

BALANCING HERITAGE AND INNOVATION – THE LANDSCAPE PERSPECTIVES

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Abstract

Landscape is a concept common to everyone experiencing the environment. Its meaning varies according to the background and objectives of the observer. Most people experience different landscapes and subtle linguistic differences in meaning exist. Many definitions of landscape exist and to clarify a specific use adjectives are used, such as *rural* landscape. Formal definitions have been formulated to allow coherent research and action in policy. Two are being discussed: (1) the definition of cultural landscapes in the World Heritage Convention of UNESCO (1992), and (2) the European Landscape Convention (2000). In most definitions, landscape is holistic, tangible and dynamic. Holistic means that landscape is a whole that is more than its composing parts and is structured as a hierarchical, open, dynamical system with several scale levels. Landscape is tangible, can be sensed and experienced, mainly visually. Holism also explains this partially by Gestalt psychology. All this fits in a dynamical, multi-scaled system, highly influenced by human actions. Most landscapes got their character and identity by local and regional forces and a unique history. The large landscape diversity fits the cultural diversity of people who value landscapes in various ways, homeland being one of the most important. Therefore, landscapes possess a natural and cultural heritage and are considered a common good. About three centuries ago commenced some important social and technological revolutions that accelerated and up-scaled landscape dynamics. Global driving forces transformed existing landscapes in urbanized and globalized ones in a networked society. Local forces were not able to sustain the traditional management that created the characteristic landscapes, in particular rural and (silvo-)pastoral landscapes with a long history. Thus, regional diversity vanished gradually, affecting both biodiversity and cultural diversity. The main driving forces are human (demography, economy, politics and technology) and natural (geotectonics, climate and calamities), which are interacting with complex feedback loops. These main driving forces induce a variety of processes such as supplying natural resources, production (in agriculture, forestry and industry), urbanization and communication networking affecting accessibility and mobility. These forces act from global to local scale, are essentially not sustainable and not interested in the persistence of landscapes. Displacement is the mantra of global mobility to increase profit, which is impossible at the local scale where only sustainability can be attempted by adaptation. Consequently, landscape research and applications in planning, management and conservation become complex and demand an interdisciplinary approach (integrating academic disciplines) and even being transdisciplinary (involving participation of sectors and the population). Sustainable development is not obvious. The trend is now formulating 'landscape services' allowing expressing 'intrinsic' landscape qualities in societal significance, i.e. economical, monetized terms. Most actions in landscape policy are still top-down processes and evaluation remains the domain of 'experts', 'professionals' (some with professional interests) and 'competent public authorities' (sometimes with a lack of interest or certainly with insufficient means).

Keywords

definitions, holism, transdisciplinary, change, driving forces, values

Résumé

Le paysage est un concept commun à tout qui expérimente l'environnement. Sa signification varie selon le passé et les objectifs de l'observateur. La plupart des personnes font l'expérience de différents paysages et de subtiles différences linguistiques existent dans la signification même. Beaucoup de définitions du paysage existent et pour clarifier un usage spécifique, de nombreux adjectifs sont employés, comme le paysage 'rural'. Des définitions officielles ont été formulées pour permettre des recherches cohérentes et des actions dans des politiques. Toutes deux sont discutées : (1) la définition des paysages culturels dans la convention du patrimoine mondial de l'UNESCO (1992), et (2) la convention européenne du paysage (2000). Dans la plupart des définitions, le paysage est holistique, réel et dynamique. Holistique signifie que le paysage est un tout

qui est plus que l'addition de ses composantes et qu'il est structuré selon un système hiérarchique, ouvert, dynamique à plusieurs échelles. Le paysage est réel ; il peut être senti et expérimenté, principalement visuellement. Le holisme explique également partiellement ceci par la psychologie de la forme. Tout cela s'ajuste dans un système multiscalair dynamique fortement influencé par les actions humaines. La plupart des paysages ont forgé leur caractère et leur identité selon des forces locales et régionales ainsi que par une histoire unique. La grande diversité paysagère va de pair avec la diversité culturelle des personnes qui évaluent les paysages de diverses manières, le 'chez-soi' étant une des plus importantes. Par conséquent, les paysages possèdent un patrimoine naturel et culturel et sont considérés comme un bien commun. Il y a environ trois siècles, quelques révolutions sociales et technologiques importantes ont débuté puis ont accélérées et remesuré la dynamique paysagère. Des forces motrices globales ont transformé ces paysages existants en paysages urbanisés et généralisés dans une société en réseau. Les forces locales ne pouvaient pas soutenir la gestion traditionnelle ayant créé ces paysages caractéristiques, en particulier ces paysages ruraux et (silvo-) pastoraux de longue histoire. Ainsi, la diversité régionale a disparu graduellement, affectant à la fois la biodiversité et la diversité culturelle. Les forces motrices principales sont humaines (la démographie, l'économie, la politique et la technologie) et naturelles (la géotectonique, le climat et les catastrophes naturelles) agissant l'une sur l'autre avec des boucles rétroactives complexes. Ces forces motrices principales induisent une grande variété de processus tels que pourvoir des ressources naturelles, des productions (dans l'agriculture, la sylviculture et l'industrie), l'urbanisation et les réseaux de communication affectant l'accessibilité et la mobilité. Ces forces agissent de l'échelle globale à l'échelle locale, ne sont pas essentiellement durables et ne sont pas intéressées par la persistance des paysages. Le déplacement est le mantra d'une mobilité globale pour augmenter le profit, qui est impossible à l'échelle locale où seulement la durabilité peut être tentée par adaptation. En conséquence, la recherche en matière de paysage et les applications en aménagement, la gestion et la conservation deviennent complexes et exigent une approche interdisciplinaire (intégrant des disciplines académiques) et même transdisciplinaire (impliquant la participation des secteurs et de la population). Le développement durable n'est pas évident. La tendance actuelle formule des « services paysagers » permettant l'expression de qualités « intrinsèques » du paysage à portée sociétale, c.-à-d. en termes économiques et financier. La plupart des actions de la politique paysagère sont encore des processus hiérarchisés où l'évaluation demeure le domaine des « experts », des « professionnels » (dont certains ont des intérêts professionnels) et « des pouvoirs publics compétents » (avec parfois un manque d'intérêt ou avec certainement des moyens insuffisants).

Mots-clés

définitions, holisme, transdisciplinarité, transformation, forces motrices, valeurs

I. LANDSCAPE AS HERITAGE IN AN CHANGING WORLD

Landscape, in particular natural and traditional, rural landscapes are often regarded as common heritage that should be preserved. Obviously, in the fast changing world this is not an easy task. Not only do we have to deal with global driving forces of environmental change, but also the concept of landscape itself adds to the complexity.

In this article, I will first explain how the multiple meanings of the word landscape, the subtle linguistic difference and the holistic, dynamic and subjective of nature of landscape make the task complex. Next, I will discuss three formal definitions of landscape that may help to address the problem in a transdisciplinary way.

II. THE CONCEPT LANDSCAPE – HOW TO DEFINE LANDSCAPE?

A. Landscape in common language

Landscape is a concept common to everyone experiencing the environment. Its meaning varies according to the culture and the background and objectives of the observer (Antrop, 2015). Most people experience different landscapes and subtle linguistic differences in meaning exist. A striking example is the difference in meaning of the word landscape between British and American English (Cosgrove, 2002). In UK-English it mainly refers to the scenery, while in the US-English it is similar to region. This difference points to the origin of the word in the language: in the UK-English referring to one of the Dutch meanings as 'painted scene', and

in US-English referring to the German *Landschaft* in the sense of ‘territory’.

The original word comes from Germanic and Scandinavian tongues and was already in use in Dutch written documents in the 12th century. In common language, the word landscape has multiple meanings. Consequently, many definitions exist and to clarify a specific use adjectives are used, such as rural landscape, or even metaphorically as political landscape. Also, some cultures do not have the concept landscape at all (Luginbühl, 2012), as well as some languages (Makhzoumi, 2002).

B. Towards formal definitions

In research, policy and planning, certainly when international co-operation is necessary, this is extremely confusing and unpractical. However, it took long before formal definitions were formulated and applied. An important trigger in doing so, were the rapid and devastating changes that occurred during the second half of the twentieth century, causing cultural landscapes, considered being traditional, valuable and beautiful, becoming lost and disturbed, while the speed and magnitude of the changes was still increasing. Since the 1990s, this caused a growing popularity of landscape in policy debates and scientific conferences. Three important ones will be discussed more in detail in chronological order.

1. Cultural landscapes in the World Heritage List of UNESCO

Cultural landscapes were added as a new category to the UNESCO World Heritage List in 1992. They are described as to “represent the ‘combined works of nature and of man’ and considered illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal.” (UNESCO, 1992). Three main categories are recognized: (1) *designed landscapes* have been created intentionally by man, such as gardens and parkland landscapes. (2) *organically evolved landscapes* have developed from the interactive process between a specific culture and in response to its natural environment.

They fall into two sub-categories:

- (a) *relict (or fossil) landscapes* still show characteristic material features resulting from the processes that made them but came to an end;
- (b) *continuing landscapes* are sustained by a still active traditional way of life in the contemporary society.
- (3) *associative cultural landscapes* refer symbolically to powerful religious, artistic or cultural associations of the natural element rather than material cultural evidence.

Categories (1) and (3) refer to landscapes, which are often considered spectacular or sublime. Category (2) deals with traditional agrarian, rural and pastoral landscapes that characterise the countryside. Important problems related to this category are already recognized in the two subcategories. When lifestyle changes and does not sustain anymore the landscape it created over centuries, the living landscape dies and becomes a relic. Many landscapes of this category had already to be moved to the list of endangered world heritage. The description of the categories also shows that the UNESCO World Heritage is not dealing with the ordinary, every-day landscapes, but mainly with landscapes that can be considered “outstanding” and “universal” and have important heritage value.

2. The Dobříš Assessment of the EEA

In the First Assessment of the European Environment by the European Environmental Agency (EEA), also known as the Dobříš Assessment of 1995, chapter was devoted to landscape. The importance of landscape is formulated as follows (Stanners & Bourdeau, 1995):

“The richness and diversity of rural landscapes in Europe is a distinctive feature of the continent. There is probably nowhere else where the signs of human interaction with nature in landscape are so varied, contrasting and localised.

Despite the immense scale of socio-economic changes that have accompanied this century’s wave of industrialisation and urbanisation in many parts of Europe, much of this diversity remains, giving distinctive character to countries, regions and local areas.”

(<http://www.eea.europa.eu/publications/92-826-5409-5/page008new.html>)

3. The European Landscape Convention (ELC)

The EEA-report stimulated the Council of Europe to take action as well, resulting in the European Landscape Convention (ELC) (Antrop, 2008). This Convention initiated more research and action programs related to the landscape in most European countries than ever before. This is remarkable as the Convention has only a moral authority and no legal power such as an EU-directive, and no financial means are provided. Nevertheless, opened for signature on October 20th, 2000, it entered into force already on March 1st, 2004 and in September 2016, the Convention was ratified by 38 of the 47 member states, and two more signed it.

The Convention introduced a series of formal definitions related to the landscape and recommendations. These offer a common, transdisciplinary and international basis for action (Table 1). The formal definition of landscape is a consensus between the ministers of the member countries of the Council of Europe and received positive recommendations of the committees on diversity and landscape (CO-DBP) and cultural heritage (CC-PAT) of the Council of Europe (Antrop, 2008).

The formal definition of landscapes fits closely the etymological meaning of the original word. It refers to a territory (“an area”), the scenery (“as

perceived by people”), its holistic nature (“character”) and dynamics (“action and interaction”), bridging the natural and human world. Innovative and important is also that there is not a focus on specific types of landscapes, nor on exclusively on “outstanding” ones. Article 2 states clearly that that all is landscape.

The general measures proposed by the European Landscape Convention include the recognition of landscapes in law as an essential component of people’s surroundings, as an expression of the diversity of their shared cultural and natural heritage and a foundation of their identity. Consequently, the integration of landscape in all kinds of policies was proposed. The specific measures include awareness-raising, training and education, identification and assessment of landscapes (i.e. landscape character assessment) and defining landscape quality objectives.

Although some criticism has been formulated that the definition of landscape in the ELC is too broad and vague, it is innovative in many aspects. Essentially, the landscape:

- is seen as a spatial entity, having a variable extent and scale, and having territorial properties;
- is perceived and experienced by humans, and consequently is relative to the observer;
- is holistic, expressed by its character, which also defines its identity;

Table 1. Definitions en scope of the European Landscape Convention (Council of Europe, 2000)

Article 1 – Definitions

- a. "**Landscape**" means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors;
- b. "**Landscape policy**" means an expression by the competent public authorities of general principles, strategies and guidelines that permit the taking of specific measures aimed at the protection, management and planning of landscapes;
- c. "**Landscape quality objective**" means, for a specific landscape, the formulation by the competent public authorities of the aspirations of the public with regard to the landscape features of their surroundings;
- d. "**Landscape protection**" means actions to conserve and maintain the significant or characteristic features of a landscape, justified by its heritage value derived from its natural configuration and/or from human activity;
- e. "**Landscape management**" means action, from a perspective of sustainable development, to ensure the regular upkeep of a landscape, so as to guide and harmonise changes which are brought about by social, economic and environmental processes;
- f. "**Landscape planning**" means strong forward-looking action to enhance, restore or create landscapes.

Article 2 – Scope

... this Convention applies to the entire territory of the Parties and covers natural, rural, urban and peri-urban areas. It includes land, inland water and marine areas. It concerns landscapes that might be considered outstanding as well as everyday or degraded landscapes.

- is dynamic, changes being an inherent property of it; and
- is the result of continuous interaction between natural processes and human activities.

III. SOME BASIC CONCEPTS

A. Land and landscape

Landscape has to be conceived a dynamic holistic phenomenon consisting of scale dependent entities that are hierarchically structured. Thus, the concept 'landscape' differs fundamentally from the concept 'land' (Zonneveld, 1995), which is considered a tract of terrain and very often owned by someone or some institution. Land refers to (private) property that can be used more or less freely by its owner who has the usufruct of it, which means some form of value or income (Antrop, 2008). The confusion between both is understandable as one of the meanings of the word landscape is also a territory where a community possesses certain rights (Jones, 2005; Olwig, K.R. & Mitchell, 2007).

Human impact upon the landscape mainly acts indirectly through land use. The concept of landscape as a tangible area or region was the object of the traditional regional geography in the early twentieth century that aimed to identify and delineate regions, based on their particular character as a result of the interaction between the physical environment and the society living there (Muir, 1999, 2003).

B. Landscape is holistic

The basic paradigm of holism is that the whole is more (or different) than the sum of its composing parts. The holistic nature of landscape is particularly found in landscape as heritage (Antrop, 2005a), in landscape ecology (Naveh & Lieberman, 1993), and in the Gestalt-psychology of perception (Antrop, 2005a; Antrop & Van Eetvelde, 2000). Thus, the holistic nature of landscape both refers to landscape as a system with its organization in patterns, structures and processes as well as the perception of it. The premise behind holism explains the attempts to describe meta-qualities of landscape such as diversity, complexity and heterogeneity and the introduction of landscape metrics (McGarigal *et al.*, 2002). It also explains the complexity of factors influencing experimental landscape preference

studies (Sevenant & Antrop, 2009; Sevenant & Antrop, 2010; Sevenant, 2010).

Holism also became a basic paradigm in landscape ecology, where the concept of a 'holon' as a building block of the Total Human Ecosystem (THE) was introduced (Naveh and Lieberman, 1993). Holons are considered open (sub)systems that are hierarchically structured, thereby forming the complex landscape. Zonneveld (1995) called them "black boxes" and van Leeuwen (1982) "ecodevices". Scale and context are two important factors that define the meaning and functioning of holons and are considered basic parameters in setting up a research project.

C. Landscape is perceived

Landscape differs essentially from the concept of "land" through its relation to the human observer, as clearly formulated in the European Landscape Convention. Perception shows up in the definition of landscape (Art. 1); preference is referred to in "aspirations of the public" in the definition of landscape quality objectives (Art. 1).

Cosgrove (2002) speaks of "way of seeing" and showed how these evolve with society and technology. In landscape research, perception and preference are two different concepts referring to distinct processes that have been intermingled in literature (Sevenant, 2010). They are often brought up in one and the same breath both by experts and non-experts. This confusion is already obvious from the designation of research paradigms in perception and preference research, where the "perception-based approach" and the "public preference model" refer to the same paradigm. Kaplan and Kaplan (1995) argue that perception is a key element in preference in that the measurement of preference allows investigating the perceptual process. The intimate link between landscape and its perceiver has consequences for policy actions and shown in the other definitions of the ELC (Jones & Stenseke, 2011). The "aspirations of the public" must be translated in policy actions by "competent public authorities (Art.1.c). However, nowhere is defined who "the public" is, nor what "competences" are necessary for which public authorities. Landscape preference research shows that the "aspirations of the public" are not always guaranteeing the preservation and persistence of landscape values (Sevenant & An-

trop, 2009b; Hagerhall, 2001). Hence, the debate about the competences in the matter between “experts”, “laypeople” and “locals”, “outsiders”.

D. Landscape is dynamic

Landscapes always evolved during history. The transformations were gradual, sudden and even catastrophic, but changes happened not frequently so adaptation was possible. Often, the continuity with the past was broken (Antrop, 2003). Landscape can be regarded as a palimpsest (Claval, 2005), where innovations transformed more or less existing features and could replace locally the existing landscape by a new one (Antrop *et al.*, 2007; Antrop, 2008). Relics and marks of the past remained more or less distinguishable in the present. Landscape trajectories or paths could be reconstructed (Käyhkö and Skånes, 2006), the time depth of elements in the present landscape could be established and the biography of landscape could be written (Elerie & Spek, 2010)

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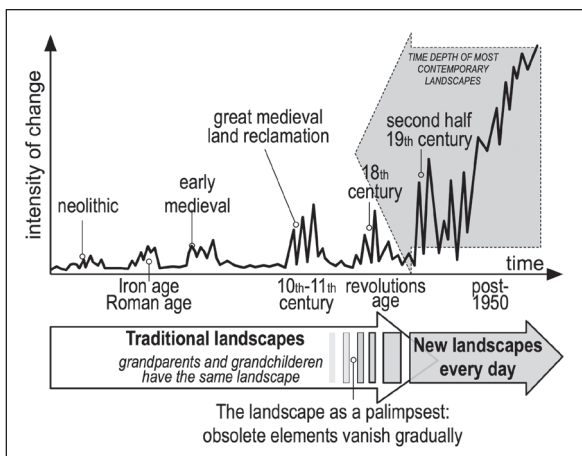
1997). Thus, regional diversity vanished gradually, affecting both biodiversity and cultural diversity.

In general, the trends for future landscape development are known (Pinto-Correia & Vos, 2004; Vos & Klijn, 2000; Antrop, 2000). Geographical space becomes polarized, intensifying focal areas by concentrating people, activities and infrastructures, and abandoning vast areas in the periphery of economical activities. Consequently, landscapes everywhere are affected. These changes affect also the attitudes people have towards the landscape. In 2014, 54% of the world’s population lived in urban areas, and the United Nations expects an increase to 66% by 2050. Non-urban areas (i.e. *rural* and natural areas) lose people and functions, which were once useful for urban places, such as providing food and natural resources. Otherwise, ‘nice’, ‘traditional’ and ‘natural’ landscapes attract urbanites for tourism and recreation, increasing the pressure on local land qualities and causing severe degradation of the sites, in particular those that were assigned a status of ‘protected’, ‘extraordinary’, ‘sublime’ landscape of ‘universal value’.

E. Landscape as heritage

The Cambridge Dictionary defines heritage as “features belonging to the culture of a particular society, such as traditions, languages, or buildings that were created in the past and still have historical importance”. However, most conventions and legislation with regard to heritage do not give a formal definition of heritage, but rather define different categories regarded as heritage. The importance of the value of heritage is always stressed and heritage is regarded a possession of the community, something that must be passed on to future generations.

Figure 1. Frequency and intensity of landscape changes during history in Europe, showing the transition between traditional and new landscapes and the time depth of contemporary landscapes. Today’s landscapes are a palimpsest of the past (adapted from Antrop 2008)



For each category of heritage different rules and legislation were elaborated and heritage can be valued and treated in very different ways. Some main groups of heritage can be recognized: natural (fauna, flora, natural resources and also landscape), and cultural heritage (artifacts, monuments, sites and landscapes), tangible (artefacts, landscape) and intangible (customs, traditions, beliefs), immovable and movable heritage. Clearly, landscape is bridging several categories of heritage.

Lowenthal (1985) showed that artefacts contain memories and narratives important for people, and

Schama (1995) and Olwig (2002) gave an impressive overview of what landscapes can symbolize in Western civilization. Landscapes can be read as a history book (Claval, 2005). Heritage is often unique and irreplaceable – two important facets of its intrinsic and instrumental values. However, the perception of what is valuable as heritage changes between generations and cultures.

Landscape is part of our heritage and integrates a variety of values (Lowenthal & Olwig, 2013). For example, traditional rural and pastoral landscapes are the result of practices adapted to specific local natural conditions, and resulted in a great diversity of landscape types, which often supported sustainable ecological processes. They combine natural, historical and cultural values, which gives them a clear-cut character and identity. Traditional landscapes are often valued, too, for their aesthetic qualities, while traditional cultural landscapes are an important source of barely studied knowledge on sustainable management techniques that would be useful for the future and possess a high information value (Antrop, 2005b).

People assign value, individually or collectively, to certain properties or qualities of an object of phenomenon such as landscape. Also, different categories of “value” exist. According to the scale, value can refer to a local, national or international, and even “universal” level. The way value can be expressed is still matter of a lot of debate, in particular when it comes to express value in monetized terms, which would allow an economic trade-off with other values (Price, 1978; van der Heide & Heijman, 2013). When it comes to landscape and nature, with qualities such as “beauty”, “uniqueness”, it is difficult to find objective means to express value. This opens the discussion between intrinsic and extrinsic values and the relation between value and utility (Constanza *et al.*, 1997).

The concepts “intrinsic or inherent value” and “extrinsic or instrumental value” are fundamental in value theory (axiology), which belongs to the domain of philosophy and ethics, but also has economic applications. In philosophy and ethics, intrinsic value is a property that an object has “in itself”, independent of its appreciation by a perceiver or its utility for some purpose. One could also say it has this value “naturally”, and can be considered “universal”. Extrinsic or instrumental

value arises from the object’s utility or usefulness and its potential for creating more value. Extrinsic value is relational to things other than the object itself, including the environment it is situated in. In finance, intrinsic value is also called fundamental value, and is ordinarily calculated as the income generated by comparing its actual value to its market value. A typical example is comparing the value of the metal contained in a coin to its value as money for exchange. Carter (2001) gives the following definitions:

- instrumental value is the value, which something has for someone as a means to an end that they desire;

- inherent value is the value, which something has for someone, but not as a means to a further end;

- intrinsic value is simply the value, which something has. No appeal need be made to those for whom it has value. It is simply valuable, and is so independently of anyone finding it valuable.

Sometimes inherent value is seen as the first-grade instrumental value, when a personal experience is of intrinsic value. For example, a beautiful landscape can have value for me (and not for someone else), but not because it enables me to do something further. This means that intrinsic value (“beauty”) can be used to define a range of instrumental values that can be realized (Nordstrom, 1993).

Intrinsic value (and holism) became a fundamental concept in environmental ethics as founded by philosophers including Holmes Rolston III (Rolston 1988). The basic argument is that wild nature and healthy ecosystems have intrinsic value prior to and apart from their instrumental value as resources for humans, and should therefore be preserved. Ethical duties are derived from these intrinsic values. Environmental ethics applies the notions of “right” and “wrong” to human behaviour in relation to nature (Rolston, 1999).

Aldo Leopold broadened the compass of environmental ethics from individuals, species and ecosystems to the land as a whole as a holistic entity, and called it ‘land ethic’, which ‘simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land’ (Leopold, 1949). The basic principle is: ‘A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise’. This extends the moral and ecological to the aesthetic meanings,

and includes non-material holistic qualities such as integrity, stability and beauty.

In landscape ecology, the concept of the intrinsic value of landscape is strongly associated with the holistic concept of landscape (Naveh, 1995). This is reflected in such landscape concepts as diversity, complexity and heterogeneity, but also in beauty and mystery, etc. Holism also integrates the spatial pattern model of landscape with its perception (Antrop & Van Eetvelde, 2000). Anyhow, intrinsic value can refer to very different things and the meaning depends largely on the context it is used in. Also, related terms such as inherent value and extrinsic value need to be redefined and clarified in the context of landscape assessment (Antrop, 2012).

IV. DRIVING FORCES OF CHANGE

About three centuries ago commenced some important social and technological revolutions that accelerated and up-scaled landscape dynamics. Global driving forces transformed existing landscapes in urbanized and globalized ones in a networked society. Local forces were not able to sustain the traditional management that created the characteristic landscapes, in particular rural and (silvo-) pastoral landscapes with a long history. Thus, regional diversity vanished gradually, affecting both biodiversity and cultural diversity.

The main driving forces are human (demography, economy, politics and technology) and natural

(geotectonics, climate and calamities), which are interacting with complex feedback loops (Table 2). These main driving forces induce a variety of processes such as supplying natural resources, production (in agriculture, forestry and industry), urbanization and communication networking affecting accessibility and mobility. These forces act from global to local scale, are essentially not sustainable and not interested in the persistence of landscapes. Displacement is the mantra of global mobility to increase profit, which is impossible at the local scale where only sustainability can be attempted by adaptation (Antrop, 2008).

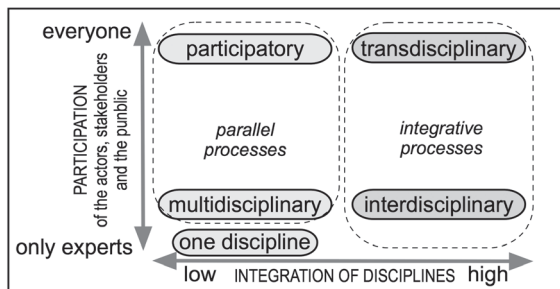
V. NEED FOR A TRANSDISCIPLINARY APPROACH

Landscape research and its applications in planning, management and conservation become complex and demand an interdisciplinary approach (integrating academic disciplines) and even being transdisciplinary (involving participation of sectors and the population) (Antrop 2006; Naveh 2005; Selman, 2005; Tress *et al.*, 2003). Sustainable development is not obvious. The trend is now formulating 'landscape services' allowing expressing 'intrinsic' landscape qualities in societal significance, i.e. economical, monetized terms. Most actions in landscape policy are still top-down processes and evaluation remains the domain of 'experts', 'professionals' (some with professional interests) and 'competent public authorities' (sometimes with a lack of interest or certainly with insufficient means) (Sevenant & Antrop 2009).

Table 2. Driving forces, processes and scales affecting landscape changes

DRIVING FORCES	PROCESSES	SCALES
<p>Human drivers</p> <ul style="list-style-type: none"> • demography • economy • (geo)politics • technology <p>Natural drivers</p> <ul style="list-style-type: none"> • geotectonics • climate • sea level rise 	<p>Supply of natural resources</p> <ul style="list-style-type: none"> • (space, land, soil, food, water, fiber, wood) <p>Production</p> <ul style="list-style-type: none"> • (agriculture, forestry, energy, industry) <p>Urbanisation</p> <ul style="list-style-type: none"> • (housing, living, work, leisure, recreation) <p>Networking</p> <ul style="list-style-type: none"> • (accessibility, mobility, migration, communication, information) <p>Wars and calamities</p>	<ul style="list-style-type: none"> • Global • Continental • National • Regional • Local

Figure 2. Types of landscape research according to the degree of participation and integration of disciplines



VI. CONCLUSIONS

Landscape as heritage is found in two different contexts. First, there are landscapes considered “outstanding”, “spectacular” or “sublime”. These are mostly sites and scenery, both from natural origin as from human design covering a restricted area. These are often designated with a legal status for their conservation or protection. Second, there are vast landscapes, mainly of rural or pastoral character, that are considered “beautiful” and “traditional”. These are multifunctional spaces where different, often conflicting (economical) interests determine the dynamics of change. Sustainable management, development and preservation are the policy actions here. Many of the urbanized, industrialized and fragmented landscapes are considered “ordinary” and “every day” landscapes. The policy actions here are not only management and development, but also restoration and the creation of new landscapes.

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