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**DECONSTRUCTING LANDSCAPE IN THE
MIND OF PEOPLE: AN EXPLORATION OF
EVERYDAY AND WIND ENERGY
LANDSCAPES**

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Cover: My ordinary and wind energy landscape ©Laplec 2016

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DECONSTRUCTING LANDSCAPE IN THE MIND OF PEOPLE: AN EXPLORATION OF EVERYDAY AND WIND ENERGY LANDSCAPES

In the 19th century, geography was defining itself as the science of landscape, led by German and French schools. Other disciplines were also interested in landscape, each one with its own definition(s). In public policy, landscape has remained, for a long time, a heritage object to be protected (e.g. cultural landscapes of UNESCO). In 2000, the European Landscape Convention, which aims to safeguard the European landscape diversity, proposed a common definition. This includes the idea of areas perceived by people. One of the recommendations of the Convention is the call to focus on other landscapes that only heritage landscapes, such as everyday landscapes and degraded landscapes. The convention also calls for better management and planning practices towards landscape changes. Today, landscape is often invoked as arbitrator in territorial disputes. This is the case in discussions for the installation of wind farms. Newcomers and farmers' visions on landscape are often opposed: idyllic landscape for living and recreation for the firsts, working environment for the seconds. Despite the European Landscape Convention, many grey areas remain about how to achieve its goals. Long before it, leading researchers called for a better interest in everyday landscapes. Yet they remain the poor relation in landscape research, to the benefit of natural, wild landscapes. Many uncertainties also remain on how non-specialists perceive their ordinary landscapes and how they have appropriated the landscape concept.

The research helps to fill this double gap, deconstructing the concept through the lens of ordinary landscape. With several research questions, I plan to explore what is the landscape in people's mind, how they conceptualize it, how they think it and how they question their own views on landscape. I will show how these conceptualizations and thoughts are shaped by the living environment, which often provides the tools necessary to the apprehension of the landscape. I will analyse how new elements such as wind farm can disrupt these patterns.

The first part of the research is dedicated to the overall perception of their ordinary landscapes by Belgians, especially facing the issue of wind energy. Using a photo-questionnaire survey, we surveyed a representative sample of the Belgian population (n = 1542). Based on this investigation a model was developed. It highlights the positive influence of forest cover and the lack of anthropogenic elements, but also the negative influence of its urbanization and too flat relief on landscape attractiveness. The influence of wind turbines has to be qualified according to the landscape in which they are implanted. In landscapes strongly marked by the human footprint, they seem perceived as increasing the landscape attractiveness. In unspoilt landscapes, they seem rather to contribute to their degradation. These global findings are nuanced in further research. Deeper analysis shows that Flemish people have a more positive view of the landscape than Walloons. I hypothesize a decisive influence of the local context. Indeed, Flemish landscapes are generally more urbanized and marked by man than most of the Walloon landscapes. The building of wind farms seems to change or even reverse the situation. The analysis also shows significant influences related to educational level and gender. Anthropogenic landscapes are less disregarded by low educated people. Women seem to attach importance to stewardship and landscape

maintenance. In contrast, although suspected, age influence has not been formally demonstrated.

The second part of this dissertation, the cornerstone of this doctoral research, aims at deconstructing the landscape concept in the mind of people. In this part, wind farms are no longer considered as a case study, but as a leitmotif. I deeper surveyed smaller groups (n = 54) in three areas of Wallonia (Walloon Picardy, between the Sambre and Meuse rivers, and Ardennes) with qualitative techniques. This survey was conducted five years after the first. The analysis of the vocabulary used by the regional sub-groups shows that people are not equipped the same way for analysing landscapes. The experience of living environment seems to be crucial in providing analytical keys. Thus Ardennes people seem better equipped to talk about the forest, marking their landscapes, while the Picards seem more loquacious about their iconic cultivated landscapes. The research also highlighted different landscape analysis patterns. Some people ordered landscapes according to their degree of naturalness, the less spoiled landscapes being the most attractive. On the contrary, fewer attach importance to landscapes where human footprint is clearly visible. Some respondents remain in a purely aesthetic landscape analysis, while others project themselves into the landscape, imagining they are performing different actions. Depending on their interests, these actions influence the perception of one same landscape. Research shows that this overall pattern analysis is disturbed by various factors. The recognition of certain places transformed landscape analysis in an analysis of the place, with the emotional changes that this entails. The position of the participants facing wind energy projects also appears sharper. In the time between the two parts of the research, Wallonia has experienced unprecedented wind development; opinions have therefore had time to form. This was not yet totally the case during the first survey. Beyond these major disruptions, the research also shows clear influences of the ordered character of landscapes, their living character and variety of land uses. The research also highlights the influence of non-visual criteria such as noise or odours detectable in the landscape. In conclusion, the research shows that respondents often show a sense of landscape, weaker than sense of place and stronger than aesthetic.

DÉCONSTRUIRE LE PAYSAGE DANS L'ESPRIT DES GENS : UNE EXPLORATION DES PAYSAGES QUOTIDIENS ET ÉOLIENS

Au 19^e siècle, la géographie se définissait comme la science du paysage, sous l'impulsion des écoles allemande et française. D'autres disciplines s'y sont également intéressées, chacune avec sa ou ses propre(s) définition(s). Dans les politiques publiques, le paysage est longtemps resté un objet patrimonial à protéger (par exemple les paysages culturels de l'UNESCO). En 2000, la Convention Européenne du Paysage, qui vise la sauvegarde de la diversité paysagère européenne, a proposé une définition commune. Celle-ci inclut l'idée de territoire perçu par sa population. Parmi les recommandations de cette convention figurent l'appel à s'intéresser à d'autres paysages que les seuls paysages patrimoniaux, comme les paysages du quotidien et les paysages dégradés, ainsi que l'appel à de meilleures gestion et planification de leurs évolutions. Aujourd'hui, le paysage est souvent invoqué comme arbitre lors de conflits territoriaux. C'est le cas lors des discussions pour l'implantation d'éoliennes où les visions du paysage s'opposent entre néo-ruraux et agriculteurs : paysage cadre de vie et de récréation idyllique d'une part, paysage cadre de travail d'autre part. Malgré la convention européenne du paysage, de nombreux flous subsistent sur la manière d'atteindre ses objectifs. Bien avant celle-ci, d'éminents chercheurs appelaient à s'intéresser aux paysages quotidiens. Pourtant, ceux-ci restent le parent pauvre de la recherche paysagère au profit du paysage naturel, de la wilderness des Anglo-Saxons. De nombreuses inconnues subsistent également sur la manière dont les non-spécialistes perçoivent leurs paysages ordinaires, ainsi que sur la manière dont ils se sont approprié le concept paysager.

La recherche contribue à combler cette double lacune, en déconstruisant le concept au travers du prisme du paysage ordinaire. A travers plusieurs questions de recherche, nous envisageons d'explorer ce qu'est le paysage dans l'esprit des gens, comment ils le conceptualisent, comment ils le pensent, et comment ils interrogent leur propres vues sur le paysage. Nous montrerons comment ces conceptualisations et pensées sont façonnées par le milieu de vie, qui fournit souvent les armes nécessaires à l'appréhension des paysages. Nous analyserons comment l'arrivée de nouveaux éléments, tels que les éoliennes, perturbent ces schémas.

La première partie de la recherche est consacrée à la perception globale qu'ont les Belges de leurs paysages ordinaires, en particulier face à la question de l'implantation d'éoliennes. A l'aide d'un photo-questionnaire, nous avons sondé un échantillon représentatif de la population belge (n= 1542). Sur base de cette enquête un modèle a été développé. Il met en évidence l'influence positive du couvert forestier et de l'absence d'éléments anthropiques, mais également l'influence négative de son urbanisation et d'un relief trop plat sur l'attractivité du paysage. L'influence des éoliennes est à nuancer en fonction du paysage dans lequel elles s'implantent. Dans un paysage déjà fortement marqué par l'empreinte humaine, elles semblent perçues comme augmentant l'attractivité du paysage, alors que dans des paysages plus préservés, elles semblent au contraire contribuer à leur dégradation. Ces constats globaux sont nuancés dans la suite de la recherche. Une analyse plus approfondie montre que les Flamands ont une vision plus positive des paysages que les Wallons.

Nous émettons l'hypothèse d'une influence déterminante du cadre local sur celle-ci, les paysages flamands étant globalement bien plus urbanisés et marqués par l'homme que la plupart des paysages wallons. L'arrivée d'éoliennes semble changer voire renverser la donne. L'analyse montre aussi des influences sensibles liées au niveau d'éducation et au genre. Les paysages marqués par l'homme sont moins dénigrés par les personnes moins éduquées. Les femmes semblent attacher de l'importance à la propreté et l'entretien des paysages. Par contre, bien que suspectée, une influence générationnelle n'a pu être formellement démontrée.

La seconde partie de la dissertation, qui se veut la clé de voûte de cette recherche doctorale, ambitionnait de déconstruire le concept paysager dans l'esprit des gens. Dans cette partie, les éoliennes ne sont plus envisagées comme un cas d'étude, mais comme un leitmotiv. Nous avons ciblé des groupes plus restreints (n=54) dans trois régions de Wallonie (Wallonie picarde, Entre-Sambre-et-Meuse et Ardenne) afin de les interroger plus profondément aux moyens de techniques qualitatives. Cette enquête a été réalisée cinq ans après la première. L'analyse du vocabulaire employé par les différents sous-groupes régionaux montre que les gens ne sont pas armés de la même manière pour analyser les paysages. L'expérience du milieu de vie semble déterminante dans la fourniture de clés d'analyse. Ainsi, les Ardennais semblent mieux armés pour parler de la forêt, marquant leurs paysages, tandis que les Picards semblent plus loquaces sur les paysages cultivés emblématiques de leur cadre de vie. La recherche a également permis de mettre en évidence différents comportements lors d'une analyse de paysages. Certains hiérarchisent les paysages en fonction de leur degré de modification par l'homme, les paysages les moins modifiés recueillant le plus de suffrages. Au contraire, d'autres, moins nombreux, attachent de l'importance aux paysages travaillés par l'homme. Une partie des personnes interrogées demeure dans une analyse purement esthétique du paysage, tandis que d'autres se projettent dans les paysages, s'imaginant y réaliser différentes actions. En fonction de leurs centres d'intérêt, ces actions influencent la perception d'un même paysage. La recherche montre que ce patron global d'analyse est perturbé par différents facteurs. La reconnaissance de certains lieux transforme l'analyse du paysage en une analyse du lieu, avec les changements émotionnels que cela engendre. La position des participants face aux éoliennes semble également plus tranchée. Dans le laps de temps qui sépare les deux parties de la recherche, la Wallonie a connu un développement éolien sans précédent, les opinions ont donc eu le temps de se forger, ce qui n'était peut-être pas encore totalement le cas lors du premier sondage. Au-delà de ces perturbations majeures, la recherche montre également des influences manifestes du caractère ordonné des paysages, de leur caractère vivant et de la variété des occupations du sol. La recherche souligne également l'influence de critères non-visuels tels que le bruit ou les odeurs décelables dans le paysage. En guise de conclusion, la recherche montre que les personnes interrogées font souvent preuve d'un certain sens du paysage, se situant entre le sens du lieu et l'analyse purement esthétique.

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1 General introduction

1.1 Context

Is research about landscape preferences still relevant in 2016? At first glance, everything seems to have been explored in the past. Landscape remains a key issue in geography and urban or rural planning. Landscape is summoned up as an arbitrator in topics as various as urban sprawl, heritage protection, or energy policies. For instance, opponents to renewable energy projects often claim they spoil landscape. Urban sprawl in rural areas is accused to privatise public views on the countryside.

Landscape is a vast concept that has interested many academic disciplines for a long time but each one has got its own definition(s). No definition is better or worse than any other in its own context. In Europe, landscapes were first representations (paintings) of the countryside. The word landscape entered many European languages, including English, through Flemish art (Dutch “Landschap”) during the Italian Renaissance (Olwig, 2004; Antrop, 2013). Landscape as painting style emerged during the Italian Renaissance with Flemish painters (e.g. Patinir). From detail in a portrait (e.g. Robert Campin, Master of Flémalle), landscape painting became an own style (Roger, 1997). This idea of representation is still common today and still influences our mental schemes. Geographical spaces or places are seen as landscapes only because we learnt to see them as landscapes (Descola, 2013). Landscape and place are intertwined concepts but they are different.

The key ambition of my research is the deconstruction of the landscape concept in the mind of people. What do people think when they talk about landscape? What is landscape to the eyes of ordinary people? How do they perceive and use landscapes? I shall especially focus on everyday landscapes often considered as secondary to landscape research. Wind farms will also be a leitmotiv through this research. However, I shall use them as an elicitation device (windfarms can increase awareness on landscapes) rather than analysing a case study on landscape impact.

For a long time landscapes have been the study object of many geographers. However, within this discipline, various definitions co-exist. During the 19th and early 20th centuries geography was defining itself as “the science of landscape”. German geographers (Carl Ritter, Alexander von Humboldt) were pioneers in landscape study followed by the French school of geography (Vidal de la Blache). Vidal de la Blache defined landscape (*paysage*) as a territory (*pays*) inhabited and modified by humans

through centuries. Landscape was the central part of regional studies in geography. In this type of study geographers analysed large areas of land with topographic maps rather than with field observations (Lacoste, 1977). This definition leaves little room for aesthetic considerations and for the meanings people put behind landscapes. The anthropocentric nature of this conception also limits its extension (Descola, 2013). German geographers (e.g. Otto Schlüter), followed by American geographers like Sauer, developed the concept of cultural landscapes. According to Sauer natural landscapes are a substratum that humans, with culture as an agent, modify to give cultural landscapes (Sauer, 1925). These descriptive approaches do not take landscape stakeholders' views into account, but only the expert's views. They allow little research perspectives in applied geography (Antrop, 1997).

For a long time interest for landscape in spatial planning was simply linked to heritage issues. For instance, the UNESCO's "Convention Concerning the Protection of the World Cultural and Natural Heritage" included outstanding landscapes in its list since the beginning (UNESCO, 1972). To date this list of cultural landscapes deserving to be protected counts 102 landscapes. But patrimonial landscapes are not limited to this UNESCO short list. At local scales many countries also listed their patrimonial landscapes. In the wake of the European Landscape convention¹ (Council of Europe, 2000a, 2000b), Wallonia (Southern Belgium) decided to characterize its patrimonial landscapes (Dubois et al., 2006; Droeven et al., 2007). Some countries did not await the convention to list and characterize their outstanding and heritage landscapes. Germany did not sign ELC but started to inventory and to classify landscapes long before, in the 1950s-1960s (Meynen et al., 1953), followed by United-Kingdom in the 1960s-1970s (e.g. Linton, 1968; Robinson et al., 1976), and Flanders with the inventory of traditional Flemish or relic landscapes during the eighties (Antrop, 1997). Interest for heritage landscapes is much older in Belgium. Danielle Sarlet recalled that the first Belgian law to protect landscapes was voted in 1914 to protect the battlefield of Waterloo (Sarlet, 2004). Authorities had in all likelihood only historical and commemorative reasons since this law was unique and site-specific. However, this has had an unexpected consequence: the battlefield landscape is, still today, protected from Brussels urban sprawl. Yet, without this historic fact this landscape could be just perceived as any other ordinary or everyday landscape: an undulating plateau

¹ I will use ELC as an abbreviation of European landscape convention in the rest of this dissertation

dominated by crop fields and small isolated farms in an intensive agriculture area, just like everywhere on the Belgian loamy plateaus.

Today, landscapes do remain an environmental, societal, and economic issue. From a societal viewpoint, landscapes are an important issue in urban planning. ELC added to the protection issue both management and planning issues. All landscapes (including ordinary and degraded landscapes) are of economic, societal, and environmental interest, and should be considered with the same care in ELC's spirit. This text also stressed the need in a better consideration of people's perceptions of landscapes. This led to research during the decade 2000 to characterize landscapes and to identify potential issues in terms of protection, management, and planning. Public perception issues remain the poor relative in these applied landscape research projects.

In Wallonia, the recent conflict over mapping the most favourable areas for wind energy development (Lejeune and Feltz, 2008) is a perfect example of the multifaceted aspects of landscapes. During this conflict, as well as during any other conflict against wind energy development, landscape spoiling was used as a strong argument, even if people usually pay little attention to landscapes. Yet, the vast majority of landscapes concerned by this development may not be described as outstanding, but ordinary. To the eyes of authority it was thus interesting to bring an environmental and economic added value to these landscapes. However, they neglected that these ordinary landscapes were also the surroundings of more and more people in the context of urban sprawl. As Van der Horst and Vermeulen wrote in 2011: *"The landscape concerns expressed by opponents have been accepted by some as an end-point, that is, people don't like to see wind turbines in rural areas—full stop."* To opponents' eyes landscape is just landscape and do not have to be debated. This "full stop" argument is not restricted to wind energy. Landscape conflicts are rooted in different conception of the "word itself", to cite JB Jackson (1984). All portions of perceived space may not be call landscapes. All people do not put the same idea behind the word. The French anthropologist Philippe Descola reminded in his courses that these differences in meanings may lead to misinterpretations (Descola, 2013). From his own experience he was seeing a view on an Amazonian river as landscape, whereas his local guide was probably seeing this just as a familiar place.

Thus some people just consider landscape as the scene they have in front of them. Others consider landscapes as the places where they live, recreate, and work. Rural areas are no more only the breadbasket of cities. Progress contributed to the open-up of these areas which became the living environment of people wishing to leave urban

areas. Progress also contributed to huge agricultural changes. These changes were not without landscape consequences. Modernization increased the need in bigger fields, less hedges. Globalization caused the abandonment of some farming lands where other land uses took the upper hand (e.g. Christmas tree plantations in the Ardennes, conifer plantations, wind turbines, industrial estates...). Newcomers come to live in rural areas with rural idyll in mind, whereas farmers have to cope with the new realities of globalized agriculture. Their new and ancestral farming practices may be contested by newcomers. Undoubtedly visions on rural landscapes are multifaceted and sometimes contradictory. Today, exploring landscape preferences and what people put behind the concept is still relevant to enlighten spatial policies about landscapes.

To summarize, landscape is a key concept in geography and urban planning, but there is a mishmash of ideas to decode behind this concept. With my research, I would like to contribute to unravel landscapes in the mind of people. I would also like to measure how the living environment contributes to landscape preferences. In other words, how spatial and landscape familiarity shape our preferences and readings of landscape?

1.2 Literature review

1.2.1 Introduction

In this section, I will be reviewing and discussing international literature on landscape preferences research. During this review I will explore the following questions:

- What is landscape aesthetics? Are aesthetics strong enough to explain landscape preferences?
- How can we assess landscapes, from various perspectives?
- What are the main trends in this research field?
- What did researchers find that influence preferences?
 - Personal characteristics influences
 - Spatial environment influences
- What is sense of place and how does it interact with landscapes preferences?
- Are ordinary/ everyday landscapes a relevant topic in literature?

According to Daniel: *“A distinction must be made between assessments of aesthetic quality – the relative aesthetic excellence of one landscape area as compared to others – and valuations of aesthetic quality – the worth of given levels of aesthetic quality relative to other values/resources/human desires and needs”* (Daniel, 2001: p. 271). With all due respect to this author, I find this definition of assessment

simplistic. It limits the value of landscapes to their aesthetic qualities, whereas many other parameters should be taken into account to enrich assessment. Landscapes without any aesthetics qualities could be interesting as well.

Assessing landscapes value has been the concern of many landscape researchers for decades. The reasons of this scientific interest are various and multifaceted ranging from fundamental knowledge to better spatial planning. I shall focus more on public-preferences methods than on expert assessment due to my main research question.

According to Lothian (1999), landscape researchers usually follow two contrasting paradigms: a so-called objectivist and its opposite view which is subjectivist, taking into account public opinion on landscapes. The French geographer Augustin Berque, for his part, proposes to situate landscape research at the crossroads of both. He calls this “landscape trajectory” (Berque, 2000).

I shall elaborate on the subjectivist paradigm as this PhD research aims to follow this paradigm. The objectivist paradigm will only be presented for reference purposes. According to this paradigm, landscape quality only depends on its own physical characteristics, such as presence of waterbodies, terrain elevation or land use diversity. Lothian (1999) wrote that this apparent objectivity holds actually a certain degree of subjectivity coming from the drawing up of evaluation criteria. He also pointed the lack of reproducibility of them and pleaded for subjectivist paradigm. In his paper, Lothian cited also the pioneers and leader of landscape subjectivist paradigm. The main contributors are classified according to their discipline:

- Environmental psychologists: Terry Daniel and colleagues with the scenic beauty evaluation method (Daniel and Boster, 1976), Rachel and Stephen Kaplan (Kaplan and Kaplan, 1989), Thomas Herzog and his cognitive analyses of environmental preferences (Herzog, 1984, 1985, 1987, 1989), Herbert Schroeder working on perception of forested landscapes (Schroeder and Daniel, 1981) and Strumse working on agrarian landscapes (Strumse, 1996);
- Social ecologists – Fernando Bernaldez, studying among other children’s landscape preferences (Bernaldez et al., 1987, 1989);
- Researchers in forestry (e.g. Buhyoff et al., 1982);
- Landscape architects such as Ervin Zube (Zube and Pitt, 1981; Zube, et al., 1982).

Most of them focused on relationships between wild or natural landscapes and people, trying to find consensus or explaining differences with demographic variables.

The great neglected in Landscape research seems to be ordinary or everyday landscapes, these landscapes which do not deserve protection, which are not seen when going from one place to another one (Schmitz, 2005). Though, they are the living environment of ever growing number rural residents in the context of urban sprawl. The American geographer Peirce F. Lewis ascribed this to “negligence, combined with snobbery” (Lewis, 1979: p. 19). Another famous American geographer, John B. Jackson invited us to “discover the Vernacular Landscape” (1984), but this invitation was not taken up by many landscape researchers. To cite some examples, the American landscape architect Robert L Ryan (2002), the American landscape planner James F Palmer (2004), the Swiss archaeologist Jean-Pierre Dewarrat (Dewarrat et al., 2003), or the Canadian urbanist Gérald Domon and his research team (Vouligny and Domon, 2007; Vouligny et al., 2009; Ruiz and Domon, 2012) explored ordinary landscapes and their links with territorial management or public preferences.

In Belgium the geographer Marc Antrop’s and the bio-engineer Hubert Gulinck’s teams have explored relationships between Flanders residents and Flemish ordinary landscapes. Marjanne Sevenant (Marc Antrop’s team) explored the landscape preferences towards Flemish landscapes among a stratified sample of Ghent’s residents. She tried to include target groups difficult to reach such as foreign-born population (Sevenant, 2010). Elke Rogge (Antrop and Gulinck’s team) worked on the landscape perceptions in Pajottenland, a small rural Flemish area to the west of Brussels urban area (Rogge et al., 2007). She worked with three groups, farmers, landscape experts and country-dwellers and logically found that their expectations towards landscape vary, highlighting the influence of landscape function on this. At the University of Liège landscape research focused on expert landscape characterization without neglecting citizen participation. The geographer Serge Schmitz was one of the few to explore relationships between Walloon residents and their surroundings in Vielsalm, a small municipality from Ardennes (Schmitz, 1999, 2001). He would now call their everyday landscape. During his doctoral research he found little landscape sensibility among people.

My research aims to be a continuation of this work to fill the gap of knowledge about ordinary landscapes through a subjectivist paradigm.

1.2.2 Landscape Aesthetics

Since landscape awareness is born from art in Europe, aesthetics play a huge role in Westerners points of views on landscapes. Assessing landscape aesthetics has thus been

scholar's main concern in landscape research. Literally, aesthetics is a socio-cultural construct defined as "the branch of philosophy that studies the principles of beauty, especially in art" (Oxford Advanced learner's dictionary², OALD). Beauty has been the concern of philosophers since Antiquity (Socrates, Plato, Aristotle). According to Lothian (1999), beauty followed an objective paradigm until the early modern period (e.g. contained in object for Plato, expression of God in objects for Christian philosophers). With French René Descartes, British John Locke, or later German Immanuel Kant emerged the subjective paradigm of beauty. Whereas Locke and other British philosophers (Burke, Hume) were empiricists, Kant opened the way to logical and deductive philosophy (ibid.). Kant's universality of subjectivity ("purposiveness without purpose") has been criticized since that time (e.g. Bourdieu, 1979) but some of Kant's ideas remain relevant today.

Landscape assessment is often reduced to its scenic aspects; "the natural features of a landscape considered in terms of their appearance, especially when picturesque" (OALD). Etymologically, picturesque derives from the Italian *pittresco* (*pittore* = painter) via the word French *pittoresque*. Visually, picturesque landscapes are thus landscapes which deserve to be painted. The influence of painting (and other arts such as poetry) on landscape preferences have been discussed at length by many researchers. For instance, landscape gardening in England was influenced by painters such as Claude Lorrain or Nicolas Poussin (Descola, 2013). The French philosopher Alain Roger (1991, 1997) got into a long dissertation about the role played by arts, especially painting and poesy, in the transformation of land (*pays*) into landscape (*paysage*). He used the word *artialisation* taken in Montaigne's writings as Charles Lalo did before. Roger distinguishes *artialisation* in situ (direct, through landscape management or gardening) and in visu (indirect, through representations such as paintings and poesy). Gérard Chouquer criticized this predominant position of art in Roger's essay. According to Chouquer, Roger's artialisation downgrades the role of environmental criterion (Chouquer, 2002). This elitist view on landscape is also called into question by Raphael and Catherine Larrère when they claim that everybody can develop aesthetics concerns (2009). Paul Gobster also pleaded for taking "Ecological Aesthetics" into account (Gobster, 1999) but this was criticized by Parsons and Daniel (2002).

² <http://www.oxfordlearnersdictionaries.com/definition/english/>, [September 2016](#) (I will use the abbreviation OALD in the rest of the text)

To sum up, I hold for my own research the following idea: aesthetics seems not enough to explain landscape preferences. Ordinary people may express preferences not only from an aesthetical point of view. These other points of view should be explored.

1.2.3 Objectivist vs subjectivist paradigm

A quick review of main contributions to landscape research showed two main trends. The first is an objectivist approach. I wrote “so-called objectivist” in line with Lothian (1999). For him, objectivity is influenced by researchers own subjectivity when they fix their assessment criteria. I will be reviewing them briefly since they have influenced our visions on landscapes, but I intend to deepen the subjective approach.

To cite some examples, L.R. Litton, a landscape architect from Berkley, presented a method to assess the “Visual Vulnerability of Forest Landscapes” (Litton, 1974), using parameters such man-made elements, outside influences and inherent characteristics. In 2002, C. Swanwick and land use consultants wrote a guide to help managers to assess landscape character in England and Scotland (Swanwick, 2002). Despite some recommendation to include local people advice, this method remains mainly objectivist. In French-speaking Belgium, landscape researchers, such as urbanist Claude Feltz and its research team singled out objectivist methods to characterize landscape territorial entities on behalf of Walloon regional authority (Feltz et al., 2004). A classification at the whole scale of Belgium was conducted by Veerle Van Eetvelde (Van Eetvelde and Antrop, 2009). This approach has been in use mostly in the context of landscape management practices (Daniel, 2001).

Zube, Sell and Taylor (Zube et al., 1982) divided the subjectivist paradigm into four sub-paradigms: expert, psychophysical, cognitive and experiential. As its name suggests, the expert paradigms implies that the assessors are “skilled and trained” (ibid. p. 8) in one field relating to landscape research, such as landscape design, ecology, management, or geography. The expert is supposed to base his judgments on the principles of his speciality, for example presenting ecological diversity or complying with canons of beauty. The psychophysical paradigm involves the participation of general public, considering them as respondents. They evaluate landscape on the basis of parameter which can be more or less managed such as land use (mineral or plant cover, urbanization) or physical characteristics (topography, waterbodies). The cognitive paradigms explore the “meanings associated with landscapes” (ibid. p. 8), considering assessors as processors using meanings such as “mystery, legibility or identifiability” (ibid. p. 8). Last, experiential paradigm is based on the exploration of

relationships between humans and landscapes, considering observers as active participants and exploring observer's everyday experiences with landscapes such as familiarity (ibid.).

The subjectivist paradigm emerged in the late 1960 with Elwood Shafer's works. With his colleagues he investigated the preferences towards natural environment (Shafer, 1969a) and landscapes (Shafer and Mietz, 1972; Shafer and Tooby, 1973). With Robert O. Brush (Shafer and Brush, 1977) he described a regression model based on black and white pictures of natural landscapes to predict public preferences. Beyond studying preferences his works aimed mainly to help decision makers to optimize management of natural landscapes. He focused mainly on people frequenting those spaces, such hikers and campers, pleading the non-existence of average camper (Shafer, 1969b). For my own research this suggests to focus on differences in landscape preferences in addition to find consensual landscapes and to measure average preferences.

Since the 1970s some researchers have proposed theoretical frameworks to explain landscape preferences using evolutionary theory. They claimed that aesthetic preferences were linked to the satisfaction of biological needs. They aimed at bridging the theoretical gap in landscape assessment (Appleton, 1975b). For them we have innate preferences for landscapes offering more opportunities to survival. The British Geographer Jay Appleton developed the prospect-refuge notion (Appleton, 1975a). According to Appleton the observer seek always landscapes where he/she can see (prospect) without being seen (refuge). According to Appleton, socio-cultural factors and personal experiences "do not operate ex nihilo but modify innate patterns of survival behaviour" (Appleton, 2000). This theory is close to Orians' savanna hypothesis (1986) who found preference for this type of landscape all around the world. Ulrich (1977) developed a model to forecast landscape preferences. Affective judgements on landscapes could be preceded unconscious and rapid cognitive processes (Ulrich, 1977; Kaplan, 1987). Rachel and Stephen Kaplan are also pioneers and leaders in this field. Their book "*The Experience of Nature: a Psychological Perspective*" (Kaplan and Kaplan, 1989) - remains a reference book. They made a comparison of public preferences towards natural and urban scenes in 1972. In this study they found higher preference for natural slides than urban ones (Kaplan et al., 1972). Their works mainly focus on natural spaces and they impact on human health. To cite some examples Rachel Kaplan discussed the psychological benefits of gardening (Kaplan, 1973). In 1985 she insisted on the importance of taking public preferences into account in land management. In 1988 Kaplan and Talbot explored the differences in

preference for nature according to ethnicity – white and black Americans (Kaplan and Talbot, 1988). In 1993 she explored how natural environment close to workplace contribute to the feeling of well-being at work (Kaplan, 1993). In 2001 she found positive contribution of the type of view from home on the sense of well-being (Kaplan, 2001). In the Kaplans' line, Thomas Herzog largely contributed to the study of cognitive processes linked to landscape preferences. He developed his research methodology on field-and-forest environments (Herzog, 1984). Then, he found that natural environments were preferred according to their type (desert, mountain, canyon...) and their level of identifiability, complexity or mystery (Herzog, 1987). In 1989 he investigated preferences towards urban nature and found that tended urban nature was preferred to old buildings (Herzog, 1989). Using the same methodology he also studied waterscapes (1989). With Rachel Kaplan and Herbert he also introduced cross-cultural differences comparing American and Australian subgroups (Herzog et al., 2000). In my opinion, these theories should not be limited to aesthetics considerations. When Lacoste recalled the role played by the military in geography, he made a tacit reference to Appleton (Lacoste, 1977, 1982). Though, this cognitive approach of landscape preferences was rejected by one of the pioneer and leader in psychology of perception, J. J. Gibson. In his last book *The Ecological Approach to Visual Perception* (Gibson, 1979) he synthesized his main thoughts: visual perception of people (and even other animals) is linked to the relationships they have with their environment. In Gibson, contrarily to cognitivism, affordances of environment – what is provided by environment to serve the observer- are directly perceived (Gibson, 1977) without any intermediate such as in Herzog's papers where indirect realism is privileged.

For my research I would like to keep this idea of unconscious and rapid process guiding preferences but I also would like to explore how people deepen their analyses beyond this first quick glance.

Other academics have developed theories in this line. For Yi-Fu Tuan, a Chinese-American geographer, our landscape preferences are linked to places. He explored the relationships ("*affective bond*") between people and places, which he called *topophilia* (Tuan, 1974). With this book, he provided the basis of a humanistic geography. He explored the symbolic aspect of places and landscapes. In *Space and Place* (Tuan, 1977) he analysed the way people perceive their environment introducing the main role of time in landscape perception. David Lowenthal, both geographer and historian, also underlined the role of time in the shaping of attitude towards landscapes with a general preference for the past (Lowenthal, 1975).

The environmental psychologist Terry Daniel (University of Arizona in Tucson) developed with his colleagues his own research on landscape quality evaluation. First, they have investigated quantitative methods for landscape evaluation through the prism of signal detection theory (Daniel et al, 1973). With R.S. Boster he developed the scenic beauty estimation method (Daniel and Boster, 1976) to provide a quantitative method of evaluation to forest managers. This method is based on a perceptual approach. Then he tried to map this scenic beauty (Daniel et al., 1977). With Herbert Schroeder he also worked on perceived scenic beauty of forest places (Schroeder and Daniel, 1981). Throughout his career Daniel also discusses methodological issues. To cite two examples J. Vining and he explored methodological issues in landscape quality assessment (1983). With Meitner he studied the validity of using landscape pictures (photographs, computer visualizations) instead of field experiment (Daniel and Meitner, 2001). This will be discussed below. His 2001 oft-quoted paper on scenic beauty and landscape quality assessment represents a good review of progress in this part of landscape research (Daniel, 2001). Daniel's approach may be considered as psychophysical, joining people preferences to physical qualities of landscapes.

In France, Augustin Berque also stressed the importance of analysing the relationships between man and environment that he calls *oecumène*³ (Berque, 1994, 2000). Berque also insists on the relativity of landscape and scenic beauty concepts. Indeed, these concepts did not exist at all time and do not exist in all social groups. Alain Roger made the same statement in his "*Court traité du paysage*" although his concept of "landscape artialisation" developed in this book may suggest the contrary (Roger, 1997). In Berque, landscapes cannot be measurable objects, in the sense of hard sciences. He also points that nature does not automatically mean scenic beauty in all minds of people, as often assumed in literature (Berque, 1994). In Larrères' *Du bon usage de la nature* (Larrère and Larrère, 2009), the authors insist on the necessity to take into account the different view people may have on landscape. First, they distinguish the expert view which may vary according to the expert's sphere of competence. Second, they draw attention on the aesthetic view we may have on landscapes, underlining this was not only the sphere of competence of educated people. Third, they presented the inner view, explaining this view was the prerogative of people having strong relationships with one specific landscape.

³ Écoumène

In Spain the pioneer and leader in this field was the social ecologist Fernando Bernaldez. With Abello and Gallardo he explored children's landscape preferences with photographs. Thanks to a multivariate analysis (Bernaldez et al., 1987) they found that landscape diversity did not explain variation in preference among children. This variation was more related to aesthetics, linked with light conditions or textures. Aesthetics preferences among children are "related to an effective system advising and guiding habitat choice and exploration" (Bernaldez et al, 1989). This is more or less coherent with Gibson's thoughts and can be related to Appleton's prospect-refuge theory (Appleton, 1975a).

1.2.4 Influence of cultural characteristics on landscape preferences

Beyond innate processes some academics also claimed our preferences are shape by our culture. In my research I intend to explore preferences among Belgians, including Flemings from Germanic culture and Walloons from Romance culture. Many authors attempted to explain how and why landscape preferences may vary among people. Authors focuses mainly on these characteristics: cultural differences such as spoken language or ethnic origin, education level, age, and gender, to cite the most frequent. Erwin Zube (one of the pioneers and leaders of subjectivist paradigm) and David Pitt explored the differences in landscape preferences between people of several ethnic backgrounds from Yugoslavia, West Indies (Western Caribbean Islands), and America viewing landscapes pictures taken in Virgin Islands (Zube and Pitt, 1981). They found huge differences in the way these subgroups perceived heritage landscape with or without man intervention. In contrast Zube found consensus towards natural landscapes when cultural background was relatively similar (Zube, 1984). Rachel Kaplan and Janet Talbot explored ethnic-related preference differences among citizens from cities in Michigan (Kaplan and Talbot, 1988). They found difference between Whites and Blacks but also a common interest for natural environments close to their own home. More recently Kongjian Yu (1995) compared the landscape preferences of a heterogeneous group of Chinese (experts and non-experts) with preferences of a homogeneous group of experts from Western origin (university students in Harvard). He found few differences between experts' preferences from both continents but also other influences which are discussed below. Thomas Herzog with Eugene Herbert and Rachel Kaplan explored differences in preference among students from United States and Australia for Australian scenes (Herzog et al., 2000). They found more similarities than differences. For example, they found a positive consensus towards river landscapes and a negative consensus towards open landscapes with large views but low

bushy vegetation. Janet Stephenson studied the cultural differences towards landscapes between Maoris and people of European descent in New Zealand (Stephenson, 2008). She stressed the importance of interactions with landscapes to explain relationships with them. With Elands and Langers, Arjen Buijs studied the cultural differences towards preference for “natural” Dutch landscapes between Native Dutch and immigrants from Islamic countries (Buijs et. al, 2009). According to their study, Native Dutch like unmanaged wild landscapes; immigrant showed low preferences for the same scenes. These authors showed that cultural differences must be great to measure an impact. In other words, it is difficult to find cultural divisions that are relevant for landscape preferences analyses. I also have to underline that many of these studies have been conducted with students from the researchers’ universities, which can induce some sampling biases.

Education is one of the best predictors for landscape preferences. Yu (1995) found a greater influence of general education level rather than expertise in landscape. The general trend in most papers is the following: higher educated people prefer wilderness and natural landscapes; lower educated prefer managed and man-made landscapes. For example, De Groot and Van den Born (2003) made this observation among participants from a small town in the Netherlands. Buijs, Pedroli, and Luguimbühl confirmed this observation in their joint paper over their own findings in the Netherlands, France, and other countries (Buijs et al., 2006). Later Buijs et al. observed the same influence of education when he explored image of nature among immigrants (Buijs et al., 2009). Sevenant and Antrop found that less educated were statistically more likely to give more weight to “stewardship and urbanisation” than to “naturalness” (Sevenant and Antrop, 2010). Lindemann-Matthies et al. (2010) found that better educated people disliked grasslands with less biodiversity ascribing this observation to a better sensitivity to biodiversity challenges.

Zube and his colleagues found age-related differences, especially between adolescents and other age groups preferences (Zube et al., 1983). Most researchers found that youngsters are more likely to prefer non-cultivated, wild landscapes, whereas the elderly do prefer landscapes where human footprint is visible (Buijs et al., 2006; Van den Berg and Koole, 2006; Lindemann-Matthies et al., 2010). Van den Berg and Koole (2006) ascribed this low preference from elderlies to the threatening aspect of wild places. Lindemann-Matthies et al. (2010) or Howley et al. (2012) explained that a better familiarity with traditional farming areas may explain this higher preference for cultivated landscapes among the elders.

Ode et al. (2009) found significant relationships between gender and preference scores. They found, however, that demographic factors were less influential than their selected indicators. Howley et al. (2012) wrote that female respondents to their survey preferred farm landscapes. Hull and Stewart (1995) did not find a significant relation between gender and perceived “*enjoyability*” of landscapes.

1.2.5 Influence of spatial familiarity on landscape preferences

One objective of this research is also to measure and to understand how people’s environment influences their view on landscapes. In other words, do they prefer their local landscapes to which they are the most familiar? Gale et al. (1990) defined spatial familiarity as an in-depth knowledge of one environment and its constitutive elements. This definition could be transposed to landscape familiarity. Wellman and Buhyoff (1980) compared preferences for mountainous landscapes among people from Rocky Mountains and Appalachian regions. They did not find any regional familiarity effect in concordance with other findings and suggest that regional familiarity is not an important issue in landscape research. Yet, later, Elizabeth Lyons (1983) found higher preferences for the most familiar biome she showed to her participants. Philip Dearden (1984) confirmed this positive correlation. Kaplan and Herbert (1987) wrote this correlation could depend on the participants’ expertise which influences the form of familiarity. Yu (1995) found strong influence of the urban or rural nature of participant’s living environment. According to his study, Chinese farmers tend to reject lands unusable for crops, showing the existence of a utilitarian view of landscapes. Strumse also observed this influence of familiarity on some Norwegian landscapes (Strumse, 1996). Buijs et al. (2009) explained that preference differences between native and foreign-born respondents could be explained, at least partially, by a different familiarity towards Dutch landscapes. As a reminder, Howley et al. (2012) explained the elderly’s preference for farmed landscapes with a higher familiarity with this type of landscapes.

1.2.6 Place attachment, place meaning, and sense of place

Landscape may also be defined as a subjective view on a place. Relationships between people and places influence landscape preferences. Whereas number of disciplines are competing for the study of landscapes, place is the study object of geographers (Tuan, 1975). However, if place is geographic, human relationships with places (such as meaning or attachment) are a multidisciplinary study object. Geographers do agree at least on this definition: place is “a meaningful segment of geographical space”

(Cresswell, 2008). Ryden (1993) already stressed on the idea of meaning. Cresswell (2013) recalled the three fundamental aspects of place highlighted by John Agnew (1987). First places have a localisation that geographers use to characterize with coordinates. Place and localisation intermingle in the mind of people (Cresswell, 2013). Second place is characterized by a locale. This is the physical setting of the place. Last, Agnew introduced the sense of place (SOP), already explored by Anne Buttimer (1976). This is the attachment people may have with the place from an emotional point of view, especially for everyday-life places. French-speaking literature opens up interesting prospects on this topic (Dubois and Schmitz, 2011). Armand Frémont (1974, 1976) called to open classical regional geography to the study of its subjective reality: experienced space or life-space (*espace vécu*). Guy Di Méo (1999) explored the territories of everyday life (*les territoire du quotidien*), whereas Serge Schmitz (2001) used the term relevant environment (*environnement pertinent*). SOP is a concept as vague as landscape (Shamai, 1991). For Paul Rodaway, behind sense are both lying meanings but also feelings (Rodaway, 2002).

Sense of place is very close to Environmental psychologists' place attachment and to Tuan's topophilia. The Chinese-American geographer defined this as "the affective bond between people and place or setting" (Tuan, 1974: p. 4). In his book Tuan explored how humans perceive the world and its structure. In Tuan, environment, culture, and topophilia intermingle to shape our spatial attitudes and values. Affective bonds with places may vary in intensity and be expressed differently according to people. For Anne Buttimer (1976), with his studies of "pays", Vidal de la Blache already explored the sense of place, although he emphasized the role of "physiographic boundaries". For Buttimer, Vidal de la Blache's *genre de vie* (pattern of living) "shaped and was shaped by the SOP". She recalled the phenomenological paradigm. Each person builds his/her own SOP, using his/her own spatial references ("with his own zero-point"), made of a bunch of places which form this person meaningful regions. As Cresswell wrote later (2008), Buttimer already insisted that place may vary in scale, from the room to the nation. For Buttimer, geography may agree with phenomenology when exploring the experience of place: different ways, same conclusions. Shamai (1991) defined SOP as "feelings, attitudes, and behaviour towards a place which varies from person to person, and from one scale to another". He distinguished three growing phases to develop SOP: belonging, attachment, and commitment. Each phase has two levels and he added a zero-degree (not having any SOP). The belonging phase is divided into a mere knowledge of the place ("being located in a place") and a feeling of "belonging to a place". One step higher, attachment implies a meaning of the place in

the mind of people. Then, people may judge that place aims are conform to their expectations. This reflects a stronger relation with the place than mere attachment. Finally, Shamai divided the “commitment phase” into involvement (playing an active role) and sacrifice for a place (“to give up personal and/or collective interests (...) for the place”).

For Jorgensen and Stedman (2001) place identity, place attachment, and place dependence are intertwined. Place attachment may be associated to positive bonds people and their environment, such as topophilia. Place identity may be seen as a part of a more global process of self-identification. Finally place dependence introduces the idea of the strength of relationships between one place and one person. This relationship may also be negative. For Tuan (1975) as well as for Relph (1976), the longer last the experience, the stronger is the attachment. For Relph, relationships with people might play a bigger role than the physical environment (Relph, 1976; Jorgensen and Stedman, 2001). In Cresswell thoughts, place and landscapes differ. Whereas landscapes are viewed from outside, places are lived from inside. Although places can inform landscapes and vice versa.

In my research I would like to see how landscape preferences may be shaped by place influences. When people assess landscapes, do they make reference to the place, especially places they know?

1.2.7 Ordinary/ everyday landscapes

This literature review shows that most researchers on landscape preferences have focused on natural landscapes. Yet, natural landscapes are not most people’s living environment. Researchers should also pay attention to these landscapes of everyday life. John B. Jackson one of the American “gurus of the landscape”, focused all his scientific attention to what he called vernacular landscapes (Jackson, 1984). Aasbø, S. (1999: p. 145) defined everyday landscapes as *“those landscapes which are part of people’s immediate life world and surroundings, without any particular spectacularity or pretensions. Most often such landscapes are not directly affected by any formal designation of protection value”*.

In literature, vernacular, ordinary and everyday landscapes are close related concepts. There is an interesting body of literature on everyday / ordinary landscapes. Although some scholars like to distinguish them, I will consider them as equivalent in this review as they represent more or less the same places. Research about everyday landscapes focused among others on:

- Health, therapeutic impact (e.g. Wakefield and McMullan, 2005; English et al., 2008);
- Landscape design (e.g. Preece, 1991; Conway, 2000);
- Landscape management (e.g. Beilin, 2001; Qviström and Saltzman, 2006);
- Preventing natural hazard (e.g. Kates, 1975)
- Landscape ecology (e.g. Di Giulio et al., 2009)

This interest is also present among researchers studying suburban landscapes. Due to urban sprawl, these landscapes are in essence the everyday landscapes of many people. According to Ingrid Sarlöv-Herlin (2004), suburban everyday landscapes may be considered as of the most emblematic cultural landscapes nowadays. Some geographers tried to estimate the monetary value of landscape. In the French THEMA laboratory, Cavailles et al. (2009a, 2009b) used the willingness to pay method to estimate landscapes value in the Besançon urban area. In landscape ecology, one topical issue during this decade is ecosystems services. Within this framework, van Berkel and Verburg (2014) estimated the value of cultural ecosystem services in Dutch agricultural landscapes. Other researchers also used hedonic pricing methods to evaluate this monetary value of everyday landscapes (e.g. Tyrväinen, 1997; Geoghegan et al., 1997; Morancho, 2003; Kong et al., 2007). We wish also underline that hedonic pricing methods were used to evaluate the landscape monetary impact of wind energy on houses prices (e.g. Sims et al., 2008; Hoen, 2010; Hoen et al., 2011; Heintzelman and Tuttle, 2012).

Landscape architect Robert L. Ryan's case studies are situated in New England, which seem to be one of the best United States areas to observe suburbanization trends comparable to European cases. In 2002 using a photo questionnaire survey he found higher preferences for "natural" features, including fields, than cultural features (old farm building, stone walls). In 2006 using photo questionnaire survey and interviews among lands stakeholders he compared local resident's viewpoints on rural character in Western Massachusetts, on the one hand, and homebuilders and planners' viewpoints, on the other hand. Surprisingly he found consensus between groups on a better contribution of open spaces to rural character than cultural features. He also found consensus on the necessity of protecting this rural character, yet with lower intensity among homebuilders. On the other hand he found difference between local residents and planners on the type of development compatible with rural character. At the interface between wild nature and ordinary landscapes Ryan also investigated everyday nature. In 2005 he explored "the Effects of Environmental Experience on Attachment

to Urban Natural Areas” (Ryan, 2005). Urban park users and managers were surveyed with a photo questionnaire survey through the theoretical lens of place attachment theory. He found differences between neighbours and recreational users on the one hand, and management staff on the other hand. He observed that relationships to urban natural areas depend on three factors: the place and its characteristics; the place familiarity (“type and intensity of people’s experience with a place”); and their general knowledge about natural areas. Recreational users and staff management’s views differ but a better knowledge of this may contribute to a mitigation of conflicts.

Another Massachusetts Landscape architect, JF Palmer, explored ordinary rural landscapes from this area. In a case study in Cape Cod (Palmer, 2004) he re-photographed the same views as in another study performed some twenty years before (Chandler, 1976). He found that GIS-generated landscape metrics was a good predictor (50% of the variation) of local public perception of local landscapes scenic quality.

The Canadian urbanist and landscape ecologist Gérald Domon and his research team also explored landscapes preferences focusing among other on ordinary landscapes from Québec, especially these situated in intensive farming areas. With K. Benjamin and A. Bouchard (Benjamin et al., 2007), he explored perceptions of abandoned farmlands. They found that both fallow lands with shrub and herbaceous ground vegetation, and maize fields were significantly depreciated in comparison to other land uses such as woodlots, pastures and hay fields. Vouligny et al. (2009) found difference between expert and resident views on the same landscapes. While expert focused on visual aspect, local residents insisted on aspects such as personal emotions, familiarity, and day-to-day practice of landscapes and places (Schmitz, 2001).

In France Yves Luginbühl was interested in the social representations of fallows and spontaneous afforestation on abandoned farmlands (Luginbühl, 1999). He explained that social representations are a “subtle combination of cultures”. He stressed that some former ordinary landscapes are now gaining new social value with their wild aspect. Luginbühl also discoursed on “the place of ordinary in the question of landscape” (Luginbühl, 2007). He insisted on the necessity to widen our thoughts beyond aesthetics considerations. He reminded also his long fight for taking people’s preferences into account in landscape policies. In her PhD thesis, Eva Bigando (2006) explored residents’ sensitivity towards ordinary landscapes in the city of Bordeaux outskirts. She found that relationships between people and their living landscapes were mainly unconscious, but could come to light owing to big landscapes changes induced

by man (such the construction of one motorway) or provoked by natural hazards (such as forests lifted by strong windstorms).

1.2.8 Methods of assessment

The most obvious way to explore how people assess landscapes is to bring them in front of various landscapes to make assessments. However, experiments in-situ may be costly and time-consuming. Most landscape researchers use thus photographs as a surrogate for landscape in their research projects involving people. I intend to do the same in my research. There is an extensive body of published literature on the validity of using landscape surrogates instead of in-field experiments. Landscape surrogates goes from the classical photographic survey to the use of sophisticated techniques using computer graphics.

Some researchers criticized this use for various reasons. In 1974, Zube doubted about the validity of photographic surveys. Hull and Stewart made a comparison and found few correlation between in-site and photographic ratings. Whereas assessment in the field may induce multisensory experience of landscape, the use of photos might limit analysis to visual (Hull and Stewart, 1992). Pocock wrote that even the sense of sight is altered, because photographs offer a two-dimensional experience of three-dimensional reality. He also underlined that photographs did evade other senses such as hearing – giving the example of the sound of water and the singings of birds. According to him, this is independent of the quality of the photograph (Pocock, 1982). Many landscape researchers have emphasized the necessity to take into account other senses than sight (Zube, 1984; Heterington et al., 1993; Scott and Canter, 1997).

Although these theoretical considerations are true, many papers showed that photographs and other pictures were used as good landscape representatives. In a meta-analysis of papers dealing with landscape preferences, Stamps (1990) found good correlations between on-site and photographic assessments. However, Scott and Canter (1997) stated that researchers should be clear with participants about what is evaluated: the place represented by the landscape surrogate, or the picture itself. Other representations of landscapes have also been validated. In 2001, Daniel and Meitner tested different types of photograph, from black and white to full colour photographs. They found good internal reliability but low inter-correlations between the different type of surrogate (Daniel and Meitner, 2001). Palmer and Hoffman focused on the need to evaluate both validity and reliability in each visual assessment. They defined reliability as “the degree of similarity among evaluators” and validity as “the

equivalence of judgements made from photographs and in the field” (Palmer and Hoffman, 2001: p.149). They suggested for example to calculate interrater and intraclass correlations to estimated reliability. The estimation of validity may only be done by comparing photo and in-field ratings, as Stamps did in his meta-analysis (Stamps, 1990). In 2006, Roth empirically validated the use of the Internet as a valid media for exploring landscape preferences (Roth, 2006). He showed that computer visualisation of landscapes could also be validly used.

The advantages of photographs are various. Sevenant and Antrop (2011) compared landscape assessments made in-situ, with standard normal photographs, and with panoramic photographs. They did not find variation for half of the landscapes they were shown. For the other half, they found that the best type of stimulus was depending both on the landscape itself and the variable being measured. However, they did not work with a random selection of landscapes, nor a random selection of respondents, who were students from their university. They also suggested that the photos allow experimental control of what is evaluated through photograph reproducibility. Many papers present studies made with computer editing of photograph to isolate or simulate specific landscape features. The validity of computer simulation was validated in many papers (e.g. Bishop and Leahy, 1989).

Swaffield and Fairweather (1996) used computer editing to explore the impact of different land use change scenarios in New Zealand. Tahvanainen et al. (2002) did the same with Finish Landscapes, exploring various landscape changes such as new crop fields, urban sprawl in rural landscape or impact of new recreational areas. Teresa Pinto-Correia and her research team also used modified pictures of landscape to assess the fuzziness of typical Portuguese Montado landscapes (Pinto et al., 2011; Barroso et al., 2012). Last but not least, computer modification was used in research over landscape impact of wind turbines in many papers. Bishop and Miller (2007) simulated various off-shore wind energy park designs in different weather conditions. Van Rompaey and al. (2011) made simulations in different Belgian rural landscapes types. Molnarova et al. (2012) simulated wind turbines in Czech landscapes. Both research projects showed that this visual impact depended obviously on the initial landscape quality and the respondent’s attitude towards wind energy.

The French geographer Eva Bigando (2013) suggested another use of photographs in landscape research: photo-elicitation interviews, which is a qualitative method used by visual sociologists and anthropologists. As the name suggests, photo-elicitation use photographs (and other types of picture) to liberate interviewees’ speech and to get

more information or reaction from them with a classical oral interview. Harper, one of the leaders of this technique, suggested this could be explained that way: “*the parts of the brain that process visual information are evolutionarily older than the parts that process verbal information. Thus images evoke deeper elements of human consciousness that do words.*” (Harper, 2002: p. 13). Usually the pictures are brought by the interviewers, but some researchers asked the participants to take their own pictures (Moore et al., 2008). The landscape sociologist Ruth Beilin analysed the relationships between Australian farmers, their farming practices and their landscape with photo-elicitation interviews (Beilin, 2005). She gave disposable cameras to Australian farmer families with the instruction of taking pictures of their significant landscapes. This was the starting point of deep-interviews she made afterwards. The French geographer Yves Michelin already used this method in 1998. He asked six local councillors from Auvergne to take pictures of five landscapes type in their own locality: their inner landscapes, blighted / spoiled landscapes, the land of their ancestors, tourist landscapes, and changing landscapes. These photos were then used during interviews. During this action research, he used thus photo-elicitation without explicitly naming this. During her PhD Research, the French geographer Eva Bigando (2006, 2013) also used a photo-elicitation survey with self-directed photographs, asking her participants to take photos of their own everyday landscapes. Christine Partoune and her colleagues developed the concept of *hyperpaysage* / hyperlandscape (Ericx et al., 2002; Partoune, 2006). She asked to people to build 360° panoramic views and to add hypertexts markers within the picture to enhance a navigation process. This allowed to understand how people learn to appropriate landscapes or to let them tell their own story of one landscape. This is quite close to photo-elicitation methods but using modern techniques linked to web browsing.

However, most landscape studies with photographs used quantitative methods, especially with attitudes scales. There a various type of scales. The most frequents in papers are: Likert scales (level of agreement on a statement), ranking of photograph (e.g. classification according to the level of preferences), and Q-sort (photographs are put into piles according to specific criteria). With a meta-analysis of nine studies, Stamps (2000) asserted they were almost equivalent, as a found an effect size of $r=0.99$. From a theoretical viewpoint, Likert-scales, ranks and Q-Sort are ordinal scales. This, distances between levels of such scales may not be considered as necessarily equivalent. Therefore, data must be analysed using non-parametric statistics (Donneau, 2013). However, most papers using ordinal scales used parametric statistics, in all likelihood through ignorance. In 1998, Ryan used 5-points Likert scales with non-

metric factor analysis. Wherrett (2000) used 7-points scale, but she normalized in order to rub out the differences induced by personal ranges of scores. As she wrote, she did this because she did not want to explore these differences but an average assessment of landscapes. Rogge et al. (2007) also used a 7-point scale with parametric analysis of data (one-way ANOVA). Buijs et al. (2009) used 5-points Likert scale, asking respondents to mark their agreement to a list of items concerning nature. They used both parametric (factor analysis) and non-parametric (chi-squared, Eta and Cramer's V). Q-Sort methods are used among others by Pitt and Zube (1979), Fairweather and Swaffield (2001, 2002). One aim of this method is to measure the correlations between assessors across the variables, in other word to find assessors who share the same preferences towards landscapes. Rank-ordering was used for example by Karjalainen (1996), when she evaluated the preferences for clear-fell areas in Finland.

To conclude, in this review about landscape assessment I made the point on the two main paradigms in the field. I have presented the main contributors who are mainly geographers (Tuan, Lowenthal, Lewis, Berque), environmental psychologists (Kaplan and Kaplan, Daniel), and landscape architects (Zube, Ryan). I have stressed that environmental psychologists mainly focused on natural landscapes. I highlighted a gap in the knowledge of everyday landscapes, partially bridged by some geographers and landscape architect. I noted that quantitative methods largely dominate landscape assessment studies. Photographs as landscape representatives dominate in landscape assessment and their use has been validated in many papers. Qualitative methods are also used to a lesser extent. There is a gap in studies combining both quantitative and qualitative methods.

1.3 Research goals and overall methodology

As announced in title my research aims at deconstructing landscape among ordinary people. I mean “deconstruction” in Heidegger and Derrida’s sense: unravelling to better understand.

During my research I used a “floor to floor” methodology. Indeed, the methodology utilized at each stage of my research is drawn upon the methodology and critical analysis of the previous chapter. Starting from a purely quantitative approach I will use qualitative approach to reach my final goal. In this section overall methodology is summarized and put into perspective with main research goals. The next chapters will be structured the same way: first a global context, second detailed methodology, third main results and last discussion of results.

My research is divided into three parts. The common thread of these parts is exploring relationships between people and everyday landscapes with the following research questions:

- What are landscapes to people?
- What are their points of view, especially on everyday landscapes?
- How do people conceptualize/understand landscapes?
- How do they interrogate their own views on landscapes?
- How these views and thoughts are influenced or shaped by their living places?
Can we see regional trends in landscape preferences beyond individual preferences?
- What does it happen when their landscapes are perturbed by new features?
- What is the influence of wind turbines (WT) and other anthropogenic features?

1.3.1 Average preferences for everyday landscapes and perceived landscape impact of wind turbines

The first stage of my research (see section 2) is part of the of Lacsawep research project (Van Rompaey et al., 2011). This two-year research project was mainly oriented at gathering data that will be analysed in my research. I used the results of a large-scaled photo-questionnaire survey (n=1542) to estimate average landscape preferences of Belgians, especially the influence of wind turbines in landscapes. This photo questionnaire was built with panoramic photographs of Belgian rural landscapes with and without Photoshop simulations of wind turbines. Participants to the survey had to

assess the attractiveness (not necessarily the aesthetics) of the landscapes they were shown.

The questions which guided this part of my research were:

- How attractive are different rural landscapes to the eyes of people?
- How does attractiveness vary when wind turbines are present in landscapes?
- Are people coherent (across subgroups) when they use measurement scales?

Even if I collected some comments made by participants during the survey, little information on motivations behind assessment was gathered. In another part of my research work during Lacsawep project that I will just briefly mention in my dissertation, I also interviewed wind energy projects stakeholders. This was aimed at a better understanding of the shaping of attitudes towards wind energy projects in Belgium. However, it will give important clues to conduct research.

1.3.2 Variations in preferences for everyday landscapes and perceived landscape impact of wind turbines

In the second stage of my research (see section 3), I take the opposite view to analyse the same dataset. Rather than finding an average value of landscape, I will analyse differences across subgroups of respondents. The research questions are about homogeneity of landscape preferences:

- How do landscape preferences vary among people (subgroups)?
- Do the types of landscape influence the variation of sensibility (with or without wind turbines)?

With this survey, I will get a good overview on how people assess landscape quantitatively, but not on the motivations lying behind their assessments.

1.3.3 Deconstructing the landscape concept among people with qualitative survey

In this section I will try to fill the explanative gap. I elaborate a new survey mainly qualitative (see chapter 4). I selected landscape photos in the previous database to keep a comparison point with previous sample. I selected three groups of participants in three areas in French-speaking Belgium. In addition of assessing the landscape they were shown, participants to this new study has to deeply justify their assessments. The interviews will be transcribed to allow two types of analysis: a textual analysis and a thematic analysis.

To make a parallel with linguistics, with this part of research I would like to evaluate the part of signifier / signified of wind turbines and other elements in landscapes appreciation. Signifier and signified are allusions to the theory developed by the Swiss linguist Ferdinand de Saussure, pioneer of modern linguistics (De Saussure, 1916)². In Saussure, the signifier corresponds to the sound-image and the signified to the mental concept. *Mutatis mutandis*, I apply this to landscape preferences. The signifier will be what can be seen (heard, touched, smelled or tasted), whereas the signified is the meaning of landscape. In “De la grammatologie” the French philosopher Jacques Derrida (1967) laid the basis of deconstruction, a word taken in Heidegger’s works. He opposed Saussure’s dichotomous approach. For Derrida, each signifier refers to other signifiers as a chain of cascades in a river. This analogy rose in my mind with the symbolic role played by wind turbines in landscapes. They were more than one mast with rotating blades in landscape. More, as underlined by Wolsink (personal communication), attitudes towards wind energy should be analysed in the light of the project nature rather than the wind turbine itself.

It became apparent that I had to decode both the influence of wind turbines in landscapes but also other landscape features.

This part of research is the cornerstone of my research.

1.4 Research originality

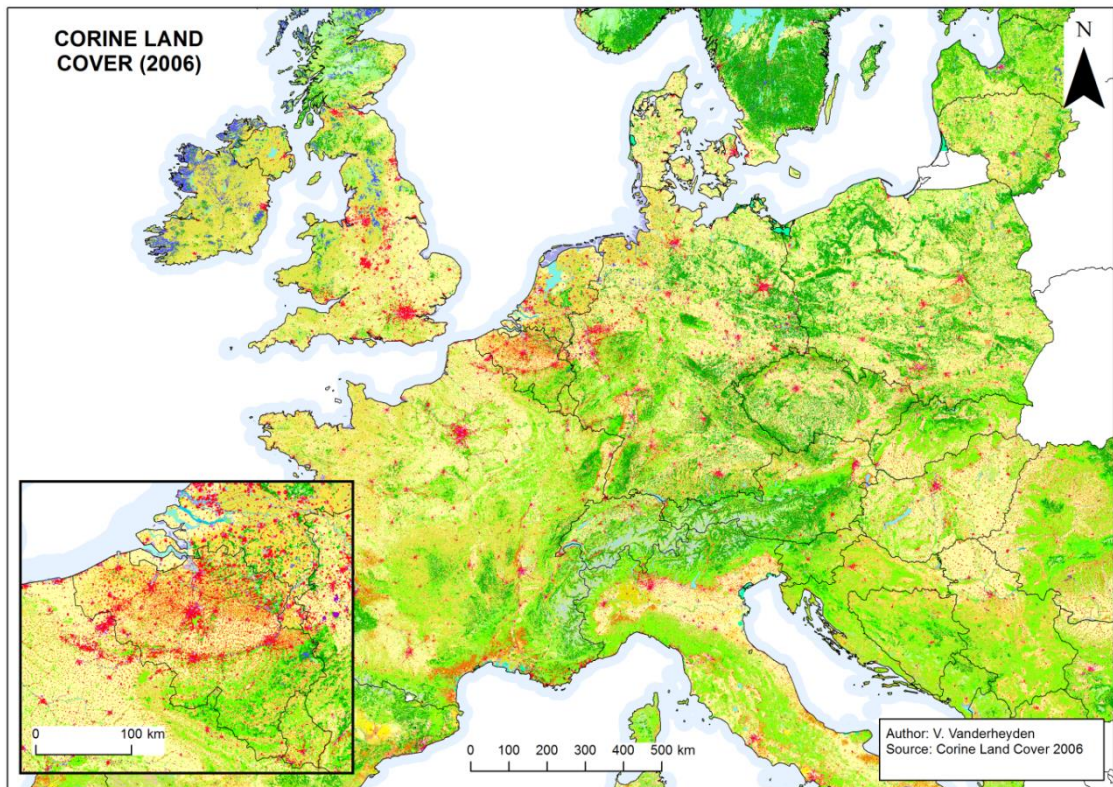
1.4.1 Why this research should be done?

Landscape seemed an obvious concept. Although its definition varies according to disciplines and even within one same discipline. Landscape research involving people and urban planning policies often consider landscape as a concept mastered enough by people. The deconstruction of the landscape concept (what are landscapes to the eyes of people) proves essential to be carried out to enlighten efficient urban planning policies.

Researchers mainly focus on extraordinary and wild landscapes. They look vulnerable to global changes and to human pressures. As a consequence, everyday landscapes as study objects are neglected, understudied.

Most landscapes research consist in quantitative assessment: giving a score to landscape or to give a level of agreement to statements on landscape (quality, aesthetics). Despite interesting explanative theories (e.g. Appleton, 1975) we do not know much about the motivations of people lying behind their assessments. This research is also often focused only on aesthetics concerns. Evolutionary theories also usually focus on the first quick glance at landscapes: how our primitive brain select relevant environments in a fighting for survival context. These researchers found preferences for savannah landscapes (Orians, the Kaplans) or landscapes with prospect-refuge opportunities (Appleton). Yet, these types of landscapes are not the most inhabited spaces in Western Europe. On the other hand, research on familiar landscapes involves deeper reflection from participants. My PhD research lies between both. It aims at exploring landscapes deeper than a quick glance, but less deep than landscapes marked by our frequented places. We do not know much about how people think about landscapes (if they think about them) and how they are equipped to face landscape analysis. The lack of knowledge about spatial relationships between people and their everyday landscapes is not only prejudicial to fundamental research, but also from an applied perspective in planning..

Studies about relationships between people and everyday landscapes have already been performed in Flanders (Sevenant, Rogge) but not from both side of a cultural border. Located in the middle of Europe at the crossroads of Latin and Germanic cultures, Belgium is a good case to explore these relationships. Belgium is situated in the heart of the most urbanized part of Europe, as visible on the Corine Land Cover map (Figure 1.1.) Ordinary landscapes are thus the surrounding of many people, their everyday landscapes.



Corine Land Cover types – 2006



	Artificial areas		Open spaces / bare soils
	Arable land and permanent crops		Wetlands
	Pastures and mosaics		Water bodies
	Forested land		No data
	Semi-natural vegetation		Outside data coverage

Figure 1.1 Corine Land Cover (2006)

1.4.2 How my research aims at filling these gaps?

My approach will not be limited to landscape aesthetics and landscape quality. With my research, I ambition to go wider since landscapes without any aesthetics qualities may be important to people. That is also why I chose to explore everyday landscapes. Beyond being snubbed by researcher, everyday landscapes are an excellent study object to broaden analyses beyond aesthetics. During the present research I will confront people to their own everyday landscapes but also to other everyday landscapes. This will allow to analyse both emotional influences (linked to familiarity) and indifference towards unknown landscapes. Does the living environment shape their opinions? The presence of wind farms in landscape will be used as a recent change and a disturbing element: do they really increase landscape awareness?

During this research, I did not want to follow one single methodological approach. I shall use various methodologies, combining both quantitative and qualitative methods. Quantitative research methods are appealing for they allow to test and to validate research hypotheses among broad respondents' panels. Psychologists and statisticians have developed methods allowing to gather a lot of information with quantitative methods, for instance using the ordinal scales with very detailed surveys. Quantitative methods are often used in landscape assessment because they give a lot of numeric information. Nevertheless, they lack details about people motivation towards landscape preferences. Qualitative methods are relevant in landscape research because they allow to comprehend the different ways of approaching landscape as a geographical space (Floch and Devanne, 2007). However, the cumbersome nature of qualitative research processes does not allow to reach as many respondents as quantitative research processes, but they do allow to go deeper in the analyses. Qualitative methods are also often criticized for they lack of reproducibility. Although using both methods in a same research process may seem oxymoronic, there is a growing trend to use mixed methods to take advantages of both methods while encompassing, as far as possible, their respective disadvantages. Gathering qualitative data through interviews may inform and help analysing the quantitative dataset (Lokocz et al., 2011).

2 Assessing landscape preferences towards wind energy

Adapted from:

Van Rompaey, A., Schmitz, S., Kesteloot, C., Peeters, K., Moens, B., Van Hemelrijck, H., Vanderheyden, V., Loopmans, M. & Vanden Broucke, S. (2011). Landscape Capacity and Social Attitudes towards Wind Energy Projects in Belgium “LACSAWEP”. Final Report. Brussels: Belgian Science Policy. (Research Programme Science for a Sustainable Development)

2.1 Context and research questions

This first part of my research is part of the LACSAWEP project. This consisted mainly in building a strong database and contributing to a first quick analysis of results. I gathered the data with my colleagues in 2007 and 2008. The present chapter is based on the final report I co-authored (Van Rompaey et al., 2011). I fully contributed to this project, which constitutes the starting point of my research.

This two years project (end 2006 – 2009) responded to a call for proposals made by BELSPO⁴ within the research programme “Science for a Sustainable Development – SSD”. This program aimed at enlightens sustainable development policies with scientific research. The first main goal was to develop a decision support system to evaluate the landscape capacity of hosting wind turbines. The second main goal was to understand how attitudes towards wind energy were shaped.

My own research questions within this framework were the following:

- What are the most suitable landscapes for hosting wind energy from a public point of view?
- What mechanisms are shaping attitudes towards wind energy projects in Belgium?

With the first question, the final aim was to produce a landscape sensitive map at the whole scale of Belgium. This map is not a part of my own research. As part of my own contribution to this project, I did almost all fieldwork in French-speaking Belgium (photography, survey, interviews, quantitative and qualitative analyses).

⁴ BELSPO : Belgian science policy

Belgium had started its wind energy growth phase at the end of 2006. The country aimed to meet Kyoto protocol objectives and to gain energy independence in the context of increasing prices of raw materials and energy sources. Belgium also bet massively on solar photovoltaic panels with excessive subsidies during the same time period, creating an investment bubble.

Figure 2.1 gives an overview on wind farms development in Belgium. 112 wind turbines were already built in 2006. This represents a little less than 200 MW of installed capacity⁵. The towers were mainly localized in Flanders (northern Belgium, 72 turbines) on industrial estates and on port areas, as required by Flemish urban planning rules and due to the scarcity of agricultural land. Growth became exponential two years and a half later, at the end of the research project. The number of wind turbines had doubled within the same time frame, reaching 278 turbines (400 MW of installed capacity). In view of technical progress, the increase in installed capacity is faster than the increase in number of wind turbines. Wallonia (southern Belgium) had caught up with Flanders and had even surpassed this region (148 towers in Wallonia, 124 in Flanders). Contrary to Flanders, Wallonia authorities recommended to build turbines on agricultural land, far more available in Southern Belgium. Since 2008 the Federal state has also authorized the development of offshore wind energy projects on the North Sea sandbanks (6 in 2009, 182 in 2015).

To give the reader an idea of this growth, the number of wind turbines installed at the end 2015 is 871 and exceeds 2000 MW, including all on-shore and off-shore wind farms. Flanders is now in the lead again due to more favourable social, political, and administrative context during the last five years. In Wallonia, the solar photovoltaic investment bubble burst, the wind energy planning map, and the strong increase in electricity price created a loss of faith from public towards alternative energy. The increase in wind turbines is now smoothing whereas initial “climate-energy” goals are not fully reached.

⁵ Installed or nameplate capacity: theoretical output of an electric generator, usually expressed in MW.

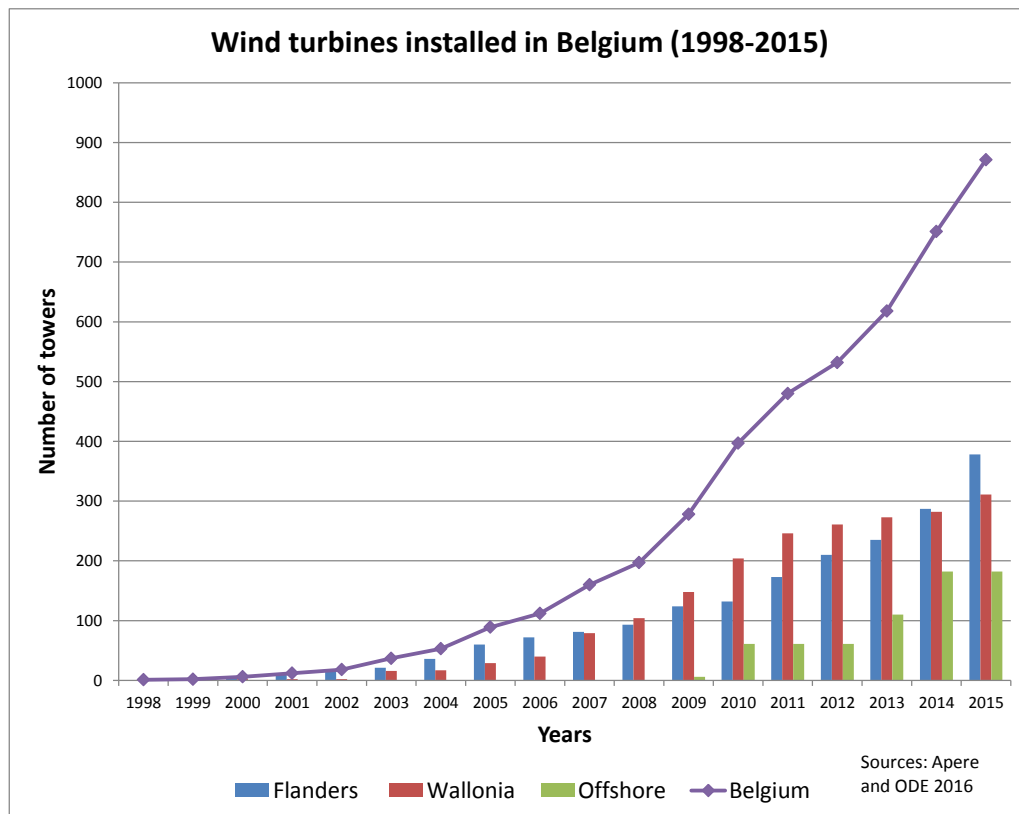


Figure 2.1 Number of wind turbines installed in Belgium from 1998 to 2015. Sources: Apere and ODE (2016).

2.2 Methodology

2.2.1 The shaping social attitudes towards wind energy

To explore the shaping of social attitudes towards wind energy projects, I interviewed stakeholders of two wind energy projects in Wallonia (Mettet and Houyet, see Van Rompaey et al., 2011), and stakeholders at the regional level. I conducted these interviews with local residents, developers, local and regional authorities, but also local and regional lobbies (pros and cons). Then I transcribed and I analysed all interviews conducted in French. These interviews were put into perspective with interviews conducted in Flanders and transcribed by KUL colleagues. All interviews were also read and analysed by other researcher (triangulation). I also conducted a press and media review. During my analyses, I paid particular attention to how the discourses were shaping attitudes. The same following analysis framework was applied by all researchers:

- Who were discourse producers?
- At what scale level did they produce it?

- In which stage of the process did they produce it?
- What were their arguments and motivations?
- In residents' interviews I paid attention to:
- How were these discourses perceived?
- What were people's fears?

2.2.2 Assessing and modelling landscapes attractiveness

To assess the capacity of landscapes to host wind farms from the point of view of the general public, I designed a photo questionnaire survey with my colleagues. During spring and summer 2007, I built a photographic database of Walloon rural landscapes. My colleague did the same for Flemish landscapes.

I took the pictures with a digital camera⁶. About 250 panoramic views (observation angle of around 120°) were created using 6 or 7 single pictures stitched together with Autostitch software (Brown and Lowe, 2007). The dataset should be representative of Belgian rural landscapes diversity⁷:

- Terrain differences, going from Flemish lowlands (polders and plains) in north-western Belgium to deep and rugged valleys from Ardennes area in Eastern Belgium, including mid-elevated plateaux from central Belgium;
- Various agricultural land-uses: crop and sugar beets fields from intensive agricultural areas; maize fields, pastures, and their fences from dairy farming areas, including mixed land-uses; forested or non-forested landscapes;
- Various levels of urbanisation (excluding urban areas).

With my colleagues, I selected 54 photos in the database making sure Belgian landscape diversity was still present enough. Then, we edited all the 54 pictures with Photoshop software to add wind turbines simulations. The selected landscapes with and without simulations can be seen in appendix.

⁶ The focal length was fixed to 35 mm, which is equivalent to a 55 mm focal length of a 24x36 analog camera. The camera was placed horizontally at 1.60 m above ground on a tripod to ensure horizontal views. These conditions have been scrupulously respected even to photography deep Ardennes valleys, such as Semois River, to avoid views looking down upon the valleys.

⁷ No views on the North sea were included as offshore wind farms were not targeted

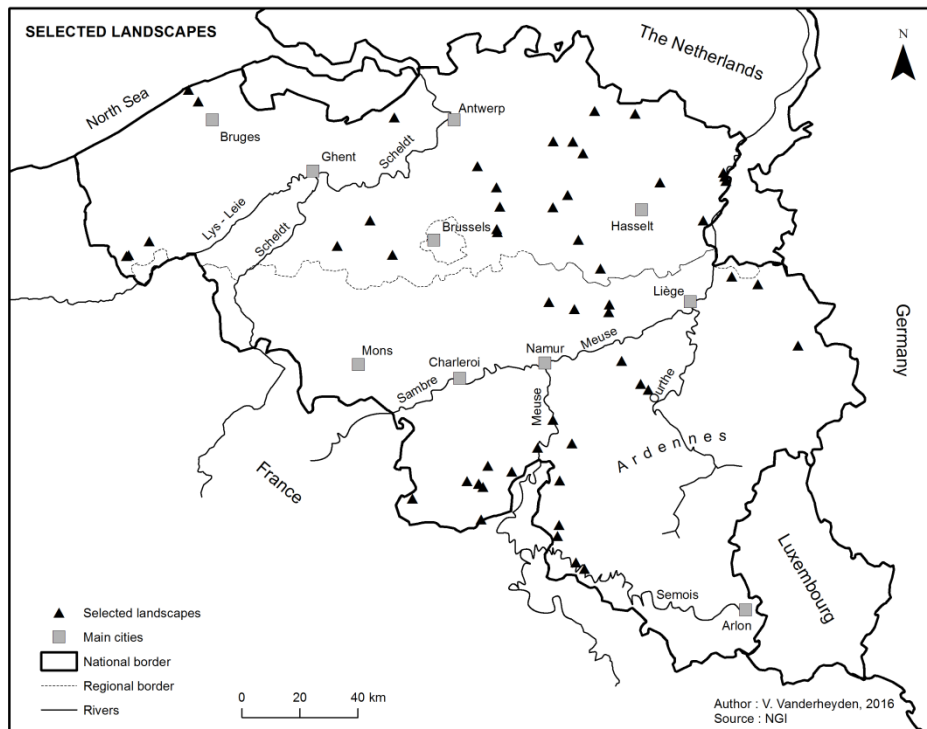


Figure 2.2 Selected landscapes



Landscapes HA6 and HB6. View on cultivated fields (potatoes, sugar beet, crops) in intensive agriculture area (Central Belgium, loamy plateau), without and with simulation of wind turbines.

As the real goal of the survey (impact of wind turbines) was not meant to be announced to participants, all simulations should be as close as possible to real situations. We alternated position of wind turbines in landscapes: in mid ground or background; from one single to six wind turbines; in various patterns such as in line along horizon, in line perpendicular to horizon, in bow, etc.

9 sets of landscape pictures were built. Each set was composed of 2 test photos⁸ and 18 photos randomly ordered: 12 without and 6 with wind turbines. One landscape photograph with simulation of wind turbines was not showed to the same participants as the same landscape without wind turbines simulation.

Participants to the survey – not informed about the survey real goal - had to mark landscapes on a 7-points “Likert” scale, according to their attractiveness. Attractiveness was preferred to aesthetics. Attractiveness is an umbrella-concept which may include beauty and pleasure concerns linked to aesthetics but also many other requirements according to people. This allowed to expend the scope of the survey.

On this photo, I find the landscape...							
	Not attractive at all			Neither of these			Very attractive
	1	2	3	4	5	6	7
	○	○	○	○	○	○	○

Figure 2.3 Attitude scale included in the survey

The places of survey were randomly selected, but I found useful to add some urban places to get enough urban areas. I conducted the surveys door-to-door in Wallonia and Brussels with the occasional help of students and colleague in remote places. Some additional surveys were made by colleagues in front of supermarket in Flanders.

With this survey, I aimed at finding average assessments given by Belgians to the landscapes they were shown. All scores were standardised by observers. This was meant to rub out the differences between observers. Indeed, some were using just the upper part of scale; others were using the whole scale. Some people always gave the same score to all landscapes (5 persons). Their scores were dismissed in this part of research.

I measured the impact of wind turbines by comparing the mean score of each landscape with and without wind turbines. Then all landscapes were digitalized to measure the share of different land uses in foreground, middle ground, and background of each landscape. I digitalized Walloon landscapes. Then we constructed a regression model to link people’s assessment with landscape compositions. At the end of the project, a

⁸ The test photos were used to brief participants. With this they also calibrated their use of the rating scale. I never analysed these test photos.

model linking horizontal photos and land use maps, to allow the generalization of results to Belgium was developed. As I did not participate to this last part of the project, this will not be discussed in my dissertation.

During the survey, we collected participants' characteristics to assess the representativeness of the sample. Some additional questions were also collected or determined subsequently.

- Residence place: Locality, Municipality, Province, Administrative Region
- The degree of morphological urbanization of the municipality: four levels, according to a recent typology (Van Hecke et al., 2009⁹)
- Gender
- Year of birth (or at least age group)
- Length of residence at this place or in the same village
- Highest qualification
- Occupational status
- Work place, if any

Two additional questions have also been asked:

- What importance do you attach to the landscape around your home?
- Do you have any wind turbines around your home? (Yes, No, Planned, Don't know)

During the survey, I also collected some comments made by respondents during their assessments.

⁹ In this typology, all Belgian municipalities were classified according to their morphological and functional level of urbanisation. I only kept morphological urbanisation as it is more relevant from a landscape point of view.

2.3 Main results

2.3.1 Attitudes towards wind energy projects

The main findings may be found in the final report (Van Rompaey et al., 2011), in Schmitz et al. (2012) and in Schmitz and Vanderheyden (in press). I conducted a review of international literature over wind turbines. This is included in these papers.

We highlighted four types of influencing factors:

- Physical disadvantages (landscape spoiling, flickering shadows, noise...);
- Economic factors (real estate depreciation, personal benefits);
- Symbolic arguments (green electricity, green washing);
- Type of decision process (top-down, bottom-up, participative...).

Landscape spoiling was not found as the main residents' concern. However, it was (and remains) the opponent's main argument. Van der Horst and Vermeylen (2011) explained this with the subjective and irrefutable nature of landscape argument. Wolsink (2007) wrote that attitudes towards wind power, wind turbines, and wind energy projects should not be mixed together. Attitudes towards wind power are general. Attitude towards turbines and projects are generally more local.

2.3.2 Photo survey and modelling of landscape sensitivity

1542 persons have been surveyed during year 2008. Each landscape without turbines was evaluated around 340 times and each landscape with turbines was evaluated around 170 times. The sample was assumed to be representative of Belgian population. The following table gives the main characteristics of the 1542 persons who answered to the survey. The sample is compared to Belgium's population at the time of the survey.

Table 2.1 Characteristics of participants' sample and comparison with Belgian population

		Sample¹⁰	Belgium (2008)¹¹	Significantly different¹²
Gender	Men	45.8%	48.98%	No (p=0.07)
	Women	54.2%	51.02%	
Residence Region	Flanders	60%	57.76%	Yes (p=0)
	Brussels	4.9%	9.83%	
	Wallonia	35.1%	32.41%	
Type of municipality ¹³	Urban	38.4%	29.7%	Yes (p=0.0004)
	Rural	61.6%	70.3%	
Age group	10-24	11.8%	20.1%	Yes (p=0)
	25-49	44.7%	39.6%	
	50-64	27.0%	21.2%	
	65 and over	16.5%	19.1%	
Education level ¹⁴	Low	22.6%	40.70%	Yes (p=0)
	Middle	56.3%	46.50%	
	High	21.1%	12.80%	

The sample is slightly different from Belgian population. The number of women interviewed is slightly higher than Belgian average but this difference with Belgian average is not significant at the 5% level. Women were more available than men during working days, which explain the difference. The number of Brussels residents interviewed is significantly under Belgian percentage. By grouping Wallonia and Brussels together, the sample is closer to reality (p=0.21). The number of urban residents surveyed is also too high. This may be explained by door-to-door methodology: it was easier for me to survey many persons in one city during one working day than in small villages. In rural areas, I had sometimes to make the survey in several neighbouring villages (same municipality) to get enough participants. The number of young under 25 years is significantly under Belgian population percentage.

¹⁰ Van Rompaey et al., 2011

¹¹ Statistics Belgium 2011 (Gender, Region, Age) 2015 (Education)

¹² According to chi-squared test

¹³ According to Van Hecke et al., 2009

¹⁴ Low educated : until lower secondary school; middle educated: higher secondary education and bachelor's degrees; high educated : master degrees and above

This is also a consequence of door-to-door methodology. When an adult was present in the house he answered the survey. Finally, low educated people were more likely to refuse to participate to this kind of survey (lack of interest, feeling of being incompetent). This explains why less low educated people were surveyed than expected.

2.3.2.1 Model fitting and regression

Along with my colleague, I digitized all landscapes to evaluate the percentage of each landscape parameter on photographs. Landscape parameters (or factors) are:

- Forest, woods and trees
- Greenery (gardens, roadsides)
- Farming land (meadows, fields)
- Water
- Vista: the perceived view angle (in relation with close/open aspect)
- Terrain elevation
- Cultural elements (historical)
- Man-made elements
- Weather conditions

We added man-made elements to the model as point elements. Indeed, this type of elements, like wind turbines, could have more effect than its effective size in the landscape.



Landscape EA4. Landscape in Ardennes and principle of digitalization

Then we built a regression model, using SPSS software. We used a general linear model fitting and regression analysis to detect which landscape parameters had a significant impact on landscape attractiveness. The table below gives a report the result.

Table 2.2 significance levels of landscapes parameter in model

Landscape parameter	Description	Categorical / Quantitative	Significance parameter	Significance level
Woods (Wo)	From isolated trees to forest	Quantitative	+	0.05
Greenery (GE)	Gardens, green roadsides	Quantitative	0	
Urbanisation (U)	Buildings, roads and paved surfaces	Quantitative	-	0.05
Agricultural land (AL)		Quantitative	0	
Water(Wa)		Quantitative	0	
Vista (V)	View angle (wide to closed)	Categorical	0	
Topography		Categorical		0.05
Flat (T1)	No undulations or slopes		-	
Low hill (T2)	Minor undulations or small slopes		0	
Steep hill (T3)	Major undulations or significant slope		0	
Historical and cultural elements (HCE)	Churches, Chapel, traditional farm	Categorical	0	
Anthropogenic point element (APE)		Categorical		0.05
- No (APE0)			+	
- Yes(APE1)			0	
Weather	Type of weather	Categorical		

This table shows the relative influence of each landscape parameter (land use, terrain, and point elements) on perceived landscape attractiveness. Concerning land use, the percentage of woods and urbanisation were found to have a significant influence. Concerning terrain, flat landscapes had a significant influence. Concerning point elements, anthropogenic structures such as wind turbines, cranes, and electric pylons had an influence. Their absence has a positive influence on visual quality.



Landscape FA6. Forested landscape in Fagne schist depression. Forest dominates this landscape which was judged as highly attractive. According to the model, percentage of woods is positively correlated with visual quality.



Landscape CA4. View on backyards in Brussels green belt area. Urbanization dominates this landscape which was judged poorly attractive. According to the model, attractiveness decreases when the percentage of urbanization increases.



Landscape DA1. Belgian coast hinterland with sand dunes and drainage channel. Anthropogenic point elements (APE) in foreground and mid ground played a negative role. This influence is linked to their presence (point element) rather than their percentage of land use. Landscapes without APE are more attractive.



Landscape GA6. Ploughed field in Flanders (Waesland). The flat topography has a significant negative influence on attractiveness.

The four significant indicators were used to construct a landscape appreciation model:

$$VQ = -0.1183 + 0.9427 W_0 - 1.6817 U - 0.1847 T_1 + 0.2386 APEO^{15}$$

A jack-knife procedure was used to validate the model.

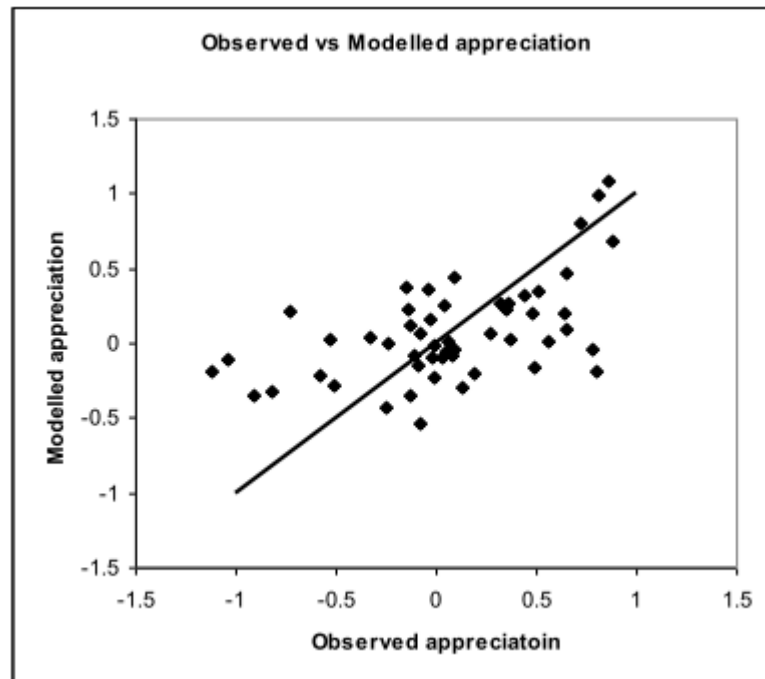


Figure 2.4 Observed vs modelled landscape appreciation (Van Rompaey et al., 2011)

On this figure, the line visible is the 1:1 line. The root-mean-square error of the jack-knife procedure is 0.41, the root-mean-square error of the model is 0.38.

According to the model, the percentage of woods, the absence of man-made elements, and undulated terrain positively contributed to landscape attractiveness (respectively strongly, fairly, and slightly). On the other hand, the percentage of urbanisation and a flat terrain contributed negatively to the attractiveness (respectively strongly and fairly).

Using this model it is possible to predict the attractiveness of rural Belgian landscapes from people's point of view. However, as any other predictive model, this gives just an indication of a real landscape value (Wherrett, 2000).

¹⁵ In LACSAWEP final report, the equation of the model included "0.0002 T₂", but I discarded this, as T₂ (minor undulations) is not significant according to the regression

2.3.2.2 Influence of wind turbines on landscape attractiveness

Then we modelled the impact of wind turbines in landscapes in comparing ratings with and without simulations:

$\Delta\text{-VQ} = a + b * \text{VQ}$ (with $b > 0$) with: $\Delta\text{-VQ}$ = Delta Visual Quality = VQ original landscape – VQ simulated landscape and VQ = visual quality of the original landscape.

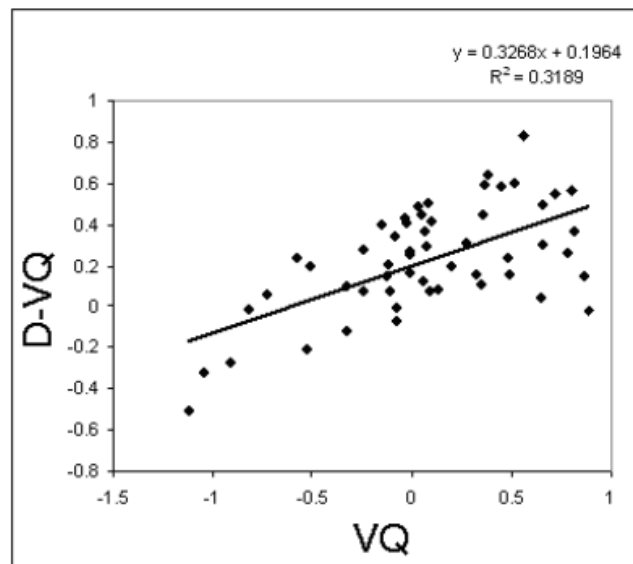


Figure 2.5 variation in visual quality related to initial visual quality (Van Rompaey et al., 2011)

There is a positive relation between both variables with $R^2 = 0.31$. This coefficient of determination is rather weak but significant at a 5% confidence interval. On this figure one can see that wind turbines simulations could have a positive impact on landscapes with initial low quality ($\Delta\text{-VQ}$ negative). On the other hand, they could have a negative impact on high quality landscapes ($\Delta\text{-VQ}$ positive). However, this statement should be qualified since the coefficient of determination of the model is quite weak.



Landscape C6. Without turbines this landscape had a low perceived initial visual quality. With wind turbines the visual quality increased.

2.3.3 Spatial and socio-demographic influences

I grouped participants according to different characteristics. I applied Pearson's chi-squared tests to estimate the influences of socio-demographic characteristics on landscape attractiveness. Then I put these results into perspective with qualitative research findings.

To measure these influences, I grouped all scorings together. With this I aimed at analysing the way people were using the scale, not the intrinsic value of each landscape. This will give indication on perceived attractiveness towards landscapes in general.

The following tables give cell differences in contingency tables; that is how far apart are expected and observed values. The signs indicate if observed value is significantly higher (+ or ++), lower (- or --) or equal (not significantly different) to expected. Two "+" or two "--" indicate that the difference on this single cell is superior to the critical value of χ^2 .

2.3.3.1 Closeness of wind turbines

Table 2.3 Expected versus observed scores stratified according to perceived proximity of wind turbines

WT in the neighbourhood?		1	2	3	4	5	6	7	Mean
All landscapes	I don't know	=	=	=	=	=	=	=	5.10
	No	=	=	=	=	=	=	=	5.03
	WT planned	=	=	=	-	=	=	=	5.10
	Yes	=	=	+	=	+	=	--	4.89
No WT	I don't know	=	-	=	=	=	+	=	5.18
	No	=	-	-	-	-	+	++	5.12
	WT planned	=	=	=	-	=	=	+	5.20
	Yes	=	=	=	=	+	=	=	5.01
With WT	I don't know	=	=	=	=	=	=	=	4.96
	No	=	+	+	+	=	-	--	4.84
	WT planned	=	=	=	=	=	=	=	4.90
	Yes	=	+	+	=	+	-	--	4.65

As suggested by this table, people living near wind energy parks were found to be more critical towards landscapes in general. They used less the highest point on the scale.

2.3.3.2 Administrative region

Table 2.4 Difference between expected and observed scores stratified to administrative region

Region		1	2	3	4	5	6	7	Mean
All landscapes	Flanders	--	-	=	+	=	=	=	5.05
	Wallonia	++	=	=	-	=	=	=	4.99
	Brussels	=	+	=	=	=	=	=	4.90
No WT	Flanders	--	--	-	=	-	+	++	5.17
	Wallonia	++	=	-	--	=	+	=	5.05
	Brussels	=	+	=	=	=	=	=	4.95
With WT	Flanders	=	+	++	++	+	--	--	4.81
	Wallonia	++	=	=	=	=	=	-	4.86
	Brussels	=	+	+	=	=	=	=	4.80

Flanders residents were found to be more positive towards rural landscapes. They significantly used less often the lower points of the assessment scale, whereas Walloons did not hesitate to use the lowest point (not attractive at all). This difference was particularly noticeable on landscapes without wind turbines. On landscapes with wind turbines differences smoothen. Flanders residents used more the middle of the scale, whereas Walloons did not hesitate to use more often the lowest point.

This difference could be linked to cultural differences (language) and to the local landscape types. As Flanders is far more marked by urbanization than Wallonia, this second hypothesis seems more pertinent. This hypothesis could be explored by analysing urbanization level influence.

2.3.3.3 Level of urbanization

Table 2.5 Expected versus observed appreciation scores stratified according the level of urbanisation of the selected municipalities

Urbanisation		1	2	3	4	5	6	7	Mean
All landscapes	Urban areas	=	=	+	=	=	=	-	4.92
	Strong	=	=	=	=	=	=	=	5.05
	Moderate	-	=	=	=	=	=	=	5.06
	Weak	+	=	-	=	=	=	=	5.04
No WT	Urban areas	=	=	=	=	=	=	=	5.01
	Strong	=	-	=	=	=	=	+	5.16
	Moderate	-	-	-	=	=	+	+	5.15
	Weak	=	=	-	-	=	=	++	5.14
With WT	Urban areas	=	-	++	+	=	-	-	4.74
	Strong	=	=	+	=	=	-	-	4.84
	Moderate	=	=	+	+	=	-	-	4.87
	Weak	+	+	=	=	+	-	-	4.84

The municipality of participants' domicile was used to determine the urbanization rate of living places. In Van Hecke and al. (2009) typology Belgian municipalities are classified both according to their level of morphological urbanisation (A to D) and functional urbanisation (0 to 3). In our analysis we kept morphological character as it was linked to landscape aspect:

- A. Urban areas (cities and their agglomerations);
- B. Municipalities with strong morphological urbanisation;
- C. Municipalities with moderate morphological urbanisation;
- D. Municipalities with weak morphological urbanisation.

Residents from urban areas were found to be more critical towards landscapes in general, using less the highest point of scale. Few significant differences were found in the scale use among residents living out of urban areas, whatever their urbanization (B to D). On landscapes with simulations differences disappeared; the highest points of scale (6-7) are significantly less uses in all types of municipalities.

2.3.3.4 Gender

Table 2.6 Expected versus observed appreciation scores stratified according the gender

Gender		1	2	3	4	5	6	7	Mean
All	Male	=	=	+	+	=	=	--	4.94
	Female	=	=	=	-	=	=	++	5.09
No WT	Male	=	=	=	=	=	=	=	5.05
	Female	=	=	--	--	-	+	++	5.17
With WT	Male	+	+	++	++	+	--	--	4.72
	Female	=	+	=	=	=	=	--	4.92

Significant influences of gender were found. Women are more positive towards landscapes than men in all circumstances (higher mean ratings). They also used significantly more the highest point on the scale on landscapes without wind turbines. Both genders underrated landscapes with turbines; the highest point is less used by both. However, males ratings were transferred on the central part of scale (3 to 5), whereas female ratings were transferred on lower points (2).

2.3.3.5 Education

Table 2.7 Expected versus observed appreciation scores stratified according level of education

Education		1	2	3	4	5	6	7	Mean
All landscapes	Low educated	+	=	=	-	-	=	++	5.08
	Middle educated	=	-	=	=	=	=	=	5.05
	High Educated	-	+	+	+	=	=	--	4.87
No WT	Low educated	=	=	-	-	-	=	++	5.14
	Middle educated	=	--	--	=	=	+	++	5.16
	High Educated	-	=	=	=	=	=	-	4.99
With WT	Low educated	++	=	=	=	=	=	=	4.97
	Middle educated	=	+	+	+	+	-	--	4.84
	High Educated	=	++	+	++	=	-	--	4.64

High educated ratings were always under the two others groups' ratings. Low educated participants tended to overrate landscapes; they use more the highest point on the scale. High educated people were far more critical. The difference was striking on

landscapes with wind turbines. Once again mean ratings lowered with wind turbines. Depreciation of wind energy landscapes is less pronounced among low educated participants. However, their ratings are more transferred on the lowest point than among the two other groups.

This finding – a more critical regard towards landscape- was consistent with our findings in the qualitative research line. The opposition to the wind energy project came first from educated people, of whom nobles and university graduated, whereas the working class less mobilized to fight against the project. This finding is also consistent with many observations in other landscape studies: low educated people are generally more favourable toward man-made landscapes.

2.4 Summary

The first main finding is that some landscape features have an influence on their assessment. The model highlighted significant influences of forest cover, built-up area, terrain, and anthropogenic factors on perceived attractiveness of landscapes. To sum up, land use, topography, and integrity influence landscape attractiveness. Positive contribution of mountainous landscapes to landscape preferences was highlighted by several academics (e.g. Hammitt et al., 1994). In landscape character assessment topography also contributes positively to landscape quality (e.g. Swanwick, 2002). The model show significant negative influence of flat terrain on landscape attractiveness. In contrast with literature, water did not influence significantly. Water positive influence was usually measured on picturesque landscapes (streaming water in idyllic landscapes). Water is only present on 9 pictures on 54 in the sample. It did not always present a pleasant aesthetic aspect, such as canalized water close to port infrastructures and drainage channels in Flanders. Forest cover, and more generally, the presence of trees, is the main positive contributor in the model. This statement will have to be qualified with further research. In the model all types of forest covers were taken into account. Other academics (e.g. Karjalainen, 1996) have discussed the need in qualifying this influence of forest cover according to its type.

Secondly, the impact of wind turbines in landscape is contextual and related to the landscape structure. Windfarms will impact landscapes differently according the initial landscape context. In low attractive landscapes, wind turbines could often improve attractiveness. Installing wind turbines in low attractive landscape could be suggested on this base from a planning perspective. However, this should be qualified since many studies, including the Lacsawep project, found many other influences than landscape

concerns on the shaping of attitudes towards wind energy projects (e.g. Devine-Wright, 2005; Wolsink, 2007; Van der Horst, 2007).

Thirdly, the use of assessment scale can vary according to the social groups and their landscape experience. Participants from Flanders were generally more positive towards rural landscapes than participants from Wallonia. Urban residents have higher standards for landscape attractiveness. Women are easier to please than men. Education plays a huge role in the way people are attracted by landscapes. Less educated people are globally more positive towards landscapes.

And fourthly, people who have experienced windfarms change their viewpoint on landscapes (including landscapes without windfarms). This finding added weight to our hypothesis from qualitative interviews: the wind energy project raised awareness towards their landscapes. They also seemed more negative towards wind energy landscapes than people living farther from projects (lower mean ratings). However people living far from wind energy parks also underrated wind turbines landscapes. With field observations during survey we might hypothesize an explanation. People living close to wind turbines parks were more able to detect their presence in landscapes photographs or were seeking them more systematically.

2.5 Methodological concerns and research perspectives

At the time of this first part of my research, surveying as many people was quite innovative. Much landscape research involving people had been conducted around the world since the 1970's. Belgium was lagging behind in this. For instance, Serge Schmitz deeply surveyed 65 persons in Ardennes during the 90's (Schmitz, 1999, 2001). In the wake of European Landscape Convention (ELC), this type of research was developing. For example, Elke Rogge (Rogge et al., 2007) surveyed 130 persons in a small area of Brussels green belt. Marjanne Sevenant surveyed more than 600 persons in Ghent's area (Sevenant and Antrop, 2009). The survey we conducted with my colleagues was the first to explore landscape preferences at the whole scale of Belgium. Moreover this survey concerned a hot topic in 2007.

The number of participants to the survey is very high (n=1542) and various (many different characteristics). Therefore I assumed that this sample may be representative of Belgian population, even I had difficulties to reach more isolated groups. Belgium rural landscapes diversity is also represented through selected landscapes with landscapes from flat areas (Polders) to deep valleys in Ardennes, including cultivated, dairy farming, and forested landscapes, but excluding urban areas. This allows a double

generalization of the findings. First the model might be applied to all Belgian rural landscapes. At the end of the research, my colleagues proved that the model was at least operational in flat landscapes (see Van Rompaey et al., 2011: p. 49-55)¹⁶. Second, landscape attractiveness may be estimated with good accuracy with the model. This gave interesting perspectives to urban planners in terms of energy policy: where are the most suitable areas to build new wind turbines?

One of the main assets of this research project is the combination of quantitative and qualitative research. As part of my own research in this project, I participated to both parts. The quantitative part was presented in this section. In addition, I briefly summarized qualitative part in this section but this was wandering from the subject of this PhD-research. Quantitative methodologies allow to survey many respondents in a short time. Qualitative research offers clue to understand landscape attitudes towards wind turbines, but take longer. Each part enlightens and enriches the other one.

In this part of research, landscape was modelled with parametric statistics because this allows to go further in modelling than with non-parametric statistics. Many researchers have published results with ordinal variables using parametric statistics, e this is not rigorous from a theoretical viewpoint. Using parametric statistics also imply two conditions: the distribution of the residuals must be normal and the variances must respect the homoscedasticity. This is not fully the case as some people gave always the same score to all landscapes. Data gathered through attitudes scales may just be assumed to be ordinal (Donneau, 2013). Theoretically this implies the use of non-parametric statistics especially since all scores gathered were not normally distributed. In the model, the scores were standardized by observers. Standardization may help to reduce normality bias, except when homoscedasticity of ratings is not present. This was problematic when respondents gave the same score to all landscapes (this occurred 5 times) but their ratings were dismissed during the analysis. However, if these conditions are theoretically required, many modelling techniques are often assumed to be strong enough to overcome this.

To explore the differences across respondents groups, I applied non-parametric statistics (Pearson's chi-squared test) to the sample. As Chi-square distribution is asymptotic, this test requires thus large sample. No expected value could be under 5. Some authors tolerate low expected values if there are at least 80% of values equal or

¹⁶ This part is not from my own research

above 5. To overcome the problems of adequate expected cell counts, all the scorings (a little less than 1542×18 given some missing data), I grouped all ratings together. This gave more information on the way people were using the scale, not really on the value of landscapes. This became an overall appreciation of landscape. This opens some perspectives of investigating differences according to landscape types, to enrich the finding of the link between landscape types and wind turbine acceptance. Pearson's chi-squared test (Pearson, 1900) has been few criticized and remained a good way to analyse contingency tables. However, this test does not take into account the ordinal character but only nominal. Stronger statistic test may be used for ordinal data (Donneau, 2013).

Some technical weaknesses may also be underlined. First, due to Belgian meteorological variability, it had not been possible to get homogeneous weather conditions on all the photographs. This could have had an unmeasurable impact on some ratings. I will elaborate on this in the qualitative section of this PhD research (see chapter 4).

Next, some comments I collected during the survey tended to show that some people were evaluating the quality of the photographs instead of the attractiveness of landscape. Although it is acknowledged in literature that photographs are good landscape surrogate, an influence may not be excluded. Then, the survey was presented to participants as a survey on landscape preferences, not on landscape impact of wind turbines. As a consequence, all participants saw more landscapes without turbines than with the simulations. I drew conclusions on differences in perceived attractiveness with and without turbines, whereas these landscapes were not assessed by the same persons. In my opinion, this was not a big issue as the sample was assumed to be representative. Finally the landscape survey was designed to be almost only quantitative (but informed by participants' comments and with the qualitative part of research). As a consequence, there is a lack of understanding on people's motivations behind their assessments. Though, the exploration of social attitudes showed that the word landscape could be differently interpreted. On the one hand landscape is perceived and lived, on the other hand, landscape is a social construct. This problem emerged in conflicts towards wind energy (Vanderheyden and Schmitz, in press) with few real landscape preoccupations, in line with Schmitz's findings (1999, 2001). In this case landscape was used as an unanswerable argument against wind energy (van der Horst and Vermeylen, 2011).

Some sampling biases are also unavoidably present in the survey. First, the respondents' sample counts more women than men. The survey was partially done

during working hours, which do explain this slight but not significant overrepresentation. Next, cultural differences were based on residence place, not participant language. Of course, Flanders residents are mainly Dutch-speakers and Brussels and Wallonia residents are mainly French-speakers. However, some exceptions were encountered in areas close to linguist border and with foreign-born respondents in industrial places. For instance, in the French-Speaking municipality of Beauvechain (35 km east-southeast of Brussels), one third of the participants were surveyed in Dutch. However, this is not really a problem if we assume that differences in appreciation are more linked to the local landscape type than to the cultural background. International literature found significant differences when exploring preferences between very different groups (see literature review). Finally, I evaluated the level of education with the highest diploma received by the participant. This is just an indicator of the real level of education, which is influenced by many other factors than school curriculum.

I suggest to perform further analysis of data, from a different perspective with new research questions:

- Is the landscape sensitivity towards wind energy homogeneous among Belgians?
 - What is the influence of living (and working) environment on this sensitivity?
 - What is the real influence of socio-demographic factors?
- Do the types of landscape influence the variation of sensitivity (with or without wind turbines)?

I found a global trend in landscape preferences: Flanders residents were more positive towards landscapes in general. However, I found little information on the type of landscape overrated by them. With the landscape model I know that woods and absence of anthropogenic point elements are positively correlated to landscapes attractiveness; and that urbanization level and flat terrain are negatively correlated to this. My main questions fall thus into some sub-questions:

- Do Flanders residents prefer all types of landscapes or Flemish landscape?
- Is residence landscape type more influent than language influence?
- What types of landscapes are preferred by women, if any? Do they prefer farmed fields as found by Howley (2012)?

- Are Belgian anthropogenic landscapes less rejected by Belgian low educated people, as assumed in literature?
- What types of landscapes are preferred according to age?

3 Exploring differences in landscape preferences: a quantitative approach

Adapted from

Vanderheyden, V., Van der Horst, D., Van Rompaey, A., & Schmitz, S. (2014). Perceiving the ordinary: a study of everyday landscapes in Belgium. *Tijdschrift voor economische en sociale geografie*, 105(5), 591-603

3.1 Context

In the previous chapter, I analysed overall landscape perception. The aim was to measure the average point of view on landscapes, using mean values. Based on this average view, I tried to find which landscape features were the most influential including wind turbines. As I worked with photographs, I initially presumed people were doing visual assessment. This is not the case, especially on landscapes with windfarms, with the benefit of hindsight.

The size of the database (n=1542) offers both population and geographic representativeness. Although respondents did not evaluate all 108 landscapes, the participants sample size remains high and various. Each landscape photograph was evaluated from 151 to 183 times (with wind turbines simulations) and 320 to 361 times (without wind turbines). This allowed the global analysis that I presented in the last section.

This is also a first entry point to deconstruct the concept of landscape in the mind of people. In this section I will analyse preferences differences within the sample for each landscape photograph they were shown. However, I will be more prudent with analyses of wind energy landscapes, as they were evaluated half as many as landscapes without wind turbines.

In the previous section, I analysed preferences but with another perspective in mind: landscape features instead of landscape types. Landscape components do have an influence but the sum of each component does not make the whole landscape. Landscape should be apprehended as a holistic concept (e.g. Simmel, 1913; Antrop and Van Eetvelde, 2000). With the same data I shall analyse this variability within groups of observers according to landscape types.

3.2 Research questions and methodology

The size of sub-samples did not allow to perform multivariate analysis. I tested multivariate analysis methods on some landscapes but this did not give any interpretable results. I did not include them in this manuscript. In this section, I will focus on univariate analyses of the sample, using non-parametric statistics.

3.2.1 Methodology used in the paper

In the paper, I explored influence of each explanative variable separately. I used Pearson's chi-square tests. With this test no expected values may be below 5, or even 10 for small contingency tables. A less strict rule suggests to have not more than 20% expected values below 5. In this test usual tolerance is fixed at the 5% level. This means that, in average, this test produce one false positive in 20.

The size of sub-samples did not allow to use the 7 points scale as it is (too many expected value below 5). Each landscape ratings were grouped according to their median. The classical median test take into account two groups: greater than median ($>$) and under or equal to median (\leq). However, people who ranked landscapes on the median were pertinent in our analyses. We kept three groups of ratings: less than, equal to or greater than median. Contingency tables and expected value tables were built; chi-squared test were applied. Some tests for landscapes with wind turbines were still doubtful in reason of sample size. As a consequence wind energy landscapes were deliberately dismissed in the paper.

I applied Pearson's chi-squared tests to the following explanative variables, determined for each participant:

- Administrative region
- Education level
- Age
- Gender
- Type of locality

In addition to these tests I calculated Spearman's rank correlation coefficient for age (continuous variable) and education level (discrete ordinal variable). This gives an indication both on the relationships between the variables but also the direction of variation, if any. For nominal variables (region, gender, and type of locality) I calculated Cramér's V and Tschuprow's T to measure the strength of association between variables.

Methodological insert 1 (Everitt, 1977)

Pearson's chi-squared test: this test was developed by Karl Pearson (1900) to test whether any observed difference (or distribution) within population significantly differ from its expected/theoretical value.

$$\chi^2 = \sum_{i=1}^k \frac{(O_i - E_i)^2}{E_i}$$

Spearman's rank correlation coefficient: this coefficient allows to estimate relationships between two variables. This coefficient is calculated with Pearson's correlation coefficient using ranks instead of variables themselves. Contrarily to Pearson's correlation, its parametric equivalent, good correlations may be not linear but just monotonic.

$$\rho = \frac{cov(r g_x, r g_y)}{\sigma_{r g_x} \sigma_{r g_y}}$$

Cramér's V: Based on Pearson's chi-squared test, this coefficient (from 0 to +1) measures the strength of association between two nominal variables. Cramér's V is the square root of chi-squared value divided by the maximal chi-squared value (or in other words divided by n (grand total) and $\min(k-1, r-1)$, where c is the number of columns and r the number of rows).

$$V = \sqrt{\frac{\chi^2/n}{\min(r-1; c-1)}}$$

Tschuprow's T: this coefficient (from 0 to +1) is close to Cramér's V and also measure associations between nominal variables. When the contingency table is squared, V and T are equal.

$$T = \sqrt{\frac{\varphi^2}{\sqrt{(r-1)(c-1)}}}$$

Wallonia and Brussels were grouped together because Brussels participants sample was too small. In Brussels most surveys were done in French. Flanders sample was big enough. This grouping with Wallonia (mainly French-Speaking) seemed more appropriated from a cultural point of view. However, this choice remains questionable from a landscape point of view as more similarities may be found between Brussels and

major Flemish cities (Ghent, Antwerp) than with major Walloon cities (Liège, Charleroi).

Low, middle, and high education groups were determined according to the highest degree participants got:

- low educated: no degree to lower secondary school, including primary education;
- middle educated: from higher secondary education until bachelor's degree (3 years after secondary school)
- high educated: master degree (university or not) or equivalent and above (at least 4 years)

Three age groups were chosen: under 25, 25 to 60 years and 60 and above. They are not equivalent in size. This choice was made for sociological reason. Less than 25 years people often still live with their parents. They have not been in position to choose their own residence. The adults aged up to 60 grew up with the huge landscape changes in Europe as they were born just after the war. The older participants (more than 60 years) are mainly retired. Their youth took place in a very different socio-economic and cultural era. They also have had chances to move home in their lives and had four decades longer to develop a stronger relationship and identity with the landscapes surrounding them.

The urban or rural nature of domicile was determined according to Van Hecke et al. typology (2009), as in the previous section. Major cities agglomerations and municipalities with strong morphological urbanization were classified as urban. Municipalities with medium and weak urbanization were classified as urban. Functional urbanization was not taken into account.

The results were classified in three groups: statistically significant ($p < 0.05$), almost significant ($0.05 < p < 0.10$) and not significant. For significant and almost significant, I calculated significance by cell to determine which group contributed to the significance.

Each landscape type was determined by the co-authors. A statistical test (Fisher exact test) was used to determine if some landscapes characteristics were more present in non-consensual landscapes. A higher presence of landscapes from a specific type among non-consensual landscape could indicate why this difference is present. Working with small sample size (54 landscapes) a small variation may have a big influence on the statistical significance. The hypotheses I will make in this section

remain just working hypotheses. Comments gathered during the survey gave clues to build the hypotheses.

3.2.2 Methodology used in this dissertation

The methodology is slightly different. I opted for more powerful statistical tests less sensitive with smaller samples. The results will thus be slightly different than in the paper.

I conducted tests both on landscapes with and without simulations.

First I analysed spatial influences: how the place of residence may influence landscape preferences? As in the paper, I explored the influence of place of residence (region, urban or rural area). I also explored the influence of wind energy project proximity, but it did not give interpretable results (see appendix for further details).

Then I analysed how cultural factors may shape people's way of assessing landscapes? I will especially focus on age and education influences, as many studies found good correlations between age/education and landscape preferences. Gender influence will also be analysed

For variables with two modalities I calculated the Mann-Whitney U. I kept p-value adjusted for ties. This test is the non-parametric equivalent to Student's t test and allows pairwise comparisons. For variables with more than two modalities (Age, Education) I applied the Kruskal-Wallis ANOVA. This is the non-parametric equivalent of the One-way ANOVA. This test was completed by Dunn's test which allows to measure the significance between each pair of modalities. In addition I calculated Spearman's rank correlation coefficients for explanative variables at least ordinal: age, education, and level of urbanisation. Finally I will put Lacsawep results into perspective with the differences. In other words: did a group contribute to the decrease or increase in appreciation induced by wind turbines.

For ease of reading, I will present here summary tables. Tables with significant (5% level) and almost significant (10% level) differences are available in appendix.

Methodological insert 2

Mann-Whitney U: this non-parametric test allows to determine if two groups (samples) come from the same population. This is the non-parametric equivalent to Student's t test but does not require any specific distribution. However, as well as for t-test, variances must be equal (homoscedasticity).

- Assigning a numeric rank to all observations, ranks from both samples are added to give R_i .
- Calculating U for both samples with the formula:

$$U_i = R_i - \frac{n_i(n_i + 1)}{2}$$

- Keeping the smaller value of U and consulting significance tables.

Kruskall-Wallis ANOVA: this non-parametric test allow to determine if three or more groups (samples) come from the same population. This is the non-parametric equivalent to one-way analysis of variance but does not require any specific distribution. However, as well as for one-way ANOVA, variances must be equal (homoscedasticity).

$$H = (N - 1) \frac{\sum_{i=1}^g n_i (\bar{r}_{i\cdot} - \bar{r})^2}{\sum_{i=1}^g \sum_{j=1}^{n_i} (r_{ij} - \bar{r})^2},$$

Dunn's test: this post-hoc test is used after computing Kruskal-Wallis ANOVA. When this last is significant, Dunn's test compares each sample pair possible to determine which pair(s) is significantly different from another.

3.3 Results

3.3.1 Respondents sample

The respondents sample is the same than in chapter 2 but I will be analysing data under another point of view. The following tables compare the sample and Belgian population on the 1st January 2008 (Source: Statistics Belgium¹⁷). Due to the sample size, only univariate statistics could be applied¹⁸.

Table 3.1 Respondent sample¹⁹

	Belgium (2008)	Sample
Brussels	9.83%	4.86%
Flanders	57.76%	59.99%
Wallonia	32.41%	35.15%
Male	48.98%	45.85%
Female	51.02%	54.15%
< 25	20.11%	11.82%
25-60	54.58%	64.03%
60+	25.31%	24.16%
Low	40.70%	22.63%
Middle	46.50%	56.42%
High	12.80%	20.95%

3.3.2 Description of selected landscapes

The panoramic photographs of all landscapes are printed in appendix of this dissertation. I also joined a bookmark with thumbnails of all landscapes to guide the reader. The main characteristics of landscapes are described in a table in appendix. A map with the location of landscapes is available in appendix.

¹⁷ Statistics Belgium 2011 (Gender, Region, Age); 2015 (Education)

¹⁸ Multivariate analyses were performed on some landscapes but did not give any interpretable results. They were discarded in this dissertation.

¹⁹ This table is almost the same as in Chapter 2, except for age groups (3 instead of 4). A detailed table is available in appendix with participants' distribution by set.

3.3.3 Residential influences on landscape preferences

Table 3.2 Number of landscapes differently assessed according to spatial criteria

	Without wind turbines				With wind turbines			
	p < 0.05	0.05 < p < 0.10	p > 0.10	Main trend	p < 0.05	0.05 < p < 0.10	p > 0.10	Main trend
Region	14	4	36	Flanders overrate (16/18)	9	7	38	Wallonia-Br. Overrate (12/16)
Urban / rural	9	6	39	Rural over (10/15)	10	3	41	Rural over (9/13)
Wind Energy projects ²⁰	4	4	46	No WEP overrate (8/8)	4	8	42	No WEP Overrate (11/12)

As the Table 3.2 suggests, only a few landscapes are differently assessed according to the criteria. However, among overrated landscapes, landscapes without wind turbines were overrated in Flanders whereas landscapes with wind turbines were overrated in Wallonia-Brussels. This is consistent with chapter 2 where I found that Flanders participants used more frequently the highest points on the scale for landscapes without windfarms²¹. For the other criteria, we cannot observe a reversal of trend. Landscapes were more overrated by rural people with and without windfarms. People without wind energy project in their neighbourhood overrated a few landscapes, both with and without wind farms.

²⁰ Are there any wind energy projects in your neighbourhood (Yes – No but they are planned – No – I don't know). The two first were grouped together, as well as the two last.

²¹ I attributed this to a lower level of requirements towards landscapes globally more urbanized in Flanders.

Table 3.3 Landscapes overrated and hypothesised influencing features (residential influences)²²

	Type of difference	Hypothesised influencing features		Landscapes with general trend	Landscapes without general trend	p (Fisher's exact test)	Hypothesis
Without windfarms	Flanders more attracted	Chessboard landscapes	Yes	9	6	0.0042	Link
			No	4	32		
	Flanders more attracted	Slightly undulating / small ridge	Yes	7	6	0.0352	Link
			No	9	32		
	Urban less attracted	Dark forest in background	Yes	3	7	0.2668	No conclusion
			No	7	37		
With windfarms	Flanders more attracted	Chessboard landscapes	Yes	2	13	0.3064	No conclusion
			No	2	37		
	Flanders more attracted	Slightly undulating / small ridge	Yes	0	13	0.3202	No conclusion
			No	4	37		
	Urban less attracted	Dark forest in background	Yes	4	6	0.0499	Link ²³
			No	5	39		

3.3.3.1 Flanders vs Wallonia-Brussels

At first glance, no clear geographical pattern of explanation could be identified to explain difference between Flanders and the two other regions. In both cases, overrated landscapes were both Flemish and Walloon landscapes. Only 3 same landscapes overrated in Flanders (without wind turbines) were overrated in Wallonia and Brussels (with wind turbines).

Two explanative hypotheses may be elaborated:

- First, this difference was due to a sampling bias. Indeed same landscapes with and without wind turbines were assessed by different observers. However, respondents and landscapes samples were built to be as representative as possible (see chapter 2). Landscapes sets were representative samples of all landscapes, whereas observers were representative samples of all observers.

²² No influencing feature could be hypothesized concerning the proximity of wind energy projects

²³ Just under 5% level, it would be preferable to avoid any conclusion due to sample size of respondents

- Second, this difference is due to the presence of wind farms. As found in the previous chapter, wind turbines in landscapes induced underrating or overrating according to landscape types.

This suggested an interesting research question: what types of landscapes are overrated in Flanders and in Wallonia-Brussels? This can be written with other words: does landscape familiarity influence landscape preferences? A careful examination of non-consensual landscapes was made by Serge Schmitz and me. This double expert analysis raised two research hypotheses.

- 1) Flanders residents are more attracted by landscapes with a plot pattern observable on many Flemish rural landscapes (chessboard landscapes)
- 2) Flanders residents are more attracted by slightly undulating landscapes (not too flat, not too hilly)



Landscape AA6. This landscape from Hageland region (central Flanders) presents both small land plots (giving a chessboard look) and slight unevenness. It was significantly overrated by participants from Flanders ($p \approx 0$).

The first hypothesis is linked to the look of Flemish cultivated fields as compared to Walloon fields. Flanders is far more densely populated (around 450 inhabitants per km^2) than Wallonia (around 200 inhabitants per km^2). Agricultural spaces are scarcer in Flanders than in Wallonia. As a consequence farming is more intensive and land plots are globally smaller in Flanders. The Flemish average farm size was 25 ha in 2013, 8.4 ha in 1980; the Walloon average farm size was 55.6 ha in 2013, 20.8 ha in 1980 (Statistics Belgium 2014). This gives a chessboard look to many Flemish farming landscapes: smaller plots with various crops and plants. If familiarity influences positively landscape preferences, chessboard landscapes should be more often overrated in Flanders. I applied Fisher exact test to verify this hypothesis. In the tests I separated landscapes with and without turbines due to the probable influence of wind turbines on landscape attractiveness.

On landscapes without turbines the p-value is largely below tolerance level ($p=0.0042$). The link between chessboard look and overrating in Flanders appears highly probable. This is not the case for landscapes with wind turbines, in which I did not find any

statistical evidence of link ($p=0.3064$). In this case no conclusion may be drawn. The difference could also be a matter of chance.

Two possible explanations emerged from this last finding. First wind turbines could perturb preferences. Does the vertical size of one turbine (around 100 meters) perturb the perception of the horizontal structure of landscapes? Secondly, the sample of observers- different and smaller – influenced the results. The smaller the sample, the higher are the uncertainties and the influence of an individual variation. As all different photo sets with wind turbines are present, the first hypothesis is plausible. However, this cannot be clearly demonstrated now. This range of indications must be put into perspective in view with further qualitative results.

The second research question in this section was: are Flanders residents more attracted by slightly undulating landscapes? Flanders terrain is globally flat and might be perceived as monotonous. Literature often found positive influence of unevenness on landscape preferences: the more mountainous, the most attractive. However, terrain perception is relative. Small ridges in globally flat landscapes will be noticed, whereas higher difference in elevation may go unobserved in uneven landscapes (Christians, 1982; Brow et al., 1986). Small ridges, slight undulations, and low hills are less frequent in Flemish flat landscapes. In Wallonia, unevenness is more frequent. Small variation in land relief might be enough to break monotony of flat landscapes from Flanders residents' point of view, not from Wallonia residents' one. This type of landscapes could be overrated in Flanders.

According to the Fisher test this hypothesis could be validated ($p=0.0352$). This is not consistent with the paper findings in which the test suggested to avoid any conclusion on this hypothesis²⁴. On landscapes with wind turbines the p value is largely above conventional significance level. The risk of wrong conclusion is too high. I could thus not conclude a link between both variables (nor reject it). Could wind turbines, due to its size, perturb the perception of smaller unevenness?

In the previous chapter, I also found difference towards wind energy landscapes according to residence administrative area. Walloons seemed more negative towards wind energy in general, using more often the lowest point on the scale (see chapter 2).

²⁴ In the paper (Vanderheyden et al., 2014) I used chi-squared test which is less robust than Mann–Whitney U test.

But on some landscapes it was not clear whether increase or decrease in appreciation could be linked to the place of residence or could be observed throughout the country.



Landscape CB6. This view shows an industrial estate in Lommel (Dutch-Belgian border, 30 km south to Eindhoven) with simulation of wind turbines.

This view was one of the Lacsawep suggested landscapes for hosting wind turbines; they increased average assessment. According to the present analysis this overrating with wind turbines seemed mainly due to observers from Wallonia and Brussels areas.

However, an increase in appreciation could also only be a matter of chance. The two following Walloon landscapes were overrated in Wallonia-Brussels. On the first landscape (DB4), wind turbines increased appreciation; on the second (AB4), they decreased appreciation. However, on both landscapes the simulations were hardly visible in background. It is not clear whether they were or not seen by all observers. Indeed, during the survey, I observed that people already used to wind energy (or feeling more concerned with this) seemed more able to detect wind turbines in background.



Landscape DB4. View on the edge of Ardennes edge between Gedinne and Beauraing (French-Belgian Border), with WT simulation on the right in background.

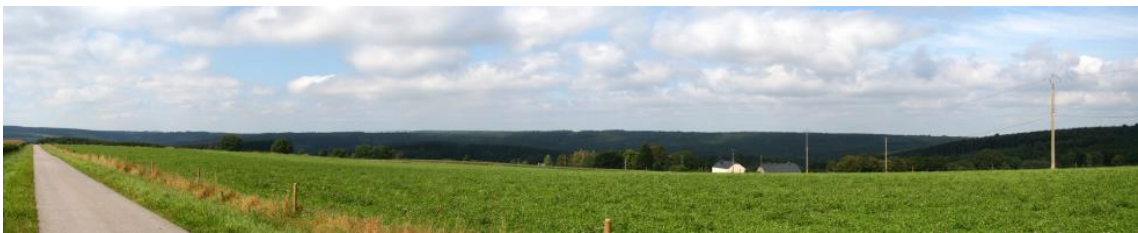


Landscape AB4. View on Meuse terraces area near Liège with WT simulation on the left in background.

3.3.3.2 Urban / rural municipality²⁵

As shown in Table 3.1 (page 62), most landscapes did not present any difference according to the rural or urban nature of participants' domicile. 10 landscapes without windfarms (on 15) were overrated in rural areas. The same trend is observable on landscapes with simulations. Spearman's rank correlation coefficients (see table in appendix) are very weak (between 0.10 and 0.20) or even not significant (at 5% level), below 0.10. Negative correlations indicate overrating by rural inhabitants; positive correlations indicate overrating by urban inhabitants.

In Vanderheyden et al. (2014), we hypothesized an influence of forest, in line with previous findings²⁶. Dark forest could be seen as frightening dark mass less frequented by urban people. On the contrary rural people who are more familiar with forest might see them differently (as a place they know or at least similar).



Landscape CA3. View on Ardennes area in Couvin area (French-Belgian border). The forest in background darkens the picture. This landscape was overrated by rural people. Mann–Whitney U test $p = 0.01$, $\rho = -0.13$



Landscape FA6. View on the Fagne schist depression. The vapour plumes of the nuclear power plant in Chooz, France can be seen in background on the left. They were almost never spotted by observers. This view was overrated by rural people. (Mann–Whitney U test $p = 0.047$, $\rho = -0.13$)

²⁵ To calculate Spearman's rank correlations coefficients, I used the four levels of Van Hecke et al.'s typology (2009) going from A (urban areas) to D (weak morphological urbanization), including strong (B) and average morphological urbanization. Municipalities were grouped into urban (A and B) and rural (C and D) to apply Mann-Whitney U test. Respondent living in urban agglomeration (A) were too few to be isolated as I did in Chapter 2.

²⁶ Significant influence of forest in the model

On landscapes without wind turbines, Fisher exact test is highly over the tolerance level ($p= 0.2668$). The test on landscapes with wind turbines is slightly upon the tolerance ($p=0.499$). The risk seems too high to validate this hypothesis at first glance. Further research (e.g. qualitative) could be useful to validate or invalidate this hypothesis

3.3.4 Cultural influences on landscape preferences

Table 3.4 Number of landscapes differently assessed according to cultural²⁷ criteria

	Without wind turbines				With wind turbines			
	p < 0.05	0.05 < p < 0.10	p > 0.10	Main trend	p < 0.05	0.05 < p < 0.10	p > 0.10	Main trend
Education	13	3	41	High educated underrated / low educated overrated	11	8	35	High educated underrated / low educated overrated
Age	26	1	27	Young under / Old over	14	0	40	Young under / Old over
Gender	11	4	39	Women over	3	3	48	Women over

Table 3.4 shows little variation according to cultural criteria, except for age where 50% of the landscapes were differently attractive to age groups (without windfarms). This trend is less strong on landscapes with wind turbines.

²⁷ Cultural in the sense of socio-demographic influences

Table 3.5 Landscapes overrated and hypothesised influencing features (cultural influences)

	Type of difference	Hypothesised influencing features		Landscapes with general trend	Landscapes without general trend	p (Fisher's exact test)	Hypothesis
Without windfarms	Low educated over / High educated under	Man-made landscapes	Yes	12	1	0.0000	Link
			No	11	30		
	Older over / Younger under	Buildings very visible	Yes	12	14	0.0897	No conclusion
			No	7	21		
Without windfarms	Women over	Worked field (care, stewardship)	Yes	10	7	0.0011	Link
			No	5	32		
With windfarms	Older over / Younger under	Buildings very visible	Yes	7	19	0.4385	No conclusion
			No	6	22		
With windfarms	Women over	Worked field (care, stewardship)	Yes	4	13	0.0707	No conclusion
			No	2	35		
All landscapes	Low educated over / High educated under	Presence of wind turbines in landscape	Yes	20	34	0.2055	No conclusion
			No	15	39		

3.3.4.1 Education level

According to literature low educated people should be less negative towards landscapes with man-made elements (de Groot and van den Born, 2003; Buijs et al., 2006; Buijs et al., 2009; Sevenant and Antrop, 2010). It is possible to consider all Belgian landscapes as man-made. However, in this dissertation man-made (or anthropogenic) landscapes are landscapes with artificial elements clearly visible, in foreground or middle ground. I did not consider all cultivated fields as anthropogenic, as they were often associated to nature in the comments. Inhabited landscapes were classified as man-made only when buildings were clearly visible. Landscapes with picturesque villages or building hidden between vegetation were not considered as man-made. In my approach, I did not consider a binary variable – man-made or not – but an anthropogenic gradient. This looked more coherent with Belgium landscapes.

Spearman's rank correlation coefficients (see table in appendix) are weak and most of them are negative. This sign indicates the general trend for perceived landscapes attractiveness: the more people were educated, the more they underrated; the less they were educated, the more they overrated. Coefficients close to zero do not automatically exclude all relationships between variables. They might correspond to underrating or overrating by intermediate age-group. However, this case occurred once and should be dismissed according to the Dunn's test.

6 landscapes were overrated by low educated people at the 5% level and 1 at the 10% level. 5 landscapes were underrated by high educated people at the 5% level and 1 at the 10% level. Two doubtful tests are dismissed. Both main trends may be considered as equivalent.

Other trends are marginal. Low educated underrated 3 landscapes (2 significant, 1 almost significant). Among these 3 landscapes, two are from Ardennes (forested valleys) and one from loamy plateau.

Landscapes overrated by low educated or underrated by high educated people are clearly among the most anthropogenic landscapes in the sample ($p = .0000$). As exact test p-value is very low, the risk of false positive is limited. As a consequence the link between man-made character and overrating by low educated people is highly probable as expected according to literature (see chapter 1).



Landscape BA5. This landscape from the market gardening area to the north of Brussels was clearly overrated by low educated people (ANOVA p-value = 0, Spearman's rho = -0.22). It was also overrated by low educated and older (at 5%); and by women and rural residents (at 10%).

The opposite trend was observed on one landscape with more natural look (not considered as ordinary landscape); low educated people underrated them. However, the landscape sample does not count enough "natural" landscapes to make any valid conclusion from a statistical point of view.



Landscape IA1. This iconic view on the Semois valley in Botassart - called the Giant's tomb - was clearly underrated by low educated people (median = 6, ANOVA p-value = 0.005, Spearman's rho = 0.12)

This finding must also be put in perspective with another iconic view on Semois valley, the view on Frahan village from Rochehaut (Bouillon).



Landscape BA2. View on Frahan from Rochehaut, Semois valley (median = 6, ANOVA p-value = 0.831, rho=0.02)

In this case, no significant difference is measured. At this stage of the analysis I have no clear explanation but it opened one question. Did the anthropogenic part of this landscape – the village – compensate the natural part?

Concerning these two famous Semois valley landscapes, however, their picturesque nature may have created a certain bias linked to place attachment or at least place

recognition. Both are listed on the Walloon heritage list as patrimonial landscapes and are tourist attractions. This will be discussed in Chapter 4.

The word “natural” should be relativized in view with Belgian landscapes: are there still any natural landscapes in Belgium? Even these Semois valley landscapes are not natural: forest were planted and are being managed. The conifer trees visible in the middle of broadleaf trees are quite recent in Ardennes landscapes (19th century). The meadows alongside the river were also restored (camping area removed in Frahan, riparian forest removed in Botassart).

Impact of wind turbines according to education level

Given the man-made nature of wind turbines, wind energy landscapes are obviously all anthropogenic landscapes. In this case the relevant question is: are landscapes with wind turbines more overrated by low educated or underrated by high educated than other landscapes? No clear relationship between presence of wind turbines and the level of education can be observed ($p=0.2055$)



Landscape B5. Market gardening landscape with WT (ANOVA p-value = 0.001, Spearman's rho = -0.25). The fence and the building were pointed as main contributors to its anthropogenic nature in the comments I gathered during survey.

Concerning this market gardening landscape both photographs with and without simulation of wind turbines were overrated by low educated people. I noticed an increase in appreciation on the landscape with WT in all groups. However, this increase is particularly blatant among low educated people. As the wind turbine on this simulation is clearly visible; I can reasonably confirm the positive influence of wind turbine highlighted in chapter 2. This was also the case for the view on Belgian coast hinterland (overrated by low educated at 5% level without turbines and à 10% level with the wind turbine). However, in this case the increase in appreciation was quite low (statistically not significant).



Landscape D1. Dune area with WT situated close to Blankenberge. Its anthropogenic nature was pointed as negative by many participants (buildings on the coast dam, tramway and its electric lines, and urban lights). Increase in appreciation not significant with WT.

3.3.4.2 Age influences

Many studies found evidence of age influence on landscape preferences. Differences are often marked between young and old people. The first are more likely to prefer wilderness, whereas the second prefer inhabited landscapes (Van den Berg and Koole 2006, Lindemann-Matthies et al., 2010). Preference for inhabited landscapes is often explained by the reassuring nature of inhabited landscapes. Preference for wilderness is often explained by a sense of freedom.

To apply Kruskal-Wallis Anova test I grouped participants to the study in 3 age groups: under 25 years, from 25 up to 60 years, and 60 years and more. Out of precaution I dismissed significant results with the Kruskal-Wallis ANOVA when Dunn's test did not allow to precise which group was different from the two others. After that, half of the landscapes presented differences according to age but various trends can be observed.

Out of precaution I dismissed significant results with the Kruskal-Wallis ANOVA when Dunn's test did not allow to precise which group was different from the two others. After that, half of the landscapes presented differences according to age but various trends can be observed

As with other participants' characteristics correlations between age and ratings remained quite weak. Significant Spearman's rank correlation coefficients are situated between 0.14 and 0.30. However, coefficients confirm some trends detected with Kruskal-Wallis Anova. Landscapes without wind turbines were mainly underrated by younger people or overrated by older people. Correlation coefficients close to zero do not exclude age influences. This is the case when the 25-60 years group overrated landscapes. Negative significant correlations could also indicate the opposite trend: overrating by younger or underrated by older. However, this case was less frequent in the results (one case).

Most landscapes with wind turbines (40) were not differently evaluated by the participants to the survey (at the 5% level). The main trend is underrating younger (8).

“The photos of inhabited landscapes seemed more attractive to the older participants, giving the impression that they analysed those landscapes in terms of living places, while younger participants analysed them in terms of leisure places. Some qualitative comments made during the survey add weight to this argument. Views of the elderly such as ‘What I like in this picture is the scenery that the occupants of that house have from their home. If I had the sufficient income, I would like to live there’ (woman, 50 years old, highly educated, city dweller), can be contrasted with the views of younger people, for example, ‘I cannot call it a landscape when buildings are too visible, a landscape must be a wild place’ (woman, 20 years old, mid-level education, city dweller). (Vanderheyden et al., 2014). Due to possible influence of wind turbines, this hypothesis (buildings very visible) could be less relevant on landscapes with simulations. In this line, I found significantly ($p=0.0055$) more landscapes with buildings very visible and positively correlated with age than others (buildings and negative correlation).

The market gardening landscape (BA5, $\rho = 0.25$) and the view on Belgian coast hinterland (DA1, $\rho = 0.29$) are correlated with age (overrated by older). They were also overrated by low educated people. Beyond individual preferences, age and education are correlated: there are more low educated people among older people, in the sample as well as in Belgian population.



Landscape CA4. View on suburban village backyards in Brussels green belt area. This was overrated by the older group ($p= 0.001$, $\rho=0.2048$). This landscape was also underrated by high educated class.



Landscape HA4. View on Scherpenheuvel-Zichem, Flanders (NE Flemish Brabant). This was underrated by younger group ($p\approx 0$, $\rho=0.2173$)

3.3.4.3 Gender influences

I found very little gender influence. In all significant cases (at 5% or 10%) women overrated landscapes (15 with, 6 without WT). Howley et al. (2012) found higher preference for farmed fields among women but did not give much information about motivations lying behind this finding. I can make the same observation on landscape without wind turbines ($p=0.0011$). For simulated landscapes, the test is between 5% and 10%.

33 landscapes with cultivated fields were shown. Among these cultivated fields landscapes, 17 presented clearly a worked look and dominated landscapes. Other landscape presented a less well cared look (e.g. fallow lands in foreground) or fields too far in background to be clearly visible. On the landscape without wind turbines the trend is clear: women tend to prefer worked fields landscapes. . However, on landscapes with wind turbines, this cannot be confirmed. This preference should be explained by preference among women for well-cared spaces. This will be discussed further. With my qualitative research I found evidence that this hypothesis could be taken into account (see chapter 4).



Landscape BA6. Intensive agriculture landscape in Brussels Green Belt area. This landscape with chessboard look / worked field look was overrated both by women and in Flanders.

3.4 Discussion

(adapted from Vanderheyden et al. (2014) discussion)

Belgian's landscape preferences are of course deeply rooted in western culture, no matter what side of the language border. As Augustin Berque underlined, Western civilization is one of the few, with Eastern Asia, to have a full landscape thought²⁸ (Berque, 2008). Indeed, I found little variation in preferences between Flanders and Wallonia residents.

However, with these deep quantitative analyses, I showed that preferences are not always as homogenous among Westerners as often asserted in literature. This variation seems highly linked to landscape types. People use to see some spaces as landscapes because they learned to see them as landscapes and they learned to take a critical look towards them (Descola, 2013).

I investigated differences according to socio-demographic factors: administrative region of residence, urban or rural surroundings, education level, gender, and age. I showed that socio-demographic factors could just partially explain differences in landscape preferences. Correlation between landscape attractiveness and these factors remains weak in all cases. This called for further investigation: how relationships between people and their landscape are shaped?

Concerning place of residence (administrative region) no significant differences were found on two-thirds of the landscapes. However, the remaining third indicated interesting issues in terms of relationships between attractiveness and landscape types. Both seem linked to an influence of familiarity towards some landscapes. This seemed not rooted in cultural differences, romance-speaking versus Germanic-speaking but rooted in geographical differences on both sides of linguistic border. History made this geographical border between Belgian flat and uneven landscapes more or less mirror linguistic border. One landscape could be seen as flat by Walloons, whereas Flemings could be more sensitive to slight differences in altitude. This was my second hypothesis. Geographical differences are also marked in farming types. Flanders have been forced to intensive farming practices in high densely populated areas, whereas Wallonia could afford more extensive farming practices. Flemish cultivated landscapes often present a

²⁸ *Pensée paysagère*

chessboard look²⁹ which is not visible in Wallonia. In this way I found that this type of Flemish farming landscapes could be preferred by Flanders residents. To explain this I revisited Catherine and Raphael Larrère theory (2009). Flemish landscapes are seen in Flanders with an inner view, whereas they are seen in Wallonia with an aesthetic view. However, language influences – in other words subcultural differences - could also not be excluded. The Dutch word “landschap” and the French word “Paysage” were used as equivalent to landscape during the survey in Belgium but do not have exactly the same meaning. In Dutch, “*landschap*” designates many different things expressed in more words in French. First, it is related to territories and areas (regional scale). In French, this meaning should correspond more to the word “*pays*” (land). Another Dutch meaning is related to images and paintings, which correspond to the most common meaning of French word “*paysage*”. This should be translated in English by scenery. Finally, both “*landschap*” and landscape may be synonyms of countryside (Antrop, 2013). One question arises from this. Could the differences observed in Flanders and Wallonia be related to this linguistic difference? I found that Walloon residents were more particular towards landscapes in general, whereas Flanders residents were easier to please. This was not the case on landscape with wind turbines. My analyses also confirm that education level is a good predictor for landscape preferences as often observed in literature (see chapter one). I could observe the same trends as other scholars: higher preference for man-made landscapes among people with a lower education level. More educated people are generally more mobile, they can move further away from such anthropogenic landscapes. In other words, their spatial capital³⁰ (Levy, 2003) is broader and better mobilized with better education. In this line this may explain why iconic views on Semois valley were more appreciated by higher educated people. They might know the place, whereas low educated people did not recognize it and analysed this just aesthetically.

In this line we wrote in our paper (Vanderheyden et al., 2014): *“Some of our qualitative data added weight to this hypothesis; ‘I do not like this landscape, there are too many ribbon buildings’ (man, 44 years old, mid-level education, country dweller). For such people with a broader range of experience of different landscapes, there are both a greater number and a greater variety of everyday landmarks against which they can*

²⁹ Small plots with various land uses

³⁰ Inspired by Bourdieu’s the forms of capital (Bourdieu, 2011), Jacques Lévy developed the concept of spatial capital (Lévy, 1993) that he defined as “all the resources, accumulated by an actor, allowing him to take advantage, according to his strategy, of the use of the spatial dimension of society” (Lévy, 2003).

compare their existing expectations when considering ordinary landscapes. Are those people therefore more selective towards landscapes?” Rather than a binary variable, man-made versus natural, it might be preferable to consider an anthropogenic gradient. Moreover I underlined that natural landscapes did not exist anymore, even in Ardennes forest.

In my analyses, the presence of building in landscapes seemed more attractive to the older participants. This gave *“the impression that they analysed those landscapes in terms of living places, while younger participants analysed them in terms of leisure places. Some comments (see p. 73) lead us to conclude that participants were sometimes analysing the pictures not simply as visual data but as the places they could represent in the lives of the participants.”* Van den Berg and Koole (2006) found the same. They wrote that wilderness could be perceived by older as threatening by elderly people. In other words, managed landscapes are less threatening than wild areas. On the other hand young people see the same wild areas as challenging or as leisure places.

“Our hypothesis concerning the influence of dark forests and the urban or rural domicile of participants was linked to the way of viewing forested landscapes. While city dwellers view rural landscapes as scenery – with an ‘aesthetical view’ – country people view the same areas with an ‘inner view’ (Larrère and Larrère, 2009) . Are forested landscapes considered as leisure places for a walk or as dark masses giving a sinister aspect to places? Indeed, although we were using photo questionnaires, that is, based our survey on visual material, we were able to (qualitatively) observe some important differences in the way that people engaged with the survey. Some people did not recognise the landscape and based their response on an overall visual inspection of the picture. A second group didn’t seem to know the landscape either but they clearly did relate to certain elements within the picture and they seemed to project themselves doing something in the landscape (Gibson’s affordances). The third group did recognise the landscape and were analysing it as a place they knew (Larrère and Larrère’s inner landscape). Finally a fourth group is composed of people who think they recognise the landscape but are mistaken. Some people seem to make an effort to associate landscapes to places they know, trying to find something familiar in the unknown. A single element become thus sufficient to make a ‘wrong’ place association: a modern farm, a power line, or a forest. During the survey people made remarks such as ‘Oh this landscape is very familiar. I can recognise Roger’s farm on the left’ (man, 50 years old, mid-level education country dweller) although

this was a picture taken 200 km away from his home. Therefore, we can add to Larrère and Larrère's three ways of looking at landscapes, a fourth way; a view that consists of attempted familiarisation, which sits between the trained and the inner view. Beyond analysing visual landscapes, people often analysed places they represent. While we do not share Cresswell's (2003) concern about the term landscape itself, we do accept his invitation to reintroduce the idea of place in landscape and to speak of 'landscape of practice'. When people analyse landscape in terms of place, they need to associate the landscape and the place with their own identity. As said above, this landscape/place identity may be linked to Schmitz's (2012) five elements: physical components of the place; functions assigned to the place (e.g. 'The idea of building wind turbines in the landscape is appealing' – 50 years old man, mid-level education, country dweller); the persons living there ('Look at that mess in this landscape, people could make an effort to tidy up their backyard' – 45 year old woman, mid-level education, country dweller); history or myths of the place; and personal investment"(Vanderheyden et al., 2014)

The building of wind turbines seems to perturb this scheme, although I may not affirm this only with this quantitative study. Chessboard landscapes with turbines are no more overrated in Flanders; landscapes with visible houses are no more overrated by elderly people. It may be tempting to conclude that wind turbines are perceived as intrusion in their living landscapes. However, this has to be confirmed by further investigation. Concerning other hypotheses I made, females still seemed to overrate worked fields (almost significant); urban people seem to underrate forested landscapes (just below tolerance level). However it appears risky to draw definitive conclusions. I also remind that the context was very different at the time of survey in 2008 because wind energy was not as developed as today throughout the country.

This open new research perspective and new research questions:

- What about real motivations behind landscape assessment?

Despite the fact I personally collected some comments during Lacsawep survey, there remains a lack at real understanding on how and why people assess landscapes that way.

- What are other influencing factors?

I showed that socio-demographic factors may just explain partially landscapes preferences. Indeed socio-demographic factors are just indicators of reality. Education

level should not be reduced to the highest degree. Place of residence may have changed multiple times during life.

- What about wind turbines 5 years after the first survey?

As I wrote the context has changed since the project. Now everybody has experienced wind energy. Lobbies pros and cons discourses have continued to shape attitudes. Wind energy is spread throughout the country. It seems to have reached saturation point in some places according to public opinion.

- What about other landscape changes?

Other recent landscape changes are present with wind energy since our landscapes have more changed during the last 50 years than during the previous centuries (Antrop, 2005). Are all changes detected and perceived the same way as wind turbines?

In order to answer these new questions I will conduct a qualitative survey in the next section.

4 Deconstructing landscape in the mind of people: a qualitative approach

4.1 Context

At the end of the second part of my research (chapter 3), I was heading down a blind alley about understanding how and why people were assessing landscapes. I also had not clear answer about what they could mean by “attractive landscape”. Did they consider an aesthetic viewpoint? A utilitarian viewpoint as it was the case with wind energy landscapes? Some comments that I gathered during the quantitative survey allowed to make some explanative hypotheses. However, comments were not systematically gathered by the research team during the survey nor said by all participants.

Another issue was pending: five years had passed since the first quantitative survey and the interviews. During this time the Belgian energy landscape had totally changed (see chapter 1). In 2007 it was still possible to find some people who had never been confronted to wind energy or other renewable; this is not the case today. Opinions towards wind energy have changed, especially in Wallonia. This is probably due to well organized lobbies against wind energy on the one hand, and a wider coverage of the territory by wind turbines on the other hand. One question arose in my mind about the feeling of saturation of landscape by wind turbines.

In the previous chapter I highlighted some differences between Flemings and Walloons but also according to people’s socio-demographic characteristics. These characteristics are just a photograph of people at the time x. Our preferences may be initiated by our innate behaviour but they are shaped throughout our lives by all events that occurred. This cannot be measured easily through a quantitative survey: in what measure landscape preferences are influenced by the living environment and the life course? A quantitative survey may allow to answer the first question but not the second. There was thus a need in encountering people to speak longer and deeper about their own preferences towards landscapes. The key ambition of this section is thus to deconstruct the concept of landscape in the mind of people. In other words, what are landscapes in their mind? I started this approach in the last chapter but I consider the response was insufficient to clarify all questions.

4.2 Research questions and methodology

To unravel landscape in the mind of people, I will explore the following questions:

- What do people mean by landscapes?
- How do they analyse landscapes?
- How did their life course shape their preferences?
- Did they feel being impacted by recent changes such as wind energy but also suburbanization and agricultural decline?

In this section, I kept using a photo questionnaire survey to allow comparison. I adapted its design according to the findings and critic discussions I made on my previous research.

4.2.1 Participants

In the previous chapters I worked at the Belgium level targeting a representative sample of Belgium's inhabitants (n=1542). In this chapter I will focus on a smaller group of participants (n=54) presenting specific and homogeneous demographic characteristics, as far as possible.

The first characteristic I fixed was the spoken language. I worked with subgroups of French-speakers for ease of use, personal convenience, and to minimize an eventual language bias.

The second characteristic I wanted to fix was age. As differences have been found between younger and older (e.g. Zube et al., 1983; Buijs et al., 2006; Van den Berg and Koole, 2006; Lindemann-Matthies et al., 2010; Howley et al., 2012), I decided to survey participants from the same generation. I worked with two age groups: students from 18 to 25 years and one of their parents. This gave a very homogeneous age group of young participants and a quite homogeneous group of older participants.

The third characteristic I wanted to fix was education level. As education is a strong predictor of landscape preferences (de Groot and Van den Born, 2003; Buijs et al., 2006; Buijs et al., 2009; Sevenant and Antrop, 2010; Lindemann-Matthies et al., 2010), it was not necessary to explore this influence deeper. This was confirmed in the findings of my paper (Vanderheyden et al., 2014) and in the previous chapter of my dissertation. I chose students from teaching schools (professional bachelor). At first I contacted their professor of geography to find volunteers. They were not many. To complete the sample, I met some students from early years at university (non-professional bachelor). I also contacted friends to find volunteers in their own circles of acquaintances. The

students could not have much landscape expertise, this was an unconditional criterion. In any case, with qualitative methodology, any unanticipated landscape expertise can be detected during the interview.

4.2.2 Research fields

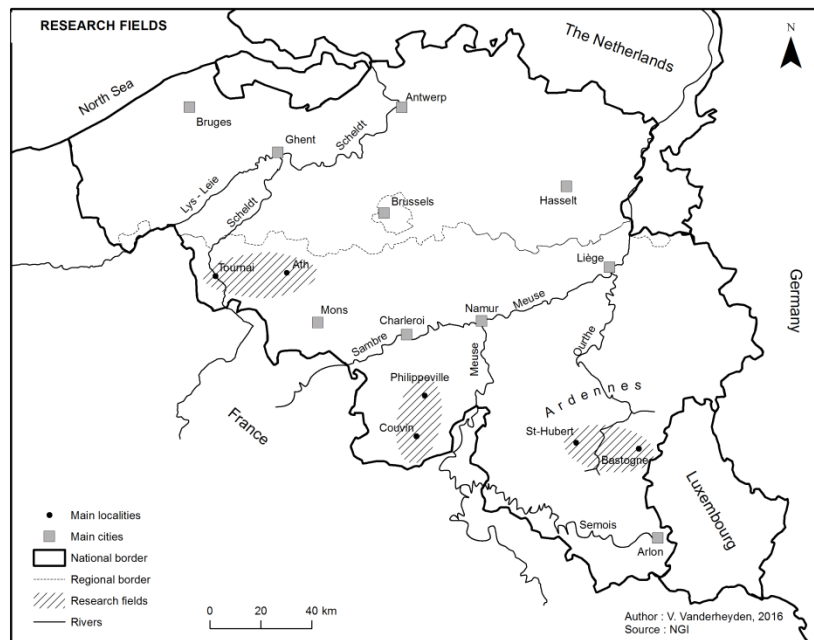


Figure 4.1 Research fields

I selected three research fields. From West to East: Walloon Picardy (the city of Tournai, the town of Ath, and their neighbourhoods); between Sambre and Meuse rivers (the towns of Couvin, Philippeville, and their neighbourhoods); and central Ardennes (the towns of Bastogne, Saint-Hubert and their neighbourhood).

I selected these areas because they present three different types of landscapes. They are also distant enough from each other, at the scale of French-speaking Belgium.

Walloon Picardy is situated in the Scheldt plain and on the western part of Hainaut loamy plateaux area. Terrain is almost flat everywhere with the notable exception of some hills and knolls to the north, which are the southern part of Flemish hills area. The altitude over sea level does not exceed 30 meters in the plain and 130 to 150 meters on the top of hills. Elevations rise gradually to the east until around 100 meters (Feltz, 2004). Due to the fertile nature of soils (loess), landscapes are dominated by ploughed fields (cereals and sugar beet). Pastures are situated in close proximity to rivers and around villages and farms. The pattern of settlements is globally quite dispersed. Woods are scarce. Some landscapes in the area are also dominated by extractive industry (limestone). The density of population is around 300 inhabitants per km², just under Belgium's average (around 350 inhabitants per km²).



Figure 4.2 Landscapes from Walloon Picardy (© Laplec 2016)

The towns of Philippeville, Couvin, and their neighbourhoods are situated between the rivers Sambre and Meuse. The north of the area is situated in the western part of the Condroz natural region. The south of the area is in the Fagne natural region. In Western Condroz, sandstone ridges alternate with large limestone depressions. The ridges are often covered with deciduous woodlots whereas depressions are dominated by ploughed fields, with some pastures at the bottom of small valleys and close to farms and villages. Ridges rise to around 300 meters above sea level whereas limestone depressions dip until around 250 meters (Castiau et al., 2010). The Fagne area is mainly characterized by a vast schist depression dipping until 150 meters above sea level and dominated by pastures due to the poorness and heaviness of clay soils. To the south this depression is overhung by a limestone shoulder scattered with karstic phenomena. Outside of these karstic zones, soils are more fertile and more favourable to ploughed fields, which alternate with large deciduous woodlots. Limestone quarries are present both in this part and in Condroz region. The population density ranges from around 90 inhabitants per km² to the north to 50 to the south.



Figure 4.3 Landscape from Sambre and Meuse area (©Laplec 2016)

Last, the towns of Bastogne, Saint Hubert, and their neighbourhood are situated in Ardennes, the western part of the Renish Massif, close to the border between Belgium and Luxembourg. Ardennes terrain is steeper and rougher than anywhere else in Belgium, especially in deep valleys such as Ourthe and Semois Rivers³¹ (see landscapes BA2 and IA1). Ardennes plateaux are often more than 500 meters high whereas deepest valleys floors dip until nearly 200 meters above sea level. The population density is the lowest in Belgium (from less than 30 inhabitants per km² to 90 in Bastogne). Despite a wilder look in some places, all Ardennes landscapes have been strongly modified. Since the 19th century, pastures and forests, mainly coniferous (spruce plantations), have supplanted other land uses. Ardennes is the most forested area in Belgium (Van Hecke et al., 2010; Christians and Daels, 1984).



Figure 4.4 Ardennes landscapes (©Laplec 2016, except for top and bottom © PNDO)

³¹ Tributaries of Meuse River

All three areas host several wind turbine parks. There are wind turbines all over Walloon Picardy and Sambre and Meuse areas. In Ardennes they are concentrated around Bastogne plateau. All participants to the study lived not farther than 10 kilometres from wind turbines except in the neighbourhoods of St Hubert.

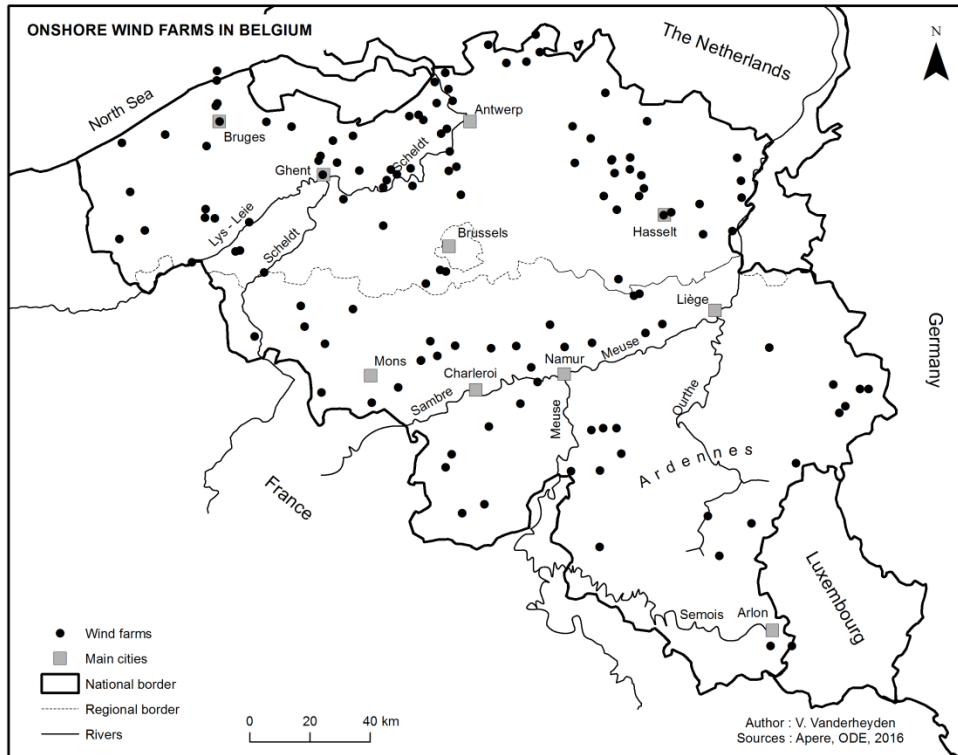


Figure 4.5 Onshore wind farms in Belgium

4.2.3 New photo-questionnaire survey

4.2.3.1 Quantitative assessment

I selected 30 landscapes in the previous landscape database (see appendix). With this I aimed at comparing the new sample with the previous one. Participants had to use the same 7-points attitude scale. My first research question at this stage was: do assessors from both samples come from the same population (in the statistical sense)?

I selected landscapes to include the same landscape types as around our participant's places³². I also paid attention to select landscapes with various landscape elements, according to hypotheses made in the previous chapter and adapted to my new sample of participants:

- Terrain:

- flat landscapes as in Walloon Picardy;
- intermediate landscapes as in Sambre and Meuse area;
- plateaus landscapes and rugged terrains (steep valleys and hills) as in Ardennes;

⇒ *Does landscape familiarity influence landscape preferences?*

- Land use:

- Forested landscapes, as in Ardennes (very forested) and Sambre and Meuse (well forested) areas;
- Intensive agriculture landscapes, as in Walloon Picardy;
- Dairy milk areas landscapes, as in Ardennes and Sambre and Meuse areas.

⇒ *Does landscape familiarity influence landscape preferences?*

- Urbanisation:

- From no building to suburban villages.

- Other man-made structures:

- Fences and railings (mainly Sambre and Meuse and Ardennes);
- Stone quarry (Walloon Picardy and Sambre and Meuse);
- Fluvial port, industrial estates (Walloon Picardy);
- Wind turbines (All three areas, less frequent in Ardennes).

⇒ Does age influence preference towards absence of man-made elements / presences of buildings?

³² But not necessarily local landscapes

I intend to compare both participants' samples from a statistical point of view. This comparison could be questionable since both survey contexts are different. I conducted a door-to-door survey in the first part of my research; the new survey was made by appointment. I did not present photos in the same order than in the previous study. The composition of the set was also different. This could have had an influence. Indeed people usually anchor their ratings as compared to the previous photos they have seen. Finally there was a five years span between the two surveys (2008 – 2013). In an explanatory way I will also examine intra-group differences within the new sample. No statistical inference is possible, however, due to the sample size and due to its stratified nature.

4.2.3.2 Qualitative assessment

In the second part of the survey, I distributed the 30 pictures in 6 sets of 5 photos according to my research hypotheses.

Table 4.1 Composition of landscapes sets according to research hypothesis

	Hypothesis	Composition of landscape set
Set 1	Flat landscapes (plains and low plateaux) are preferred by Walloon Picardy residents	3 Flat (AA6, BA3, GB5) / 2 Ardennes landscapes (EA4, FA1)
Set 2	Steep landscapes (hills, valleys) are preferred by Ardennes and Sambre-Meuse residents	3 Ardennes (BA2, CA3, HB3) / 2 flat agrarian landscapes (DA6, FA4)
Set 3	Ardennes residents prefer forested landscapes while Walloon Picardy residents do not.	3 forested landscapes shot in S&M area (FA6, GA4, HA2) / 2 without forest (CA4, DA3)
	Sambre and Meuse residents prefer their local landscapes	
Set 4	Young people dislike anthropogenic landscapes	3 anthropogenic (CB6, DA1, GA1) / 2 less anthropogenic landscapes (AA3, EA5)
Set 5	Young people see the presence of fences as an obstacle to mobility	3 with (IA4, BA5, BB4) / 2 without (IA1, IA2)
Set 6 ³³		BA6, FA2, GA6, HA6, IB6

³³ This set is composed of the 5 last landscapes from the quantitative assessment

Each participant had to order each set from the most to the less attractive. At the end of each ordering, I asked the same question: why did you order the landscapes that way? I let the participant talk about their justifications. When they fall silent, I invited the participant to continue, eventually by asking some questions. After this first ordering, I isolated the six most attractive and the six less attractive. I asked them to order the photos and to explain once again their order. Each interview lasted about 45 minutes (from 30 minutes to 75 minutes).

I recorded all interviews to transcribe them afterwards.

Although I could calculate some rank statistics, I will not do it. The real aim of the photos is to elicit the speech. However, the ordering gave insight on the personal patterns of analysis developed by respondents. The rankings will be used as a clue to enlighten these patterns.

4.2.4 Processing of data

4.2.4.1 Pairwise comparisons

The first step consisted of comparing the sample from 2008 and the present sample to measure how the present sample related to the previous one. For each photograph, I compared the ratings given during the previous and the present survey. I used the median test and the Mann–Whitney U test. The median test is nothing more than a Pearson's chi-squared test with one degree of freedom, quite comparable to the test I applied to analyse the first survey. The Mann–Whitney U test is the non-parametric equivalent of the Student's t-test as explained in chapter 3.

4.2.4.2 Inter-groups comparisons of the new sample

Before starting the qualitative analysis it was useful to see how each subgroup (area, age, gender) related to other groups. Can we find differences in the way they assess landscapes according to their residence and personal characteristics? I used the median test, the Mann–Whitney U test for binary variables (gender, age group) and the Kruskal–Wallis one-way analysis of variance for variable with more than two modalities (area of residence).

The small sample size will not allow to infer the findings but will give clues to guide qualitative analyses.

4.2.4.3 Lexicometric analysis of transcriptions

Can we detect how people differently deal with landscapes (the word and the object) with the words they use? Lexicometric analyses seem to be the ideal tool to answer this question. Lexicometric analysis of a text corpus pertains to the field of linguistics. From a wider point of view, corpus linguistics can also be a precious tool in social sciences. According to Lejeune and Benel (2012) lexicometry – a quantitative approach of the words used within a text, including counting – may be a paradox in qualitative data analysis. Qualitative methods focus on words and meanings not on numbers. However, Lejeune and Benel (2012) suggested that text statistics could be used as a clue to identify possible interpretation leads.

The following insert give some useful definitions (based upon Halliday et al., 2004 + Oxford Advanced Learner’s dictionary, 2015).

Table 4.2 Methodological insert on corpus analysis

Word	Unit of the written language
Content word	Words that have a meaning, such as nouns, main verbs, adjectives and adverbs
Function word	Words with a general meaning used to express the relationships between other words such as pronouns, determiners, prepositions, and auxiliary verbs prepositions, pronouns, auxiliary verbs, conjunctions, grammatical articles, or particles
Lemma	Simplest form of a word, as it can be found as a lexical entry in dictionaries (singular noun, infinitive verb, etc.)
Lexicometry	Measuring the frequency with which words occur in a text corpus.
Specificity of vocabulary	The probability of a word to occur more (positive specificity) or less (negative specificity) in a subgroup than probabilistically expected.
A lexeme or lexical unit	“A word or several words that have a meaning that is not expressed by any of its separate parts” (Oxford Advanced Learner’s dictionary, 2015).
Corpus	A collection of written or spoken texts

I performed text analyses with Sonal 2.0.56 software³⁴. This software can estimate the specificity of each word, using Pierre Lafon’s hypergeometric probabilistic method. Relying on this one, I was able to decide whether one lexeme was specific to an area (Lafon, 1984). This method has been criticized, because occurrences of words are not likely to follow this type of probability (Labbé and Labbé, 1994). The text corpus is composed of all the words used by respondents. I did not take into account my own questions and comments though they might have had some influence on the interviewee.

³⁴ Retrieved from <http://www.sonal-info.com/>, September 2016

I performed analyses on the text in French. During the first analysis of the corpus, I treated all words as different (e.g. singular and plural forms of the same word are different). Next, I grouped together function words or grammatical words. I did not analyse them since they do not give much pertinent information for the analysis. Then I grouped the relevant words in lexemes. After that, I lemmatized the remaining corpus. That is I grouped together same verbal forms with their infinitive as lemma, the singular form for substantives, and the singular masculine for adjective.

A significant lower or higher use of a word among subgroups (specificity) might be a matter of chance. However, the analyses of the content of interviews will allow to conclude if these overused lexemes really matter to the interviewees.

In this dissertation, I will limit the analysis of specificity to the influence of residence. I will not analyse gender and age related specificities as they did not answer to my research questions.

4.2.4.4 Thematic analyse of transcriptions (qualitative coding)

I coded my transcripts with NVivo. Qualitative coding consists in attributing one word or phrase to data (sentences) in order to sum up the idea(s) expressed in data. I performed coding in two phases. First, I applied a free coding phase to the first interviews. When there were enough free nodes, I grouped them into tree nodes, according to the main theme and sub-themes. In the main results section, I will present the most frequent themes and I will put them into perspective with quotations from the interviews.

4.3 Main results

I conducted 54 interviews (18 in each area) of which 52 interviews were transcribed. Two recording files from Sambre and Meuse area were lost in computer crash. All quantitative analyses take the 54 participants into account. All qualitative analyses take the 52 transcribed interviews into account.

Table 4.3 Distribution of participants according to their area of residence

	Female student	Male Student	Female Parent	Male Parent	Total Female	Total Male	Total
Ardennes	6	3	5	4	11	7	18
Sambre & Meuse	5	3 (+1)	7 (+1)	1	12	4	16 (+2)
Walloon Picardy	6	3	6	3	12	6	18
Total	17	9	18	8	35	17	52

4.3.1 Comparison between the two samples

Among the 30 landscapes they were shown to the new sample, 16 landscapes were assessed differently by the two samples (at the 5% level) and 14 did not present significant differences. A table with details of statistical tests is available in appendix. In all these cases, the first sample (whole Belgium, n = 1542) overrated the landscapes. This is not surprising due to the composition of both samples. I explain this overrating by the presence of Flanders residents in the first sample. They tended to overrate landscapes (see chapters 2 and 3). The new sample also counts less low educated people. They were thus less likely to overrate man-made landscapes. However, I did not find any dominant landscape type among these overrated landscapes.

4.3.2 Inter-groups comparisons

Within the new sample, little variation can be measured. This was expected as I selected a quite homogeneous subgroup of participants. The complete results may be consulted in appendix.

I found significant difference for 9 landscapes on 30 at the 5% level (13 landscapes at the 10% level) according to the area of residence. In most cases, Ardennes' participants overrated these landscapes. These overrated landscapes are from all areas, not specifically from Ardennes.

I did not observe any variation according to gender at the 5% level (one landscape overrated by women at the 10% level).

Only 6 landscapes were differently evaluated according to age group of which 5 were overrated by parents. At the 10% significance level, 11 landscapes are overrated of which 9 by parents. All types of landscapes were overrated. Nevertheless, the three iconic landscapes of the sample were overrated by parents (two views on Semois River and one view on High Fens from Belgium highest point). I will discuss this observation during my qualitative analyses. At first glance, it could be linked to a better familiarity with these three landscapes among parents group.

4.3.3 Lexicometric analyses: Are landscape preferences mirrored in the vocabulary?

I assume that words used by participants to describe their landscapes preferences are correlated with landscape familiarity.

The text corpus is made of the 52 interviews transcribed in which I deleted my own comments and questions. These comments and questions may have influenced a little the speech. However, this eventual influence would be identical for every interview. Thus this one will not be taken into account into the present analysis.

Table 4.4 Distribution of lexemes according to survey area

Area	Number of lexemes	Number of different lexemes	Number of interviews
Walloon Picardy (TOU)	66697 (34.5 %)	1645	18
Sambre and Meuse (ESM)	65199 (33.7 %)	1788	16
Ardennes (ARD)	61333 (31.7 %)	1726	18
Total	193229	3066	52

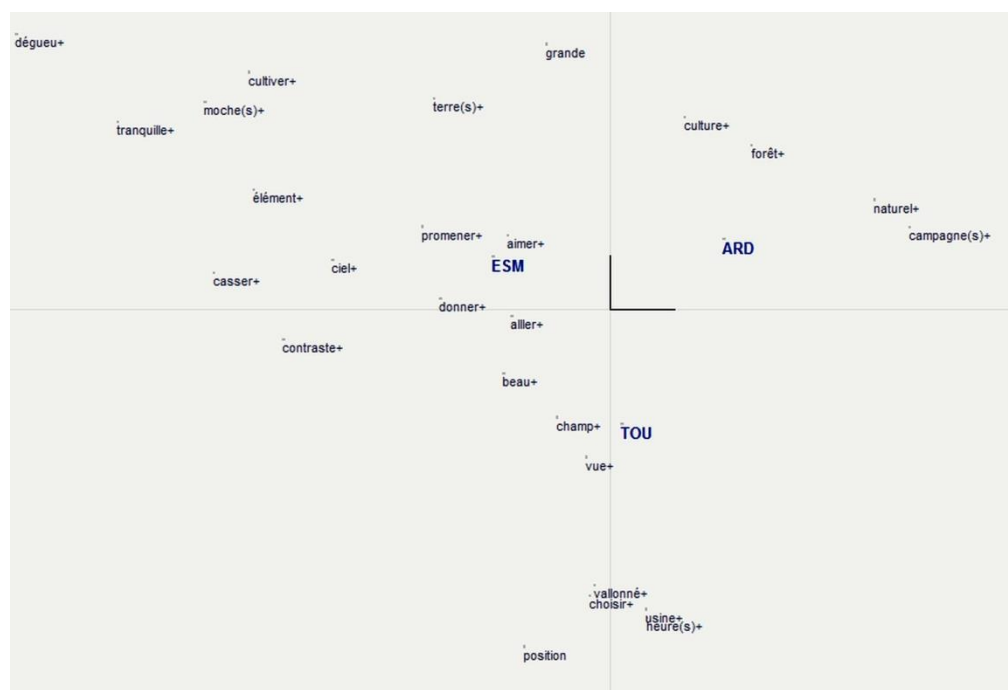


Figure 4.6 Factorial experiment, vocabulary (in French) according to residence area (factor loadings > 4%)

The factorial experiment gives a first indication on the words more used by subgroups. These most frequently used words may highlight participants' preoccupations towards landscapes. The software used the multiple correspondence analysis method (MCA). Its principle is close to principal component analysis applied to qualitative data instead of quantitative. MCA allows to underlying (unobserved) variables as in other factor analysis methods (Benzécri, 1977). The number of axes retained by the software is two.

Ardennes participants (ARD) are centred in the first quadrant. The French lexemes *culture* ("farming" or "farmland"), *forêt* ("forest"), *naturel* ("natural") and *campagne* ("countryside") stand out, associated to this subgroup. The Sambre and Meuse participants (ESM) are centred in the second quadrant. Lexemes such as *promener* ("to stroll", "to go for a walk"), *aimer* ("to like"), *ciel* ("sky") stand out. Finally, the Walloon Picardy area participants (TOU) are centred in the fourth quadrant, just close to the

third quadrant. Words such as *champ* (“field”), *vue* (“view”), and *beau* (“nice”) stand out.

At this level of analysis, Ardennes’ participants are more likely to focus on landscape features. Sambre and Meuse’s participants place importance to leisure and aesthetics. Walloon Picardy’s participants focus on their landscapes (fields) and aesthetics. The analysis of the specificity of vocabulary will allow to go deeper and to enlighten this finding. I analysed the specificity of words by semantic fields. According to the research hypotheses, I selected the followings semantic fields: terrain issues (land relief), forest issues, agriculture issues and anthropogenic elements issues (including fences, buildings, wind turbines, and power lines). The tables gives the lexemes or words, their translation in English, their global occurrence (G.O), their local occurrence among the three regional subgroups (L.O.), the number of persons using the lexeme (pers.) and the Lafon’s specificity (Spec.). In these columns, S+ means positive specificity – the lexeme occurs more than probabilistically expected in this subgroup; S- means negative specificity – the lexeme occurs less than expected, N.S. means no specificity, which include lexemes not specific to one subgroup but also cases where specificity was not calculable (e.g. no occurrences in two groups).

4.3.3.1 Terrain issues

Table 4.5 Specificity of vocabulary according to living area (terrain issues)

Terrain			Walloon Picardy				Sambre and Meuse			Ardennes		
<i>French</i>	English	GO	LO	Pers.	Spec	LO	Pers.	Spec	LO	Pers.	Spec	
<i>Plat</i>	Flat	246	92	14	NS	78	14	NS	76	14	NS	
<i>Vallonné</i>	Undulating	158	96	14	S+	37	9	S-	25	10	S-	
<i>Relief</i>	Terrain	116	34	13	NS	32	9	S-	50	13	S+	
<i>Montagne</i>	Mountain	73	38	11	S+	18	7	S-	16	8	S-	
<i>Vallée</i>	Valley	63	21	16	NS	21	6	NS	21	7	NS	
<i>Colline</i>	Hill	52	20	9	NS	27	5	S+	5	4	S-	
<i>Dénivelé</i>	Difference in level	40	0	0	NS	2	1	S-	38	3	S+	
<i>Hauteurs</i>	Heights	30	11	6	NS	16	7	S+	3	1	S-	
<i>Buttes</i>	Hillock	24	7	2	NS	3	2	S-	14	4	S+	
<i>Plaine</i>	Plain	22	6	3	NS	9	5	NS	7	3	NS	
<i>Vallon- nement</i>	Undulation	18	15	4	S+	2	1	S-	1	1	S-	
<i>Vallon</i>	Small valley	15	6	5	NS	5	2	NS	4	1	NS	
<i>Mont</i>	Mount	13	13	8	S+	0	0	NS	0	0	NS	

Legend: global occurrence (GO), local occurrence (LO), the number of participants who said the word (Pers.) and the specificity (+, 0 or -)

Plat (“flat”) is the lexeme with the highest occurrence in this table but without any specificity among one subgroup. In the interviews, flat landscapes were globally judged less attractive and associated to monotony even in Walloon Picardy area where the terrain is globally flat. The lexemes *relief* (“terrain”) and *dénivelé* (“difference in level”) seem to be more specific to the Ardennes people where this type of land relief is also more frequent. The lexeme *montagne* (“mountain”) is overused by Walloon Picardy’s participants. Although some of them used this wrongly to talk about Ardennes terrain, other used this lexeme while comparing terrain to their own experience of real mountainous areas outside Belgium. The word *mont* (“mount”) was only used by participants from this area, due to the presence of this word in local hills names (part of Flemish mounts, e.g. *Mont de l’Enclus*). In Sambre and Meuse area, the lexeme *colline* (“hill”) is overused which might be associated with the higher frequency of this landform type in the area.

4.3.3.2 Forest issues

Table 4.6 Specificity of vocabulary according to living area (forest issues)

Forest			Walloon Picardy			Sambre and Meuse			Ardennes		
<i>French</i>	English	GO	LO	Pers.	Spec	LO	Pers.	Spec	LO	Pers.	Spec
<i>Forêt</i>	Forest (noun)	339	68	14	S-	100	14	S-	171	16	S+
<i>Arbre</i>	Tree	307	89	16	S-	129	16	S+	89	16	NS
<i>Bois</i>	Wood	213	64	13	S-	55	14	S-	94	14	S+
<i>Boisé</i>	Wooded	60	21	6	NS	26	5	S+	13	7	S-
<i>Sapin</i>	Fir	37	9	4	NS	10	7	NS	18	8	S+
<i>Bosquet</i>	Copse	33	12	5	NS	18	6	S+	3	2	S-
<i>Epicéas</i>	Spruces	27	3	1	S-	0	0	NS	24	5	S+
<i>Feuillus</i>	Broad-Leaf trees	22	0	0	NS	7	1	NS	15	5	S+
<i>Sapinière</i>	Fir forest	9	0	0	NS	3	2	NS	6	4	S+
<i>Peuplier</i>	Popular tree	9	0	0	NS	9	1	S+	0	0	NS
<i>Forestier</i>	Forest (adj)	8	0	0	NS	0	0	NS	8	3	S+
<i>Arbuste</i>	Shrub	7	1	1	NS	3	3	NS	3	1	NS
<i>Conifères</i>	Conifers	6	0	0	NS	5	2	S+	2	2	NS

Legend: global occurrence (GO), local occurrence (LO), the number of participants who said the word (Pers.) and the specificity (+, 0 or -)

The table shows that people from Ardennes paid more attention to forest issues than people from the two other areas. The general lexeme *forêt* (“forest”) and *bois* (“wood”) are more utilised in this subgroup than statistically expected. This may indicate a higher interest for this issue among this subgroup.

Ardennes’ people also used a more specialized and more diversified vocabulary concerning forest issues. Nevertheless, they did not use an expert vocabulary. The lexemes *épicéa* (*Picea abies* L., “spruce”) and *sapin* (*Abies alba* L., “fir”) are statistically more specific to Ardennes participants. The first occurs only in one interview outside Ardennes. Spruces were imported in the Ardennes during the 19th century and are usually planted in well-organized parcels. Spruces have now become typical features in Ardennes’ landscapes. They are less present in the two other areas. The second species (fir) is almost absent in Belgian forests. This word is more used by speakers from all areas as a generic term for coniferous trees. The confusion might come from the use of the word in the French expression *sapin de Noël* to designate Christmas trees. This lower familiarity with forests is particularly blatant among participants from Walloon Picardy. This group did also never use *feuillus* (lobed-leaved trees). They looked not able to make difference between coniferous and broad leaves trees, whereas Ardennes participants were. Among the Sambre and Meuse participants, the preferential lexeme

concerning forest issues is *arbre* (“tree”). Sambre and Meuse participants seem thus less familiar to forest issues.

4.3.3.3 Farming issues

Table 4.7 Specificity of vocabulary according to living area (farming issues)

Agriculture			Walloon Picardy			Sambre and Meuse			Ardennes		
French	English	GO	LO	Pers.	Spec	LO	Pers.	Spec	LO	Pers.	Spec
<i>Champ</i>	Field	560	249	18	S+	187	16	NS	124	14	S-
<i>Culture+</i>	Farming	267	45	9	S-	96	9	NS	126	15	S+
<i>Prairies</i>	Meadows	175	59	12	NS	77	12	S+	39	12	S-
<i>Campagne</i>	Countryside	155	45	14	S-	21	11	S-	89	13	S+
<i>Terres</i>	Land	152	20	9	S-	86	15	S+	46	11	NS
<i>Ferme</i>	Farm	91	30	13	NS	35	8	NS	26	9	NS
<i>Blé</i>	Wheat	65	34	12	S+	22	7	NS	9	5	S-
<i>Cultiver</i>	To cultivate, to farm	65	6	4	S-	47	10	S+	12	6	S-
<i>Cloture</i>	Fence, Railings	56	16	4	NS	31	8	S+	9	5	S-
<i>Agricole</i>	Agricultural	45	10	6	S-	23	4	S+	12	8	NS
<i>Pâture</i>	Pasture	34	0	0	NS	19	7	S+	15	4	S+
<i>Ballots (paille, foin)</i>	Bundle (hay, straw)	31	10	4	NS	12	7	NS	9	7	NS
<i>Céréales</i>	Cereals	20	1	1	S-	5	3	NS	14	5	S+
<i>Fermier</i>	Farmer	20	7	4	NS	12	7	S+	1	1	S-
<i>Agriculteur</i>	Farmer	16	2	2	S-	8	5	NS	6	4	NS
<i>Betteraves</i>	(sugar) beet	16	2	2	S-	8	4	NS	6	5	NS
<i>Agriculture</i>	Agriculture	15	6	1	NS	1	1	S-	8	5	S+
<i>Foin</i>	Hay	14	1	1	S-	2	2	NS	11	6	S+
<i>Labouré</i>	Ploughed	12	5	1	NS	6	3	NS	1	1	S-
<i>élevage</i>	Cattle rearing	10	2	1	NS	1	1	NS	7	3	S+

Legend: global occurrence (GO), local occurrence (LO), the number of participants who said the word (Pers.) and the specificity (+, 0 or -)

Farming landscapes in the three research fields are different enough to expect different relationships with them due to familiarity.

As the table below shows, *champ* (“field”) and *blé* (“wheat”) are specific to Walloon Picardy area where arable lands are also more frequent. Both lexemes are also underused in Ardennes, where arable lands are far less frequent. None of this two lexemes present a statistical significance among the Sambre and Meuse’s subgroup.

Prairies (“meadows”), *pâtures* (“pastures”), *terre* (“land”) and *clôtures* (“railings”) are overused by Sambre and Meuse respondents. Cattle rearing issues are more specific to Ardennes. Both areas are characterized by cattle breeding and dairy farming.

4.3.3.4 Anthropogenic features

Table 4.8 Specificity of vocabulary according to living area (anthropogenic features)

Anthropogenic features		GO	Walloon Picardy			Sambre & Meuse			Ardennes		
<i>French</i>	English		LO	Pers.	Spec	LO	Pers.	Spec	LO	Pers.	Spec
<i>Maisons</i>	Houses	486	183	17	S+	155	16	NS	148	17	NS
<i>Éoliennes</i>	Wind Turbines	473	170	18	NS	170	16	NS	133	18	S-
<i>Village</i>	Village	260	83	16	NS	89	13	NS	88	16	NS
<i>Ville</i>	Town / city	185	49	11	S-	74	12	S+	59	16	NS
<i>Bâtiment</i>	Building	159	58	12	NS	62	12	S+	39	16	S-
<i>Carrière</i>	Stone quarry	154	61	13	NS	59	15	NS	34	14	S-
<i>Industriel</i>	Industrial	146	58	14	NS	49	10	NS	39	16	NS
<i>Routes</i>	Roads	143	47	16	NS	61	14	S+	35	13	S-
<i>Habitations</i>	Housing estate	124	45	10	NS	31	8	S-	48	9	S+
<i>Chemins</i>	Path, Tracks	111	21	10	S-	51	12	S+	39	15	NS
<i>Hangar</i>	Shed	106	30	8	NS	47	10	S+	29	10	NS
<i>Usine</i>	Factory	104	66	12	S+	19	10	S-	19	10	NS
<i>Homme</i>	Man	98	23	7	S-	37	6	NS	38	5	S+
<i>Ferme</i>	Farm	91	30	13	NS	35	8	NS	26	9	NS
<i>Barrières</i>	Fences	84	21	8	S-	35	7	S+	28	11	NS
<i>Bruit</i>	Noise	77	22	8	NS	32	8	S+	23	10	NS
<i>Pylône</i>	Pylon	74	30	8	NS	24	7	NS	20	8	NS
<i>Électrique</i>	Electric	67	32	9	S+	13	8	S-	22	9	NS
<i>Poteau</i>	Pole	59	25	7	NS	12	4	S-	22	10	NS
<i>Industrie</i>	Plant	58	25	9	NS	18	7	NS	15	6	NS
<i>Cloture</i>	Fence, railings	56	16	54	NS	31	8	S+	9	5	S-
<i>Canal</i>	Canal	53	22	10	NS	13	5	NS	18	7	NS
<i>Zoning</i>	Industrial estate	45	9	6	S-	14	7	NS	22	7	S+
<i>Humain</i>	Human	41	8	5	S-	24	7	S+	9	5	NS
<i>Grue</i>	Crane	38	17	8	NS	10	6	NS	11	6	NS
<i>Haute-tension</i>	High voltage	29	11	4	NS	15	5	S+	3	2	S-
<i>Bateau</i>	Boat	30	7	2	NS	17	6	S+	6	6	NS
<i>Électricité</i>	Electricity	19	3	9	S-	7	7	NS	9	5	NS
<i>Urbain</i>	Urban	21	4	2	NS	13	3	S+	4	1	NS
<i>Conteneur</i>	Container	18	3	3	S-	12	6	S+	3	2	NS
<i>Industrialisé</i>	Industrialised	11	3	2	NS	0	0	NS	8	3	S+

Legend: global occurrence (GO), local occurrence (LO), the number of participants who said the word (Pers.) and the specificity (+, 0 or -)

As Table 4.8 suggests, Walloon Picardy participants seem to place great importance to the presence of houses and factories in landscape. They also paid more attention to the presence of electric lines. Sambre and Meuse's participants make less distinction using the generic term *bâtiments* ("buildings") but distinguished sheds (industrial or

farming). They placed importance to the type of roads or paths visible on the pictures. Fences and railings are also more often mentioned by them. Ardennes' residents were more likely to focus on the industrial and housing estates. They were also less focusing on wind turbines, which are less frequent in their area³⁵.

To conclude, this vocabulary analysis allowed us to discover interesting clues about familiarity towards landscapes. The reading of landscape varies according to the area of residence. The participants from the three areas are not equipped the same way to apprehend landscapes. The analysis also suggests that functions given to landscapes by people will also vary according to the areas and to the familiarity towards landscapes.

4.3.4 Thematic analysis

I generated the following table give the coding table with N-Vivo software. I code all the text corpus manually. I classified all pieces of interviews according to the theme(s) they were referring to. Then, I grouped some themes together according main theme. The column "Sources" gives the number of interviews in which the theme was mentioned. The columns "References" gives how many different pieces of interviews did mention a theme. I grouped themes in encapsulating theme. I sorted the table in descending order according to the number of sources. The first table gives the themes relating to visual analysis whereas the second gives non-visual analysis themes.

³⁵ There are windfarms close to Bastogne but there aren't any close to Saint-Hubert

Table 4.9 Visual criteria (nodes codes in N-Vivo)

Name	Sources³⁶	References³⁷
Overall appearance		
Industrial, anthropogenic, urban	52	266
Natural	40	140
Varied	38	111
Dead / dried	34	67
Untidy	31	71
Monotonous, bleak, not varied	25	50
Tidy, well ordered	18	39
Living	16	34
Empty	13	23
Terrain / Relief	49	286
Visual criteria		
Luminosity - Colours - seasons - weather	48	371
Visibility - Distance	43	156
Visual integration of elements	19	42
Land use		
Buildings	51	311
Wind turbines	50	255
Cultivated fields	49	232
Water	47	164
Forests, woods, trees	47	307
Power lines and pylons	46	97
Meadows	38	92
Fences - railings	34	80
Roads and paths	34	75
Greenness	30	74
Hedges	8	26
Stone quarry	5	10

³⁶ Number of interviews

³⁷ Number of different codes

Table 4.10 Non-visual criteria (nodes codes in N-Vivo)

Name	Sources	References
Feelings	46	165
Possible action in landscapes / Affordances	45	253
Places		
Area remembrance	45	164
Frequented place – everyday landscape	41	102
Place recognition (right)	35	97
Place recognition (wrong)	27	42
Rurality	41	119
Respondents 'biographic elements		
Personal life	39	88
Leisure	33	63
Memories	22	58
Non-visual	30	80
Animals	25	41

The coding of interviews enabled to highlight the most recurrent themes in participants' talks. With the instruction of to rank and to justify, an overview on the criteria used by respondents may be found. Among all criteria were dominant or recurrent among participants.

Participants logically expressed concerns about visual aspect of landscapes. . Landscape remains a portion of space viewed by people. Anthropogenic aspect (more industrial, more urban) was a common concern among all participants. Aesthetic and weather concerns were also expressed by many participants but not all of them. Then, some focuses on the length of sight. Among themes less often mentioned we may notice the presence of concerns about tidiness of landscapes, living aspect and variety.

We also paid attention to specific anthropogenic elements mentioned in speeches. By order of importance they are buildings, wind turbines and power lines. Other elements were less often mentioned. The landscape with a stone quarry was only mentioned 5 times, by people living close to the landscape or in other quarrying areas. Other land use elements were mentioned. The most common such as forest, woods, fields, and water were more often said by participants.

Respondents also referred to personal memories, favourite leisure activities, and feelings when analysing landscapes.

I also coded piece of interviews where participants attempted to recognize the place. Usually it was not a precise place but an area (e.g. Ardennes). Few places were rightly

recognized but this was expected as I worked mainly with ordinary landscapes. Only one participant recognized far more places than any other participants. It turned out this participant worked in an association active in nature conservation. With the analysis of his speech and vocabulary I found he could be considered as an expert in landscape.

4.3.4.1 Main ways/patterns of analysing landscapes

The question why did you order landscapes that way gives clue to understand which way of analysis is privileged by the person. I identified four main ways of analysing landscapes. All participants did not use one single way of analysing landscapes but usually one technique was dominant.

Looking for wilderness (pattern 1)

“This ranking... I prefer when it is wilder. All man-made landscapes were ranked at the bottom.” (Man, Walloon Picardy, 21 years, Village)



Landscape BB4. Nismes-Viroinval, Fagne, Limestone shoulder, with simulations.



Landscape IA4. Mariembourg, Fagne, Schist depression.

“The fourth landscape is more urban (IA4). On the third one (BB4), we have forest, we have unevenness, mankind did not overrun, though, there are cuts made by the man for their field, their cows.” (Man, Ardennes, 22 years, Village)

“The fourth (BB4)... It is green, but there is a windfarm again, the fence as well. It is less attractive. [...] This one does not look as natural as the first one³⁸.” (Woman, Ardennes, 22 years, Town)

This **first way** consists in looking at the **man-made aspect** of landscapes, with a gradient of “**human presence**” as a guide for ranking: the wilder the landscape is, the most attractive it is; the most anthropogenic, the least attractive. I called this behaviour

³⁸ Her first one was the iconic view on Semois River at Botassart.

“**naturalist** analysis” or “**wilderness** analysis”. At first glance, this way of analysing landscape did not seem to be linked to specific groups.

Looking for pleasant and beautiful views (pattern 2)



Landscape BA6. Tildonk (Hageland / Brussels Green Belt)

“This one was put directly in first place... The colours! The colours played a huge role. I even did not notice there was a farm. I am just seeing the farm right now. That is the colours which played a role. I was really taken first by the colours”. (Woman, Walloon Picardy, 22 years, small town)

So, the first one... If someone asked me to hang it on the wall, I would not hesitate. Because, there is once again the colour contrast, a lovely shade of blue, a green gradient, some yellow... The cultures have not been harvested yet. There are some trees there, but not too many, and we can see them clearly. (Woman, Walloon Picardy, 19 years, village)

So, the first one, this is always the bright colours that attract me. It looks like a postcard, it is very natural, some fences, but not many, thus it remains very natural. (Woman, Ardennes, 45 years, small town).

This **second way** consists in looking first at **the aesthetic aspect of landscapes**, paying attention to the colours, the brightness, the season or the weather conditions. At first glance, this seemed to be more present among women, from all age groups and all areas.

Looking for action (pattern 3)



Landscape GB5. Olen, Albert Canal, Campine.

“The first, that is because of the water body. I do water sports, rowing, thus I like water bodies.” (Man, Walloon Picardy, 20 years, village)



Landscape FA6. Villers-en-Fagne / Matagne-la-Grande (Fagne, Schist depression)

“It’s undulating, it’s very green, it’s natural, there is forest, there are animals. Right, there is the road, but we do not see it too much, it looks very natural, it makes us want to walk” (Woman, Ardennes, 22 years, small town)

“This looks quiet. You have the small road, you cannot say there is nothing on it, but, I mean, it looks like a small road for walking, it doesn’t look to be a high traffic road”. (Woman, Sambre and Meuse area, 53 years, small village)

“Once again, this is very wild, we can just see some cows in the meadows, there is a road, but, well, we can go for a ride on bike, so this is not bad” (Man, Walloon Picardy, suburban village, 49 years)



Landscape DA33. Gooik (Flanders, Pajottenland, Brussels Green Belt)

“This is really a superb house; it is very well situated with fields around, forest, all I like. Very much greenness and I have a feeling that it is quite far from major roads. There, this is really a place where I would like to live.” (Man, Walloon Picardy, 20 years, suburban village)



Landscape IA2. Frasnés-lez-Couvin, Fagne (Schist + Limestone shoulder).

“Here, you have a stone quarry. Thus in a way, it is also to exploit the land, even if it is the subsoil.”(Man, 53 years, Small town, Ardennes)

“When quarrying is finished, this is beautiful, because this is grandiose. It reminds me of cliffs. Now, when they are working, I am assuming that it gives work to people, this I cannot be against. The people who are working there, good for them, they have a job. For our part, we are just driving through by car.” (Woman, 50 years, Walloon Picardy, stone-quarrying town)

This **third way** consists in being immersed in landscapes and focusing on the actions which could be performed there. This was already sensed in the comments gathered during the first survey. Gibson suggested that it was easier for an observer to perceive the affordances of one landscape than its qualities (Gibson, 1977). But Gibson’s theory does not explain all as this theory focus on what element afford something interesting to the observer.

With this technique, people analysed landscapes as they were into the place deliberately doing something. I would call this “**immersive analysis**”. Among the 52 interviews transcriptions, 45 utilized this way of analysis at least once.

The most frequent action is linked to the idea of walking. Other sport and leisure have also been mentioned at least once: running, riding (bike or horse), and water sports. Non-sporting activities have also been evoked to justify the rankings: to watch animals, to go camping, to do sightseeing, to shop in local craft, to garden, to talk with local residents or just to rest, to cite the most significant.

The idea of living in the landscape was also well present. It was not rare to hear the participant saying she/he could buy one house visible on the landscape.

More rarely, the idea of exploiting natural resources has been pointed out in various ways: to farm the land, to mine the quarries, to harvest fields, to go picking blueberries or, last but not least, to harness wind energy. This last observation clearly illustrates

Gibson's affordances theory. In these cases landscapes were analysed as affording interesting things.

Looking for human footprint (pattern 4)

"If you look at the landscape from my home place, you know, I do find that is beautiful. You watch and you can see land plots. But you also have some houses and it brings some life." (Man, 19 years, Sambre and Meuse area, Village)



Landscape CA3. Brûly, Couvin (Ardennes)

"I like when there are houses, for human contact, to meet people, to discuss with local people. I would not go into the desert, you know". (Woman, 49 years, Sambre& Meuse, Village)

"This road means that there are farming vehicles, but it also means you can walk on it. Electric lines do not disturb, because it is not high voltage lines, it doesn't spoil landscape. It is also a synonym of life, it supplies power to people" (Woman, 57 years, village but from urban origin)

This **fourth way** was also used, but far more rarely. I would call this the "**agerophile**" analysis. This is the counterpart of the naturalist analysis. Some people prefer landscapes where human footprint is present. They focused on the living nature of landscapes.

4.3.4.2 Analysis perturbations

This general analysis pattern was bypassed in some circumstances. This will help to elaborate a general landscape analysis pattern, answering to the following question: when they see one landscape, how do people react?

Place recognition

A first perturbation occurred when the landscape was recognized. This place recognition may be right, almost right (right area but not the right place) or wrong, but the influence will be almost the same. In my paper (Vanderheyden et al., 2014), I called

“attempted familiarisation” the fact to look at familiar landmarks in landscapes to determine if it was a known place. This hypothesis is confirmed by the interviews. Some respondents picked up in the landscape familiar elements to attribute a place to the landscape.

This observation was especially blatant with iconic landscapes, such as the view on the Semois valley (Ardennes). Despite their iconic character, these landscapes were not systematically recognized, especially by young people, even if they lived in Ardennes. This finding is consistent with quantitative analyses.



Landscape IA1. The Giant’s Tomb in Botassart, Semois valley, Ardennes.

“Once again, this is the Semois valley, this is the Giant’s Tomb seen from Botassart. I know the area very well. In Botassart, we are already in the woods, I mean, thus, immediately, I enjoy.” (Man, Ardennes, 45 years, small village)

“Oh, this one, I like it. It is the “Giant’s Tomb”, isn’t it? [...] I know it. My grandparents used to live there. We went there two months a year. We spent our holidays, walking along the Semois river.” (Woman, Sambre and Meuse, 63 years, small village)

“There, this is the Giant’s Tomb, I think, is it? [...] This is Botassart. I don’t think I have been there, but, I mean, I know the place from postcards“ (Man, Walloon Picardy, 63 years, suburban village)

“I don’t know where this photo could have been taken. I was even wondering, because, I was thinking, this is a place from this area.” (Man, Ardennes, 22 years, Village)

“Is this the Meuse valley?” (Man, Ardennes, 22 years village)



Landscape FA1. Signal de Botrange (Ardennes, High Fens)

“The most attractive, this is for sentimental reasons, actually, because this is the High Fens. I like really this area. Plenty of walking, and they are memories. That is way I put it in first place.” (Woman, 49 years, Ardennes, small village)

“So, the first landscape, for me, represents the High Fens. I like this environment. I enjoy walking, it remained very wild, there aren’t many... we cannot see many human footprints. That’s an environment where we can observe plenty of things and so, that’s why it is my favourite.” (Man, Ardennes, 45 years, small village)

“It looks a bit like, I exaggerate, the far west, with the fields so dry. We can see forest in the distance. There is nothing in the landscape. I like.” (Man, SM areas, 20 years)

I don’t like this one, it looks like the steppes. (Woman, Sambre and Meuse, 63 years, small village)

Wind turbines

As expected, wind turbines did not let the respondent indifferent.

Some reactions were pretty extreme, in both senses:

“Wind turbines are a turn-off for the eyes, I mean.” (Man, Ardennes, 22 years, Village)

“But I like wind turbines, I think they are big quiet ladies.” (Women, Ardennes, 46 years, village)

I observed also reactions going in the same sense as Lacsawep recommendations:

“It depends in what landscape. I mean, if they are in a place already altered because they are industrial estates, it doesn’t bother me. But in landscapes such the one I ranked in first place, I would not like it at all.” (Man, Ardennes, 51 years, village)



Landscape CB6. Lommel (Flanders, Campine)

“I put this landscape in third place. It looks quiet, as a landscape, but in background, we can see some industrial activity. The wind turbines make me ranking this landscape better, but it is only this element, because for the rest, I am not familiar with this landscape, I do not find this landscape beautiful at all.” (Women, Ardennes, 46 years, village).

“I put this one in second, because, I don’t know, I don’t find this landscape especially beautiful. There seems to be many complexes in background, but in other ways, I think it is precisely a right place for wind turbines.” (Man, Ardennes, 24 years, village).

“This landscape is in fourth place. I mean... it looks a bit too industrial. We can see four wind turbines, there we can see really some pylon, there we only see pylons, this doesn’t look pleasant. We also can see, I presume, big buildings to make the wheels of economy run... It looks like an old ground which they try to convert into an industrial estate or what else? I think they failed, for landscape I mean, they failed.” (Man, Sambre and Meuse, 20 years)

4.3.4.3 Secondary themes

Tidy vs untidy landscapes



Landscape CA4. Bertem (Flanders, Brussels Green Belt)

“This looks a bit messy. But, anyway, I did not surely criticise in my scores, because it is not ugly at all as surroundings, but... I don't know, this is a bit in a mess, all that different kinds of sheds. We can even see tents or I don't know what, there.” (Woman, Ardennes, 46 years, village)

“For me, it looks untidy. I mean, it doesn't have to be uniform, but... I say, we feel that even the buildings are extended with boards”. (Woman, Walloon Picardy, 51 years, village)

“We can see houses all over the place, in all directions. And also the stakes, we can see mainly the stakes because they are in the foreground.” (Woman, Walloon Picardy, 20 years, village)



Landscape EA5. Marchin (Condroz)

“I like a lot when forests are in patches. This is well structured, I like when it is well structured.” (Man, Sambre and Meuse, 19 years, town)

“It looks like it was structured... the small houses, the trees. It seems to be spread out.” (Woman, Sambre and Meuse, 53 years, village)

Living vs lifeless landscapes



Landscape BA3. Ieper (Flanders, Flemish plain)

“What I do like less, this is the crops, it looks a bit lifeless. But this is only the field. Without this field, I would not have minded.” (Woman, Ardennes, 21 years, village)

“At the bottom, it looks dead, it is dark.” (Woman, Ardennes, 49 years, village)

“The landscape is brown, that is gross, I mean. The plants seem to be dead, this is not very attractive.” (Man, Sambre and Meuse, 19 years, town)

“This one is the least, because it is brown, I don’t like, it is bleak, it is drab.” (Woman, Sambre and Meuse, 47 years, village)

Various vs monotonous landscapes

The monotonous aspect of landscapes from intensive agriculture areas was often pointed by respondents as a justification. The conjunction of flat terrain and monoculture was highlighted. Globally the landscape diversity was often a criterion among respondents.



Landscape FA4. Ramillies (Hesbaye, loamy plateau)

“The landscape is completely flat, very very little variation. There is a field, but on the horizon, we can see some trees and that’s all. This landscape is very bleak and almost lifeless, except this culture which looks too apparent.” Women, Ardennes, 46 years, village.

“This is really flat, very flat, with the same thing everywhere.”(Woman, Ardennes, 49 years, village)

“It lacks at green, at relief, all is flat.” Woman, Ardennes, 23 years, village)

“I find this landscape the most attractive. There is this little wood standing out on the photo. Without this, I cannot say that I would have liked this photo. [...] I can well imagine a small chapel behind and I would find the place interesting.” (Man, SM areas, 20 years)

“I like this side of savannah [...] The vegetation is cut very short, it looks yellowish. The small tree for a little bit of originality, I like. Yes, this one is nice.” (Man, Sambre and Meuse, 19 years, town)

The non-visual

Some landscapes evoked also smells and sounds to the respondents, in both positive and negative ways. This non-visual was mainly either farm-generated (pleasant and unpleasant odours, noise emitted by tractors) or industrial, especially concerning stone-quarrying and industrial estates. In other case, non-visual concerns were just expressed without any details (“This landscape looks quiet” said some respondents).



Landscape BA5. Sint-Katelijne-Waver (Flanders, Market Gardening area)

“What bothers me, I have on colleague who talks about it repeatedly, that is industrial pork and chicken farming. In smell, this is unbearable. [...] So when I see this, I feel sorry for the local people, even though we are on the countryside.” (Woman, Walloon Picardy, 51 years, village)

Some contrasting reactions were sometimes gathered:

“The crop field, even if it is made by man, I think this is beautiful to see, anyway. I prefer to see a crop field where I can hear the wind going through the field. This is wheat, I presume, thus we can hear the wind blowing on the wheat. This is a nice sound.” (Man, Ardennes, 22 years, Village)

But later, the same said about the same type of agricultural landscape:

“The noise made by the tractor... Among all machines, that is the one which does bother me the most. I just have to see them, I have to overtake them, they

are getting on my nerves, they would not pull on the side of the road. That is why I don't like this."

If stone quarries were perceived as useful for economy and beautiful (see above), their noise nuisance was mainly pointed as a negative non-visual influencing factor:

"That is the noise associated to the quarry which does bother me. The quarry during the weekend does not bother me. It may recall waterfalls, many things, but they do not have to be in activity." (Woman, 50 years, Sambre and Meuse, Village)

For the "naturalists", even the sounds of everyday life may be disturbing.



Landscape DA3. Gooik (Flanders, Pajottenland, Brussels Green Belt)

"In background, it looks like we are in a village. [...] I like to hear the sound of nature. I would hear birds but not distinctively. I would hear cows, dogs, cars, and people speaking." (Woman, Sambre and Meuse, 22 years, town)

Sounds and smells may also be associated to memories. When she saw a picture of Semois valley, one woman recalled her holidays:

"The birds singing, that is what you can find in a forest, a wood, the small river, and the waterfall. When you enter the woods, you have a smell of pine, it smells good." (Woman, 50 years, Walloon Picardy, town)



Landscape HA2. Monceau-Imbrechies. Fagne, limestone shoulder

"On this one, this is rather an olfactory experience, I can see hay, haymaking season, that's true, I still like the odours at this moment." (Man, Ardennes, 24 years, village)

“Here this is the bundles of hay... I am the son of a former farmer... This is the smell of hay, I like it, the smell of haylage.” (Man, Sambre and Meuse, 19 years, village)

“Thus, when I see this picture, I can hear the noise from the tractor, behind the picture, which come to fetch the bales of hay to give to the cows.” (Man, Ardennes, 22 years, village)

4.4 Landscape analysis patterns

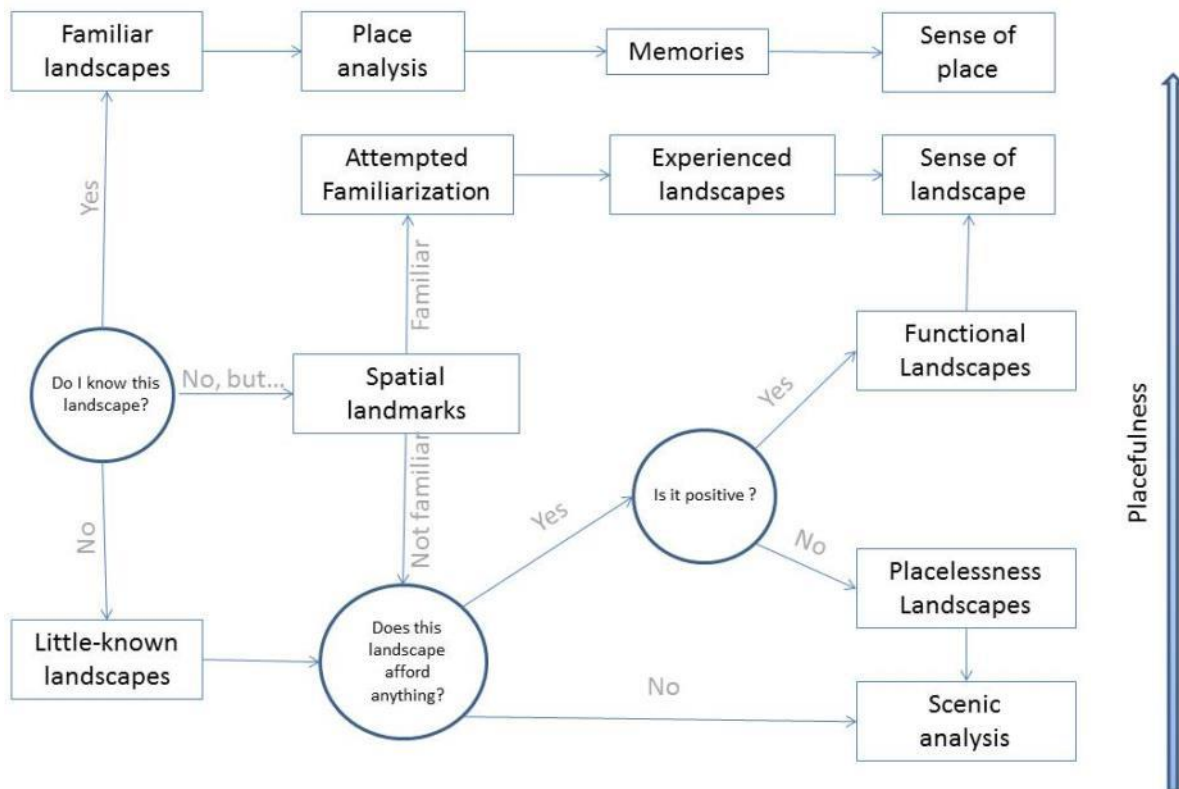


Figure 4.7 Landscape analysis patterns

The central question of my interviews was: why did you order the landscapes that way?

Although differences are blatant, a general analysis pattern emerged from the interviews.

On the figure I drew three possible reactions after viewing the landscape. In the first case the landscape was recognized. This recognition bypasses all other analyses. Landscape becomes a place. In this case emotional bonds with the place overcome all other criteria. In the opposite case the landscape was not recognized. In this case the observers tried to pick up interesting elements in the landscape. In other words they

wondered if the landscape may afford anything to them. In the case of a positive contribution, the landscape affords something and this may be useful, we come across a functional analysis of landscapes. Without saying this leads to sense of place because the place remains unknown, a kind of “sense of landscape” appears. In the case of a negative contribution the landscape seems to loose its place properties. It becomes a placelessness landscape, which could be everywhere, and then scenic analysis takes the upper hand. There was also an intermediate case that we called attempted familiarization in Vanderheyden et al. (2014). This occurs when the landscape has not been recognized as a precise place but spatial landmarks were seen in the landscape. If these landmarks were not familiar, this bypasses to the previous case of affordance analysis. In the case of familiar landmarks we came across what I would call experienced landscapes, leading to “sense of landscape”.

4.5 Discussion

This study shows that even among homogenous groups of people (from the same country, with the same language and almost the same education level) we can observe differences in landscape appreciation that could be linked to the residence and could be influenced by personal life trajectories. These differences are also expressed in the type of vocabulary they use. Differences are particularly blatant with ordinary landscapes. Researchers who found homogeneous preferences among Western people usually worked with natural landscapes and students from their own university.

Beyond this, the analysis of the way on how people assess the landscapes they were shown allows to determine the analysis pattern they used. We can relate this to the theoretical analysis framework described by Tveit et al. (2006) who found 9 different visual concepts in their review of previous studies: stewardship, coherence, disturbance, historicity, visual scale (including visibility and openness), imageability (including sense of place), complexity, naturalness, and ephemera. The first pattern of analysis (looking for wilderness) relate to landscape naturalness. In landscape visual assessment naturalness greatly contributes to landscape quality (e.g. Gobster, 1999). The second, focusing on scenic aspects, may refer to coherence (harmony) and ephemera (seasonal changes). Wind turbines and other man-made elements relates to disturbance. However, disturbance has to be qualified. Some people are deliberately attracted by human footprint in landscapes. Tidy and untidy landscapes make reference to stewardship (sense of care). Variety and monotony refer to landscape complexity. According to some participants, this perception of variety is reinforced for open

landscapes with view stretching far away (openness and visibility, relating to visual scale).

Beyond these visual criteria, imageability of landscapes play a huge role. Some places were recognized by the participants to the study. This highlights analyses linked to place attachment, which has been deeply investigated by other scholars working on sense of place and related issues (Shamai, 1991; Jorgensen and Stedman, 2001). In this case, emotional bonds with the place take the upper hand.

This is also really challenging according to what researchers would like to measure. Do they want to measure only visual or also the invisible? Cresswell wrote he did not like landscape but place. For him landscape is just visual, whereas place approach is multisensorial. Unlike Cresswell (2003), I observed that when people justify their landscape assessment, they used mechanisms more complex than visible but less strong related to places than sense of place.

In most cases, the participants did not recognize the places visible on the landscapes photos (namely or geographically). Two typical reactions occurred. Either the landscape was analysed aesthetically, either participants tried to pick up familiar elements in the landscapes, in order to link the observed landscape with a place they know. This attempted familiarisation was already observed by Vanderheyden et al. (2014). This is consistent with Serge Schmitz's findings (Schmitz, 2001), who wrote that people only use the items that they judge pertinent when they analyse their territory or landscape.

In the case where place is not namely recognized, I propose to speak of *sense of landscape*. Following the example of sense of place's researchers, I might create an empirical scale for measuring the "sense of landscape". Shamai (1991) elaborated a seven-point scale to measure sense of place going from "Not having any sense of place" to "Sacrifice for a place". *Mutatis mutandis*, a similar scale can be established concerning what one would call "Sense of Landscape". This take also into account the considerations gave by Catherine and Raphaël Larrère (2009) in the ways of looking at landscapes.

Table 4.11 (Sense of landscape scale, adapted from Shamai, 1991)

Level	Description	Quote
No landscape	When the scene presented to the observer was not considered as a landscape.	<p><i>“There is nothing there making this landscape beautiful. There are all these houses in the background. To my opinion, this is not a landscape.” (Woman, Walloon Picardy area, 22 years)</i></p>
Aesthetic / Scenic	When the landscape is not localizable as a place, could be anywhere. Aesthetic view regains the upper hand on landscape assessment. Raphael and Catherine Larrère (2009) plead that everybody can have an aesthetic view on landscape, according to our own experiences. (= scenic assessment)	<p><i>The first is there because of bright colours. I like bright colours, bright green. (Woman, Ardenne area, 22 years)</i></p>
Projection	In this case, landscape is clearly belonging to a place, even if this place is not precisely localized. People can imagine performing an action there or can see something being done there (e.g. leisure, living, working...). (= landscape assessment)	<p><i>I like biking as well, thus I like hilly landscapes. There were many photos where it was very flat. Perhaps I did not judge them as very attractive, but I reason with the fact that I do many walks in the mountains, I do a lot of bike, and I like places where it climbs up. (Man, Walloon Picardy, 49 years)</i></p>
Attachment	At this stage, the landscape is recognized as a place or at least look like a place they know which evoke them memories, give them emotions. This stage meets up with the Larrères’ idea of an inner view of landscape. That is when people have appropriated the landscape as a specific place. (= place assessment)	<p><i>On this picture I can recognize the Giant’s Tumb along the Semois river; it was very close to my grandparents’ place. There was the tale with the Giant my grandparents told us [...] I remember the walks, the hikes we did there. (Woman, Sambre and Meuse, 63 years)</i></p>
Allegiance Involvement Sacrifice	Allegiance, involvement or sacrifice (fourth to sixth stage). This implies a real connection between the landscape and the place. Three last stages are less often observed when working at the general scale of landscape.	Not observed in my interviews

The lexicometric analysis of the speech corpus allows to enlighten this theory and to validate some of the hypotheses I made to compose the sets of landscapes to be assessed during the study. The observations I made on the occurrence of some specific words relating to landscape issues or components plead in favour of a privileged link with the familiar landscapes and their main characteristics. People tend to talk with more emphasis about their own landscapes and the relating issues.

Forest issues are a first illustration of this finding. The results show that participants from Ardennes utilized a richer vocabulary concerning this issue than other subgroups. However, this vocabulary is not yet specialized. In their comments, the Ardennes participants considered forests and woods as a part of their own landscape.



Landscape BA2. Frahan from Rochehaut (Ardennes, Semois valley)

“This one is first because it recalls me our countryside. The presence of lot of forests and valleys” (Woman, 20 year old, Ardennes, small town)

“The valleys like this, that is nice! And our land, the Ardennes, is a land of woods, where culture and woods go together.” (Man, 66 years old, Ardennes, village)

Forest is a place more regularly experienced by them. *“I have lived here for more than 20 years. I grew up here, I have biked in woods, I ran and played in brooks”*, said a 24 years old man from a small village in the Ardennes. The divisions (conifers vs broadleaves) were also more often expressed. Although conifers cover a large part of Ardennes area, they are commented with a strong negative connotation: *“I prefer broadleaf forest to spruce forest, because everything is dead under spruces, probably”* said a woman (21 years). Underutilization of words concerning forest in Walloon Picardy groups where forests are far less present show significant indication about the low preoccupation towards forest in the analysis. In Walloon Picardy area, forest was just mentioned as a leisure place, referring to one of the few forests present in the area, the forest of Bonsecours, which straddle the border between France and Belgium.

Terrain issues also give a good indication on the preference towards local, with one significant exception concerning flat landscapes. *“I like the terrain in the Ardennes, it is*

cheerful. You go over a hillock and you see something else”, said a 24 years old man from a small village in Ardennes. This idea of discovery is present in some interviews in all areas. On the other hand, flat landscapes do not reach consensus in Walloon Picardy. Most participants from this area were more likely to also prefer uneven terrain. Few people in Walloon Picardy preferred flat landscapes for local reasons. Whereas Ardennes people associated uneven terrain to their landscape, Walloon Picardy residents tend to find their flat landscapes monotonous: *“I am less attracted by rugged terrain than flat. I am used to seeing flat landscapes “*, said a 20 years man from a village in this area. Flat landscapes are nevertheless associated with this area, even with people living close to Flemish hills. *“Around our place it is very flat”*, said a 48 years woman, yet from the north of the area close to Flemish hills area. A few people said flat landscapes were attractive because of the easiness to walk on them, independently of their residence area.



Landscape GA5 / GB5. Olen, Albert Canal, Campine.

“This one is in first place, because this is flat, along the river. I am perfectly capable of walking for a long time. I enjoy walking, but I do not have a lot of breath. I do not need places too hilly; otherwise, I have to stop for breathing.”
(Woman, 50 years, Sambre and Meuse, Village)

This adds weight to the finding that analysis patterns may disturb this local attachment. When they are confronted to unknown landscapes, one of the reactions can be to analyse landscape as a place where they can perform some action. This joins Ruiz and Domon’s observation (2012) of a possible hedonistic relationship between people and landscapes.

Agricultural issues plead in favour of the main research hypotheses. People from the crop field area talked more about fields, using also more precise vocabulary (e.g. wheat whereas other said cereals). Ardennes people, on the other hand, overused words linked to cattle breeding, while Sambre and Meuse residents used a general vocabulary linked to both ploughed fields and dairy farming, corresponding to the local farming types.

The influence of man in landscape may also play a role in disturbing this scheme. For example, wind turbines seem to be as important in Walloon Picardy than in Sambre and Meuse areas, the two areas where they are also more numerous. In the Ardennes, they are present and they were mentioned, but seemed less problematic and did not monopolise the comments as it in the two other areas.

Possible biases

I found that the familiarity of landscapes influences notably the preferences. However people are not motionless objects. Verifying a hypothesis such as the relation between place of residence and landscape preferences presents a bias. People travel and can experiment many different places, which contribute to the construction of their own evaluative framework of landscapes, in other words a spatial capital (Lévy, 2003). This bias adds weight to the utility of qualitative research methods to interpret and validate statistical investigation in landscape research.

Another bias due to the methodology remains possible in the lexicometric analysis. With semi-directive procedure, it could be possible that a bigger occurrence of some words or lexemes among participants be the results of an interviewer's request to go more thoroughly into some details concerning their own landscape. Nevertheless, we tried to minimize this bias during the conduct of interviews.

With the use of photographs as landscape surrogates, distortions may and do occur. The analysis patterns used by participants are sometimes restricted to an aesthetic analysis of the photograph: colour arrangements, lightness or brightness, weather conditions. In landscape research, photographic surveys are sometimes criticized for they do not represent reality but only a surrogate. They seem to oblige the respondent to make only visual assessment while in-situ experiences can include other senses (smell, hearing, touch) and emotions/feelings. In 1997, Scott and Canter warned us about a possible bias when assessing landscapes with photographs, especially in surveys involving general public. They justly asked: "Do people assess picture or place?" Yet, if in-situ experiment remains theoretically preferable, in reality it turns out they are difficult to put into practice for various reasons (such as costly and time-consuming). Photo-questionnaires could thus be only the theoretically second-best solution but the easiest to implement. They allow to reach broader public, to choose what will be seen with framing, or to fix some characteristics such as weather conditions or seasons. That is why most studies, including this one, continue to explore preferences with landscape photographs.

5 General discussion: Implications of my research and perspectives

Returning to my initial research questions, I was able to address them throughout my research. First I aimed at exploring landscape in the mind of people, focusing especially on everyday or ordinary landscapes and the change induced by wind farms. Landscape is a vague concept for some people and need to be more decrypted than presently.

The first question (What are landscapes to people?) was addressed throughout this research (chapter 2, 3, 4), first quantitatively (large scale survey) and then qualitatively (thorough examination on smaller groups). The second and third questions (*How do people conceptualize/understand landscapes? How do they interrogate their own views on landscapes?*) were hypothesized in chapter 3 and deeply explored in chapter 4. The fourth and fifth questions (*How these views and thoughts are influenced or shaped by their living places? Can we see regional trends in landscape preferences beyond individual preferences?*) were also hypothesized in chapter 3 and deeply explored in chapter 4. Finally, windfarms development was approached in two ways. From specific study object in chapter 2, this topic became mainly a leitmotiv, a pretext to let people talk about their landscapes in the course of this research.

At the end of this work, I would like to discuss more deeply some findings. How did I contribute to research on landscape preferences? What are the implications of this research in geography and urban planning? What research perspectives can be envisaged at the end of this research?

5.1 Contribution to research on landscape preferences

5.1.1 Landscape, place or picture

A first implication of my work is fundamental in research over landscape preferences but this is often neglected: knowing what people are really assessing. Are they assessing the place, the landscape or the picture?

Academic literature is replete with studies proving the validity of the use of photographs as landscape surrogate (e.g. Stamps, 1990, see chapter 1). Yet, as far back as 1997, Scott and Canter pleaded for further clarification during experiments. In their view, we – landscape researchers- are not able to detect only with psychometric scales what was really evaluated by participants: the place or the picture? Scott and Canter found contrasting results in an experiment using two sorting tasks. During a first free

sort of landscape photographs of known places, participants were more likely to base their judgment on the content of landscapes despite they known the places. During a second phase, researchers oriented participants towards place assessment. As a consequence, researchers observed that participants were using their memories and their experiences of the place to group the landscapes. My research, especially its qualitative part, adds weight to their argument. During surveys and interviews, I never specified what I meant with landscapes. Nevertheless, I came with landscape photographs and asked “Could you please assess these landscapes?” In my mind people were thus assessing landscapes. I was partially wrong. By requesting the participants to justify their sorting I was able to detect what they were really assessing. I found place, picture, and, happily, landscape assessment. I observed that some participants were immersing themselves in the landscape as they were on site. This was obviously the case when places were really recognized but this happened rarely (see chapter 4). However, some people needed to imagine they were on site when they were observing on the picture. They were looking at familiar landmarks in each landscape (attempted familiarization) or looking for actions to perform as they were there. It was observed without I had to specify “please rank on the basis of place”, unlike Scott and Canter.

There is a growing body of literature on attempts to thwart this place vs picture problem. One solution advocated by researchers is to work with computer-generated pictures in order to rub out the place effect. Åsa Ode and her colleagues (2009) pointed that this technique offers two main advantages. First, researchers can control the indicators they try to measure. Second, they offer “a direct link between the three-dimensional and two-dimensional data” (Ode et al., 2009: p. 376). Yet, Daniel and Meitner (2001) recommended to be prudent with this kind of studies. They found low correlations on assessment of the same scenes with different “levels of realism- abstraction”. They found little inter-correlation according to the level of abstraction: the higher the level of abstraction, the lower the correlation between in-situ and photographic ratings. In my opinion, with this kind of research design indicators are well controlled but one still lack information on what is being measured by participants. Landscape studies, with computer-generated landscapes pictures or not, should be more relevant with qualitative methodologies to fill the place vs. picture gap or at least to bring precision on what is being assessed.

5.1.2 Beyond visual: taking other senses into account

A second implication could be derived from the first one. Visual properties of landscapes are often considered as the main contributor to landscape preferences.

Visual analysis is the front door of landscape analysis and also the main way of analysis by definition. Eye-tracking studies add weight to this (Dupont et al., 2014, Dupont, 2016). However, many researchers limit their analyses to this visual assessment and neglect the possible impact other senses. Beyond a first visual analysis (quick glance at the picture), other senses become operational when people deepen their analyses. The use of photographs could fail to reproduce feelings linked to other senses than sight. That is one main critic towards the use of photographs as landscape surrogate. But in contrast, visually idyllic landscapes assessed in-situ could be assessed differently according to local circumstances that are not detectable on photographs (e.g. bad smell, noise pollution).

Many scholars have explored the role of other senses in landscape preferences and we should not neglect them. Grahn and Stigsdotter (2010) recalled that Gestalt theory had already interest in how people hierarchize their senses in perception. They recalled that Anton Ehrenzweig (1967) distinguished “surface perception”, which is rapid and uses Gestalt, and “depth perception”. However, according to Ehrenzweig, both are “fluently integrated” (Grahn and Stigsdotter, 2010).

In English, neologisms have emerged to characterize landscapes influenced by senses other than sight: soundscape, smellscape, or even touchscape. These are especially in use among researchers following the phenomenologist paradigm (Descola, 2013). This author recalled the works of ethnologists among pristine populations such as Edmund Carpenter’s research with Inuit people or Raymond Murray Schafer who developed research on soundscapes. In my interviews, participants sometimes spontaneously called some of their other senses to hierarchize their preferences. Smell was called to explain preference for landscape with bundles of hay or non-preference for landscapes with modern pigsty. The peaceful sound of rivers was called to explain preference toward river landscapes. Noise was called to explain low preference towards farming landscapes with tractors working. For Descola (2013), in the same way as any subjective perception of visual environment may not be called landscape, sound environment is not always soundscape. For him, a reflexive process is necessary to go from subjective perception of one sensual environment to the perception of “anything-scape” (landscape, soundscape, smellscape, touchscape, etc.). This is going in the same direction that Augustin Berque who claimed the importance of landscape thought.

Taking sound into account in landscape research is essential when one want to study the impact of wind turbines. According to Wolsink (2007) noise is a secondary factor to explain attitudes towards wind energy projects. However, Pedersen and Waye (2004)

found that noise annoyance was higher among people who also had negative visual concerns toward wind turbines. The opposite question should also be examined: do noise concerns about wind turbines influence visual assessment of wind energy landscapes? With my quantitative work I cannot affirm that only visual impact of wind turbines was really measured with my simulations. However, these noise concerns expressed by some participants are not enough to be called soundscape in my opinion.

In the same way, it is also important to take smell into consideration (Coeterier, 1996; Pérez, 2002; Amberger and Eder, 2011). When smell was called to justify preference for landscapes, this sense acted as “the elicitor of remembered landscape”, just like madeleines dipped in tea did to Marcel Proust (Riley, 1992: p. 21).

Academics use neologisms to deepen the landscape concept without altering its visual nature. This is not the case among ordinary people. My qualitative research in the French-speaking part of Belgium showed that even in one same language, people put a broad range of meaning behind the word. For academics and landscape researchers, landscape may be a clear concept within their own discipline, even if each one has got its own definition(s). For ordinary people, landscape is not as clear as in researchers and planners’ mind, as highlighted by my contribution to the deconstruction of the concept. The analysis of vocabulary also showed differences across French-speaking areas. As found in previous chapter, people tend to better justify familiar landscape. This is not a prerogative of ordinary people. Landscape experts also tend to characterize deeper the landscapes they know and to simplify other areas (Schmitz and Vanderheyden, 2016). This may be related to a place-specific assessment in known areas. This observation made among expert during participation to following committees of landscape characterization projects is confirmed by my research. For instance I interviewed one student’s father working in an association that is active in nature conservation. He recognized far more local landscapes than any other participant to the study. On the other hand, his analysis of unknown landscapes was related to landscape features and landscape design according to his “sense of landscape”.

5.1.3 Beyond aesthetics: multifaceted landscapes

During my research, in addition to exploring public aesthetic points of view on landscapes, I explored landscape attractiveness which is a larger concept. As dictionaries suggest, attractiveness means both “the quality of being pleasant to look at” but also “the quality of seeming interesting or worth having” (Oxford Learner’s

Dictionaries). The symbolic contribution of wind energy on landscape, whether it be positive or negative, is related to the second definition. People analyse landscapes differently, aesthetic assessment is just one of the possible analysis patterns. These patterns were found to vary from one person to another. Even one same person may use different patterns according to the landscape context. When the analysis is not place-related, patterns are shaped by a “sense of landscape” (see chapter 4) related to an immersion into the unknown landscape (see above). Sense of landscape is less strong than sense of place but stronger than purely aesthetic assessment. Emotional bonds explaining the sense of place are not present but people express other concerns than aesthetic pleasure. In line with these analysis patterns, many theories were published to explain landscape preferences (see chapter 1). Among them, Appleton’s prospect-refugee (1975) and Gibson’s affordance (1979) theories do have many similarities but are different. With respect to Appleton, in my opinion, Gibson’s theory looks better and larger to explain how people are analysing landscapes at first glance. Whereas Appleton’s theory is related to habitat (Darwinism), Gibson’s is related to all functions an environment can afford through its components. In Gibson, affordances are perceived “without mental calculation, that is, a direct-perception view” (Jones, 2003: p. 177). Affordances are inherent to landscape features, independently of their perception (Michaels, 2003). Gibson wrote that even animals used affordances when they analyse their environment. When participants detect meaningful features in landscapes they can decide whether the landscapes contribute or not to their needs or preferences. However, all meanings associated with landscape should not be called affordances. In the same line, are aesthetic concerns affordances? Grahn and Stigsdotter (2010) wrote that pleasure and beauty were also providing utility and should be considered as affordances. However, if affordances are independent of their perception (Michaels, 2003), this is questionable.

5.2 Implications in geography and urban planning

5.2.1 Landscape in territorial conflicts

Landscape has an important role to play in geography and urban planning, particularly concerning land use and territorial conflicts occurring at different scales. Sometimes landscapes serves as a justice of the peace, sometimes as an irrefutable argument in these conflicts. The most striking example of landscape conflicts comes from renewable energy siting. I have largely discussed the case of wind energy but it can be extended to any other renewable energy: hydro-power, solar power, and biofuels industry. For Pasqualetti, conflicts may arise as people got out of the habit of being confronted to

energy production (Pasqualetti, 2000). The subjective nature of landscape preferences gives to landscapes an unquestionable character (van der Horst and Vermeulen, 2011). Expressed aesthetic considerations concerning wind turbines and other renewable sources of energy could also reflect territorial concerns in a place-related view of landscape. They are said to spoil the landscape but in reality they just infringe on the territory. But wind turbines are also an opportunity for people to re-appropriate their own land from an energy production point of view, a form of *re-territorialisation* based on a prior deterritorialisation induced by centralised power production.

In countries following the neoliberal paradigm such as within the European Union, the debate revolves around monetary issues. While proponents argue that renewable energy are contributing to common good, that is contributing to reducing global warming; opponents argue that it will lower the price of their property (Van der Horst and Vermeulen, 2012). There is a substantive body of scientific literature on the monetary evaluation of landscapes. In my introduction I briefly drew attention on hedonic pricing (e.g. Tyrväinen, 1997, Hamilton, 2007, Sander and Polasky, 2009) and willingness to pay methods (Campbell, 2007; Hanley et al., 2009) used to give a monetary value to landscapes. In my opinion, these studies fail to explain preferences. This pleads in favour of a more holistic approach.

5.2.2 Multiple meanings: also in geography and urban planning

The range of meanings of the word landscape also has implications in my discipline. The European Landscape Convention (ELC) seems to have brought more homogeneity in the way “professional” landscape stakeholders consider the concept (Council of Europe, 2000). From an academic point of view this convention constitutes one of the few examples of consensus on the meaning of the word between landscape specialists (Donadieu, 2007). However, this is only valid in the convention languages (English and French). This apparent homogeneity should be put into perspective in view of language differences. Several authors have pointed the fact that the English word “landscape” and its translations in other language do not exactly mean the same. During the signing of the European Landscape Convention, gaps have appeared between signatory countries in its implementation (Sarlöv- Herlin, 2016). In a previous paper (Schmitz and Vanderheyden, 2016) we investigated the different perception related to landscape quality. We found differences according to expert background. This should not be neglected in planning policies concerning landscape. But differences are more blatant among ordinary people. This may lead to misunderstandings between people, researchers, and authorities in the implementation of planning policies. Yet this

consideration is not new. In the eighties, Georges Neuray (1982) had already drawn the attention in his book *“Des paysages: Pour qui ? Pourquoi ? Comment ?”* (Landscapes: For whom? Why? How?). This should be taken into account by planners wishing to develop renewable energies on their territory. Each person having their own opinion; it could thus seem futile to try to find a common view. However this is compulsory to build efficient decision support systems for energy policy at the regional scale. If authorities wish to lower public opposition this factor should also be taken into account. Yet in Wallonia during the last 15 years no planning policy was applied. Although a planning map was drawn (Lejeune and Feltz, 2008), this map was never adopted from a legal point of view. The choice of building sites was mainly let to project developers who directly negotiated with landowners. From a technical point of view flat agricultural areas are more suitable for wind energy than industrial areas (less air turbulences). Many countries privileged thus wind farms siting on these areas, including Denmark, pioneer and leader in wind turbines. This resulted in a dispersion of projects on agricultural areas instead of development on planned areas close to transport and industrial infrastructures. In Wallonia this started a downward spiral. This anarchic development was pointed by opponents’ lobbies as one of their main arguments. This situation gave them more credit among ordinary people. They succeeded in mobilizing people against planning map project at regional scale and local projects. This is not limited to the case of wind energy landscapes.

5.2.3 Everyday landscapes: our present cultural landscapes

Some people, including experts, tend to turn landscapes into a sanctuary, even for everyday/ordinary landscapes (Schmitz and Vanderheyden, 2016). In their view one should apply the same protective rules to everyday landscapes as to iconic or outstanding landscapes. This landscape heritagization created concerns specific to exceptional landscapes that could not be transposed (Dewarrat et al., 2003). Transposing these rules is though neither fully possible nor desirable. Landscapes “fundamentalists” are thus out of touch with reality. In the spirit of ELC, protection does not mean that these landscapes have to be sanctuaries. In densely populated Western Europe protection rules were established for scarce exceptional and natural landscapes. Outstanding landscapes are by definition “those to which the population has assigned a heritage value” (Council of Europe, 2013). Landscape as heritage has been widely tackled in academic literature and is still relevant today. In the introduction, I cited UNESCO initiative to include cultural landscapes on its short list. This is the tip of the iceberg in terms of heritagization. Many countries have included

outstanding landscapes in their protected areas lists. In practice protecting cultural landscapes is a paradox. Cultural landscapes are the result of centuries of land management by farmers and other land owner and land users. Even UNESCO provides changes for cultural landscapes as they include “continuing cultural landscapes”. Ingrid Sarlöv-Herlin wrote “urban fringe areas [...]are nevertheless everyday landscapes for people who live and work there, and are perhaps one of the most distinctive cultural landscapes of our time” (Sarlöv-Herlin, 2004: p. 403). As Marc Antrop (2005) recalled, all landscapes, including cultural, have experienced more changes since the Second World War than during the previous centuries. The ceasing of certain farming practices raises the question of reusing cultural landscapes in a way that suits everyone needs. This challenge is a part of a complex equation: building new cultural landscapes on past landscapes, while allowing people to live into them and without losing our entire heritage. Urbanists have integrated the need to build the city on the city for a long time. For that matter, I. S Sarlöv-Herlin (2004) pointed the need to rethink landscape policies to include all landscapes from the city core to the most remote area. The challenges are: allowing to live and to act in these landscapes without losing their character. According to Nicole Mathieu (1998), multiple meanings of landscapes flooding in the mind of people lead them to aestheticize the countryside. Therefore rural areas have lost their agricultural and productive nature. I also observed this in my research with people ordering landscapes according to their level of naturalness. However, my research also proved that those new cultural landscapes may also be perceived as living and productive places by their inhabitants. Production could be seen as a component of landscape attractiveness as well as aesthetics concerns. Whereas one cannot firmly affirm people do have landscape awareness, they do have and do express territorial relationships with their familiar landscapes and they do see their multifaceted nature.

5.2.4 More public involvement for everyday landscapes

Involving citizens in landscape management may be a lever to create bonds between idyllic landscapes aspirations and reality in the field. From an issue landscape should thus be a tool to enhance stewardship also for everyday landscapes. There is a huge need to create spatial policies adapted to everyday landscapes. The Swiss experiments (Dewarrat et al., 2003) proved that involving people could give more efficient policies concerning this type of landscapes neglected by expert. Ordinary people are often considered incompetent in managing landscapes. They are supposed to be selfish, preferring self-interest to common interest. Many practical examples can be given in

this sense, including selfish attitudes towards energy landscapes. Although many researchers (Wolsink, Bell, Devine-Wright, Van der Horst) have shown that attitudes were far more complicated to explain. If totally bottom-up landscape policies are not necessarily desirable, integrating public is necessary to better anchor sustainable everyday landscapes management policies. Through their residential choices, rural inhabitants are stakeholders of their landscapes, as farmers have been for centuries. I found people ordering landscapes according to their habitable nature; but I did not perceive they were conscious of the impact of their choice of place to live on landscapes. To conclude, a professional approach may look easier to put into practice by planners. However, this elitist view could backfire against ordinary people's awareness of their role in urban planning. However, people I interviewed did not seem aware of their role and their impact on landscapes. For instance, they were explaining housing preferences only from a contemplative viewpoint.

5.3 Research perspectives

With the benefit of hindsight, it would have been preferable to begin this PhD-research with qualitative survey, to avoid some biases already pointed out by Danford and Willems (1975). According to them, researchers select landscapes which contain features they think will be important to the eye of the participants. Scott and Canter (1997) wrote this could reduce the correlation between the experiment and the real life. They recall that people may experience many other things that those expected by researchers. Some researchers have taken Danford and Willems' criticism. For instance, they asked their participant to take their own pictures (e.g. Michelin, 1998; Bigando, 2006, 2013). In, my research I first made quantitative research to find what looked salient to people according to various factors. Then, in a second stage, I tried to explain, to fill the gaps, and to validate my hypotheses through a qualitative survey.

The deep qualitative part of my research was limited to the apprehension of ordinary (everyday) landscapes by a sub-group of people from Western culture: French-speakers from Belgium. It would be interesting to explore how ordinary people apprehend landscapes in other part of the world, provided that there is landscape awareness in those areas. This is challenging for various reasons. According to Augustin Berque (1995), one "landscape" society must meet five requirements:

- Landscape must be a subject of their thought
- They have a word to say landscape
- Their literature celebrate the beauty of landscapes (e.g. poetry)
- They have pictorial representations specially dedicated to landscape

- They create and maintain ornamental/pleasure gardens (imitating landscapes)

Berque conclude that only two civilizations meet all requirements: western (Europe and countries of European descent) and eastern Asian civilizations. I even cannot firmly affirm that people have landscape awareness where I conducted my research. In my opinion belonging to one landscape civilization does not mean that all citizens do present landscape awareness, as Schmitz showed (Schmitz, 2001).

In this line, there is a need to explore the sense of landscape – do people imagine landscapes as it is – among other neighbouring cultures. By neighbouring cultures I mean other French-speakers around the world, other Romance languages, but also geographical neighbours with Germanic languages. Indeed, through my research as well as in other research, culture was a determining factor shaping landscape preferences, even if some innate preferences may also be highlighted. This might contribute to add weight to Berque's ideas of populations being more or less sensitive to landscapes.

Beyond suspecting a sense of landscape among people, how can we record their landscape experience? Quantitative approach through psychometric scales (Likert, Q-Sort, and any other types of scales) have been privileged, including in my own research. The last part of my PhD opens interesting perspectives about the study of how people put landscapes into words. I limited my exploration of vocabulary difference across spatially stratified groups. In a transdisciplinary approach, there is a need in exploring language differences across other subgroups (age, education, gender). For instance can we detect generational influences in language? Beyond culture I also suspected and briefly highlighted that experience shaped vocabulary. As experts do not see landscapes with the same eyes as ordinary people, they also do not express landscapes with the same words. During my interviews I forced people to express their thoughts. I pushed some participants to their limits by the task. Anthony Giddens (1984) distinguished discursive consciousness and practical consciousness. For Giddens, the first is what participants are able to express with their words. Some were just able to do the task (sorting) with a kind of practical consciousness: they like or don't like landscapes but did not know why. This opens interesting perspective about the perception of one person's influence on landscapes. Are they conscious that they are stakeholders and modifiers of their landscapes? Some research in environmental psychology and neurobiology could be necessary to answer this question. However, the added-value of lexicometric analyses and photo-elicitation highlighted at the end of this research could also contribute to this.

6 Conclusion

Throughout my research I have been confronted to various ways of doing landscape research. First I started with “classical” landscape research using photographs as landscape surrogate. From that experiment conducted from the beginning to the end: conceptualisation of the survey, field work (landscape shots), image processing (creating panoramic, editing photographs), surveying people, encoding and analysing results, discussing them, and finally publishing them. Like many landscape researchers, I did not feel the need to specify what meaning I put behind the word landscape (subjective view on a place, on a space). However, during the survey, I had already noticed that people were not equipped the same way to assess landscapes. With the literature review, I highlighted three possible gaps in landscape research. First, the lack of interest for everyday landscapes persists despite several calls made by top academics or in European Landscape Convention. Second, landscape research privileges focus on aesthetics issues, which is too restrictive. Last, the lack of knowledge on the relationships between people and landscapes (how they perceive AND conceptualize them) remains quite important despite efforts to develop explanative theories. This led me to develop the second part of my PhD research, focusing on all these three gaps: ordinary, broader scope, and conceptualisation. If I could only give one piece of advice to future researchers willing to involve laypeople: do not neglect that they are not necessarily considering the same study object that you expected.

With my exploration of Belgian everyday landscapes through the prism of public preferences, I have contributed to fill these gaps. As a geographer, I explored relationships between humans and their spatial environment through the lens of landscapes. However, my approach deviates from classical geography. Whereas this last one considered human groups acting on specific territories (what I did first), I explored divergences within these groups. Spaces and places modified by humans have been the concern of geographers for centuries, whereas ordinary landscapes have often been snubbed by landscape researchers including geographers. My study shows that everyday landscapes are a relevant study object to highlight relationships between humans and their environment. Everyday landscapes allow to highlight relationships between people and landscapes that could have been omitted with extraordinary or natural landscapes. Everyday landscapes allow to stretch the study of landscape preferences beyond aesthetics and scenery. Gobster called for ecological aesthetics; this research calls for everyday “aesthetics”, to paraphrase him. I would suggest everyday “attractiveness” for the reasons mentioned throughout this research work. Whereas

wild landscapes are mostly recreational environments (from the human perspective), everyday landscapes are living and working environments and should be examined with a broader lens. These landscapes might be more vulnerable than they look.

I was also able to show that landscape is not an obvious concept for some ordinary people. One of the major findings I want to highlight: I proved that people are not equipped the same way to apprehend landscapes. Personal experience of different places play a huge role: the most frequented places and landscapes give to people a body of knowledge they can mobilise when required. They are able to bypass aesthetics to apply other criteria more important to them. They even present a sense of landscape for unfamiliar landscape. This sense of landscape is lying somewhere between the first quick look at landscapes and the familiar landscapes shaped by experience. Nevertheless, a few of them will remain incapable of going further than aesthetics concerns, even for familiar places. Is it a matter of incompetence or just a lack of discursive consciousness? Landscape and urban planners willing to involve people in landscape planning should take this into account for better policies.

7 References

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