & Van Der Wal 2011; Natori & Chenoweth, 2008; Rogge et al., 2007; Van den Berg et al., 1998). Gómez-Limón and Fernández (1999), in their analysis of preferences for Mediterranean agro-silvopastoral systems, explained the differences between managers and livestock farmers by the dichotomy in the management model adopted (ideal landscape as a product of nature or a product of traditional culture) and the identification

of forested land with nature in its best state of conservation. It has also been argued that the preferences of scientists or natural resource managers are influenced by their understanding of and expertise in natural or environmental issues, which induce a higher sensitivity to the qualities of a landscape (Carlson, 1977). According to Canter's Theory of Place, the preference of professionals for more natural landscapes can also be interpreted in light of their daily interaction with nature conservation or environmental education issues, that is, the activity in which they engage and the type of experience they usually have in landscape.

The local people interviewed tended to value what Hull & Robertson (2001) called 'Cultured Naturalness': a prevailingly natural landscape containing symbols of human culture that express local identity and remind us that people are living off the land. Ruiz and González-Bernáldez (1983) noted that for traditional livestock raisers in a mountainous area of Spain, terms such as 'beautiful' had no meaning when disconnected from practical landscape functions and always implied 'better managed'. Several recent studies have shown that local people mostly believed that biodiversity or sustainability was higher in a cultural landscape than in a wilder one (Soliva et al. 2008; Van den Berg et al., 1998).

This pattern of landscape assessment was made clear when considering the process of rewilding. As is the case here, other studies examining perceptions in rural-mountainous areas subject to population decline have confirmed that local people systematically consider rewilding negative for the ecological quality of landscape, which was perceived as increasingly unattractive (Höchtl, Lehringer & Konold, 2005; Hunziker, 1995; Pereira et al., 2005; Ruskule, Nikodemus, Kasparinskis, Bell & Urtane, 2013; Soliva et al., 2008). The connection of the process of ecological succession with abandonment of the land, loss of cultural significance and local identity has been identified as an important phenomenon that explains these perceptions.

Our results show that the professionals are not as concerned about this process, which can be interpreted as an attitude that is coherent with their understanding of naturalness as a prevalent quality in landscape. Interestingly, they had diverse opinions about the effects of rewilding on the ecological qualities and aesthetics of landscape. This diversity reflects the fact that they mainly valued the natural landscape but assigned different levels of relevance to the combination of naturalness and human modification as a part of landscape.

4.2. Perceived care as a factor determining the evaluation of managed landscape

The expression of care was highly present in the evaluations of the effects of the management of landscape. ‘Care’ may be defined as serious attention or consideration applied to performing a task correctly or in a manner that minimizes damage or risk. It means protecting or maintaining what we pay attention to. The Theory of the Aesthetic of Care states that people view landscapes that appear well-cared-for as beautiful and valuable, and that such landscapes are perceived as being in harmony with nature. Care has been identified as a key driver of preferences in agricultural or urban contexts, but it may be important even in many ‘natural’ landscapes (Nassauer 1992; 2011) because nature often exhibits signs of human intervention that indicate a condition of landscape management rather than a condition of the ecosystem.

Although care may be a general construct of aesthetic quality, it may be perceived and exhibited in different forms (Nassauer, 2011). The results of this study show that achieving more respectful intervention was an effective guiding objective for all participants since both groups expected landscape to appear well-cared-for and to some degree interpreted such care as a sign of good ecological management. However, while they shared a positive perception of some signs of care, they also differed in the evaluation of other aspects.

The local people perceived care in the physical features that mainly revealed the actions of their own social group (e.g., the absence of shrub encroachment or dense undergrowth as a beneficial consequence of farming activities). They considered landscapes that showed these signs beautiful, well-kept and ecologically stronger. However, they overlooked the attributes that the professionals judged to be signs of farmers’ careless management. The professionals related a cared-for appearance of landscapes that were subject to extensive farming activities to an obvious traditional character. Consequently, they perceived the physical evidence of intensive livestock grazing as ecologically negative and unaesthetic.

These results suggest a potential conflict in how the local people and professionals perceived the way farming activities should be carried out and how they interpreted the negative and positive impacts on landscape. Even when both groups considered the activity beneficial, they differed in their assessments of the strategies that resulted in that perceived well-cared-for landscape.

Regarding the evaluation of care in forestry activities, the perception of signs and opinions were more closely aligned. Both local people and professionals perceived the messy and untidy appearance of forests after harvesting operations and the proliferation of forest roads as a relevant aesthetic problem. The assessment of care went beyond the physical attributes seen in the forests and connected with the causes and the

evaluation of the manager in charge of the intervention. Thus, the negative effects on aesthetics and ecological conditions were associated with a particular harvesting system (cut-to-length logging using feller-processors), and the responsibility was attributed in great part to logging contractors and operators.

The assessment of harvesting methods in terms of ecological and aesthetic appropriateness as well as the rejection of the unnatural messiness perceived as a result of forestry operations and the evidence of damage in recently harvested forests have been said to be relevant visual consequences that influence the evaluation of managed forests (Gobster, 1999). The Theory of Visible Stewardship (Sheppard, 2001) emphasizes that harvesting activities can appear sudden, drastic and extractive; i.e., they largely lack visible evidence of care for the place and protection. This theory states that forest management activities will not be perceived as good forestry practice if they fail to demonstrate an obvious and sustained commitment by people to the places under their control, that is, a visible respect for nature or place.

5. Conclusions

The aim of this research was to explore how aesthetic and ecological evaluations overlap and interrelate, shaping the perceptions and attitudes of local people and professionals in the area studied. In this regard, Canter's three-component model proved to be a powerful analytical framework since it allowed an effective unfolding of the conceptual systems tied to the physical environment.

The results of this study can be essentially understood and described through the influence of two factors in landscape experience: the specific landscape type and the situational context (Gobster et al., 2007). These dimensions determined the way the two groups viewed, experienced and evaluated landscape, defining a series of alignments and disjunctures between them with some implications for landscape management.

The professionals and the local people in the case study differed in how they ascribed meaning to landscape according to their activities and concerns. While the local people's view of landscape was related to local activity and cultural continuity, for the professionals, nature affiliation and conservation were prevalent. This dissimilar conception of the values and uses of landscape (landscape as a nature reserve/landscape as a managed environment) led them to concentrate on different ecological and aesthetic qualities (naturalness/social traits in nature). One shared perception of the interviewees was their expectations about the expression of a well-cared-for managed landscape and their corresponding judgment of the ecological conditions. However, in addition to some shared ideas and perceptions among the interviewees, several divergences in their ideas of the way to achieve this state in

landscape were observed. A significant management conflict may thus arise due to differences in the participants' perspectives, since both groups would be convinced that their preferences correspond to the appropriate ecological conditions and would support strategies of intervention in landscape that may not be aligned.

Interestingly, regarding the influence of the landscape context, care was one of a myriad of factors affecting the perceptions and interpretations of a landscape perceived as mainly natural. The aesthetic experience and ecological concerns in this type of landscape are frequently related to its scenic properties and perceived naturalness, whereas care is often associated with contexts showing obvious human intervention, such as agricultural landscapes (Gobster et al., 2007; Nassauer, 1992). The results of this study suggest that care may have a significant influence on the way that even largely natural landscapes are experienced and that the role of physical signs revealing careful activities and management merit consideration and further exploration in this type of landscape.

As is usually the case in mainly natural landscapes, the inhabitants share the responsibility for maintenance with institutions. Consequently, for landscape to have an improved ecological and aesthetic condition, management decisions should take advantage of the observed synergies while also trying to resolve the conflicts to better meet common goals and expectations. The common and divergent perceptions detected in this study may provide a useful starting point for deliberative techniques in which both groups would be confronted with their own and other groups' attitudes. This approach would result in improved communication and therefore more sensitive landscape management.

References

[author(s)] (2009).

Bryman, A. (2004). *Social Research Methods*. Oxford: Oxford University Press.

Canter, D. (1977). *The Psychology of Place*. London: Architectural Press.

Carlson, A. (1977). On the possibility of quantifying scenic beauty. *Landscape Planning*, 4, 131–172.

Carlson, A. (1993). On the Theoretical Vacuum in Landscape Asses sment. *Landscape Journal*, 12(1), 51-56.

Cheng, A. S., Kruger, L. E., & Daniels, S. E. (2003). “Place” as an integrating concept in natural resource politics: Propositions for a social science research agenda. *Society & Natural Resources*, 16, 87–104.

Dandy, N. & Van Der Wal, R. (2011). Shared appreciation of woodland landscapes by land management professionals and lay people: An exploration through field-based interactive photo-elicitation. *Landscape and Urban Planning*, 102(1), 43–53.

Fry, G., Tveit, M. S., Ode, Å., & Velarde, M. D. (2009). The ecology of visual landscapes: Exploring the conceptual common ground of visual and ecological landscape indicators. *Ecological Indicators*, 9(5), 933–947.

Gobster, P.H. (1999). An ecological aesthetic for forest landscape management. *Landscape Journal*, 18 (1), 54–64.

Gobster, P.H., Nassauer, J.I., Daniel, T. C. & Fry, G. (2007). The shared landscape: what does aesthetics have to do with ecology? *Landscape Ecology*, 22(7), 959–972.

Gómez-Limon, J. & de Lucío Fernández, J. (1999). Changes in use and landscape preferences on the agricultural-livestock landscapes of the central Iberian Peninsula (Madrid , Spain). *Landscape and Urban Planning*, 44, 165–175.

Höchtl, F., Lehringer, S. & Konold, W. (2005). 'Wilderness': what it means when it becomes a reality—a case study from the southwestern Alps. *Landscape and Urban Planning*, 70(1-2), 85–95.

Hull, R. B. & Robertson, D. P. & Kendre, A. (2001). Public Understandings of Nature: A Case Study of Local Knowledge About 'Natural' Forest Conditions. *Society & Natural Resources*, 14 (4), 325–340.

Hunziker, M. (1995). The spontaneous reafforestation in abandoned agricultural lands: perception and aesthetic assessment by locals and tourists. *Landscape and Urban Planning*, 31, 399–410.

Kimmins, J. P. (1999). Biodiversity, beauty and the “beast”: Are beautiful forests sustainable, are sustainable forests beautiful, and is “small” always ecologically desirable? *Forestry Chronicle*, 75(6), 955–960.

Nassauer, J. I. (1992). The appearance of ecological systems as a matter of policy. *Landscape Ecology*, 6(4), 239–250.

Nassauer, J.I. (2011). Care and stewardship: From home to planet. *Landscape and Urban Planning*, 100, 321–323.

Natori, Y. and Chenoweth, R. (2008). Differences in landscape perceptions and preferences between farmers and naturalists. *Journal of Environmental Psychology*, 28, 250-267.

Pereira, E., Queiroz, C., Pereira, H.M. & Vicente, L. (2005). Ecosystem services and human well-being: A participatory study in a mountain community in Portugal. *Ecology and Society*, 10(2), 14-36.

Rogge, E., Nevens, F. & Gulinck, H. (2007). Perception of rural landscapes in Flanders: Looking beyond aesthetics. *Landscape and Urban Planning*, 82, 159–174.

Ruiz, J.P. & González-Bernáldez, F. (1983). Landscape perception by its traditional users: the ideal landscape of Madrid livestock raisers. *Landscape Plannning*, 9(3-4), 279–297.

Ruskule, A., Nikodemus, O., Kasparinskis, R., Bell, S., & Urtane, I. (2013). The perception of abandoned farmland by local people and experts: Landscape value and perspectives on future land use. *Landscape and Urban Planning*, 115, 49–61.

Ryan, R. L. (2011). The social landscape of planning: Integrating social and perceptual research with spatial planning information. Landscape and Urban Planning, 100(4), 361–363.

Scott, M. J., & Canter, D. V. (1997). Picture or place? A multiple sorting study of landscape. *Journal of Environmental Psychology*, 17, 263–281.

Sheppard, S. R. J. (2001). Beyond Visual Resource Management : Emerging Theories of an Ecological Aesthetic and Visible Stewardship. In S. R. J. Sheppard & H. W. Harshaw (Ed.), *Forests and Landscapes: Linking Ecology, Sustainablility, and Aesthetics* (pp. 149–173). Wallingford/New York: CABI Publishing/IUFRO.

Soliva, R., Rønningenb, K. Bella, I., Bezak, P., Cooper, T., Fløb, B.E., Martyf, P. & Potter, C. (2008). Envisioning upland futures: Stakeholder responses to scenarios for Europe's mountain landscapes. *Journal of Rural Studies*, 24(1), 56–71.

Steinitz, C. (1990). Toward a sustainable landscape with high visual preference and high ecological integrity: the loop road in Acadia National Park, U.S.A. *Landscape and Urban Planning*, 19(3), 213–250.

Van den Berg, A. E., Vlek, C. A. J., & Coeterier, J. F. (1998). Group differences in the aesthetic evaluation of nature development plans: a multilevel approach. Journal of Environmental Psychology, 18, 141–157.

[author(s)] (2004).

Wherrett, J. R. (2000). Creating Landscape Preference Models Using Internet Survey Techniques. *Landscape Research*, 25(1), 79–96.