Space and Place – Two Aspects of the Human-landscape Relationship

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Abstract
Studies of the "human dimension" of landscapes have become increasingly important in landscape research because of the roles that humans play either as causes of ecological alterations or as legitimate users of the landscape. An important use of landscapes is as a physical "space" for living but also as a "place" with its meanings and contributions to societal identity. In this chapter, we present some of the key theories of landscape experience and empirical research related to those theories. They are grouped around three concepts: First, we survey theories dealing with landscapes perceived as a physical space, covering topics such as environmental preference and the evolutionary basis of the psychological processes through which preferences arise. Secondly, we summarize some of the theories dealing with landscape perceived as place. Here we discuss concepts such as "sense of place" and "place identity". We emphasize that place identity is a particular element contributing to sense of place. Thirdly, we discuss theory and research concerning the role of landscapes for psychological restoration, which bridges the approaches that treat landscape as space and those which treat it as place. In the conclusion, we provide some suggestions for further integrative work.

Keywords: landscape, preference, sense of place, psychological restoration, theories, literature review

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Introduction

Landscape research consists not only of ecological research but also of social science research. The latter, often called "human-dimension research", deals with the multi-faceted interrelationship between landscape and society or individuals. This social aspect of landscape research has become increasingly important during recent years and it will become even more important in the future. There are two main reasons for this:

- First, in a comprehensive understanding of landscape ecological systems, humans are seen to play an important role in the system. Humans have so far been treated mainly as a cause of disturbances in natural systems, but more and more humans are also recognized as legitimate users of the system, particularly as "receivers" of material goods such as agricultural and forestry products and immaterial goods such as psychological restoration and (visual) information. Thus, from a basic scientific point of view, human-dimension research is needed for a comprehensive understanding of the socio-ecological systems that manifest themselves in landscapes. This includes the investigation of the above-mentioned "receiving" of goods by the system element "human being" (Nassauer 1997). This aspect of landscape research is still somewhat neglected, and there is a need to strengthen research efforts in this respect.
- Secondly, sustainable development involves more than matters of ecological balance. It aims at long-term ensuring of material and immaterial needs of the population. To this end, these needs must be investigated. Since the human needs that constitute the social aspect of sustainability remain underrepresented in sustainability research, more effort must be made in the future to better understand them. Knowledge of people's needs, including the reasons for these needs, is a prerequisite for designing nature conservation and landscape planning measures that can be accepted by the public and, thus, have a chance of succeeding in the long run (Hunziker *et al.* 2001; Luz 1993; Stoll 1999; Schenk 2000). Landscape planning and nature conservation measures that conflict with people's needs will face opposition. Even when such measures are in line with people's needs, educational and other interventions may be required to foster acceptance of planning and conservation measures. Knowledge about people's needs can support the design of such interventions.

As landscape research and sustainability research increasingly incorporate the human dimension, we are faced with the complexity of the human character. Each human is, simultaneously, a biological organism; a person with a unique set of capabilities, experiences, and aspirations; a social being acting within various roles in various groups; and a carrier of culture (e.g. Bourassa 1991). The complexity of the human condition finds expression in the experience of landscape, which is that component of human-dimension research on which we intend to focus in this chapter. Our intention here is to discuss some well-known and frequently used theories of landscape experience and some of the empirical research guided by or related to those theories. In doing so, we want to further the incorporation of the human dimension, and to help landscape-planning and nature-conservation practitioners develop successful strategies and measures.

Because humans are at the same time biological and social beings, one should not be surprised that the numerous theories dealing with landscape experience differ remarkably in the way they treat biological versus social determinants of landscape experience. In this chapter some of these theories are highlighted together with approaches that bridge between the two perspectives. Finally we suggest further integrative work.

To cope with the complexity of landscape experience, we find it useful to refer to two modes of landscape perception, one as space and one as place. The two modes receive

widely differing weights depending on our biological inheritance and our psycho-social-cultural background. In the space mode, people perceive the landscape primarily in terms of their biological needs; that is, they focus on the (instrumental) use of the landscape. In the place mode, however, people perceive the landscape primarily in terms of self-reflection (experiences, achievements) and social integration (values, norms, symbols, meanings). This is a long standing distinction. For example, Simmel (1993) differentiated in a similar way in his "philosophy of landscape" between the animals' drive-defined perception of space and the humans' perception of landscape, which he described as a creative act. Thus, when individuals or groups become familiar with a particular space and link it with their cultural values, social meanings and personal experiences, it becomes a place for them (Tuan 1977). In other words, personal, social and cultural processes of appropriation superimpose a layer of meaning on space (Altman and Low 1992) and thus transform it into place.

Review of Theoretical and Empirical Literature

Theories about the human-landscape relationship can be roughly divided into two major groups. The theories in one group primarily focus on the relationships between universal, mostly physical characteristics of landscape and evaluative judgments such as preference. In these theories, landscape is considered as space. The theories in the second group primarily focus on the cultural and group specific meanings of the landscape through which space becomes transformed into place. Thus, the two major groups of theories on the human-landscape relationship can be defined in terms of their primary focus on space vs. place. In the following, we discuss the best known theories in each of the two groups.

Theories and studies regarding landscape perceived as space

The best-known theories focus on landscape as space and build on assumptions about the survival needs of early, prehistoric humans regarding their environment. The perceptual capabilities and predispositions, which evolved to meet these survival needs are assumed to still function as an "inborn" basis of the human-landscape relationship. In modern humans, however, these perceptual capabilities and predispositions may not function so much as a necessary aid to survival, though they still find expression on the "psychological" level of landscape preference. Even today, then, according to these theories, the best liked landscapes tend to be those which would have helped to satisfy the survival needs of primitive humans due to their special spatial characteristics.

One such theory, the savannah theory of Orians (1980, 1986), puts substantial weight on the fact that the first humans lived in the African savannah. Orians supported his theory with several observations: first, the European explorers of North America preferred for their first settlements savannah-like landscapes with groups of trees, views onto lakes and rivers, and vista points from which one could oversee the whole region (Orians 1980). Shephard (1969) made a similar observation about the settlers of New Zealand. Secondly, it is argued that, in countries around the world, people tend to arrange the cultural landscapes similarly to that of the natural savannah landscape. That is, many cultural landscapes represent a mosaic of open grassland and groups of trees (Orians 1980). And thirdly, savannah-like landscapes occur in many paintings (Smith 1989).

The literature on landscape perception includes various empirical tests of the savannah theory. For example, Balling and Falk (1982) found that savannah landscapes were highly preferred over other landscapes, especially dense forest and desert landscapes. Moreover, the savannah landscapes received particularly high preference ratings from the young

children in their sample (ages 8 and 11). The children also rated the savannah significantly higher than other, also positively judged landscapes, whereas there were no significant differences between the judgments of the savannah and the other most-preferred landscapes when given by older persons. Balling and Falk (1982) interpreted this result with regard to the low grade of socialization of children, which they claimed made it easier to express an "inborn" biological-instinctive reaction. Lyons (1983) however, argued that the savannah preference of children might be caused by the fact that the savannah is most similar to those landscapes where children normally play, in parks with meadows and groups of trees. This interpretation treats the savannah preference as a product of social norms rather than biological rules. However, one can argue that there is also a reason for constructing parks in the manner described, which in turn might support again the savannah-theory.

Appleton (1975, 1996) based his prospect-refuge theory on the need of primitive humans for shelter and for keeping close watch over their surroundings. It differs from the savannah theory in that it is restricted to what Appleton considered the most important of the primitive human's survival needs, that of "seeing without being seen". He justifies this restriction (Appleton 1975: 73) with the argument that fulfilling the need for shelter and surveillance of the surroundings is an intermediate step for fulfilling the other basic needs.

Various attempts have been made to test the validity of prospect-refuge theory. In particular, differences between the genders have been studied in this regard (e.g. Nasar 1988). For example, Hull and Stewart (1995) found that the men and women in their sample focused on different things when moving through a landscape. Some authors, however, consider such differences as indicators of differing social rules (Balling and Falk 1982; Bernaldez *et al.* 1987; Lyons 1983; Strumse 1996). More empirical evidence in support of Appleton's theory has been reported by Clamp and Powell (1982), Woodcock (1982), Abello and Bernaldez (1986), Mealey and Theis (1995) and Hägerhäll (2000), but still other authors have concluded that their results did not offer support for the theory (e.g. Klopp and Mealey 1998).

The information processing theory of Kaplan and Kaplan (1989) assumes that those landscapes are preferred which stimulated and facilitated the primitive human's acquisition and rapid processing of information and thus promoted the development and differentiation of a capacity for planning action in the environment. This theory analyzes landscape perception in terms of complexity, mystery, coherence and legibility (Kaplan and Kaplan 1989: 52ff). Complexity and mystery relate to the need to gather information, while coherence and legibility relate to the need to make sense of the information gathered. These informational characteristics of the perceived environment can also be ordered along a temporal continuum: complexity and coherence refer to immediately available and interpretable information, whereas mystery and legibility refer to the possibility for gaining more information and yet maintaining orientation as one moves further into the landscape. Various empirical studies have examined the influence of one or all of these four characteristics on preferences for scenes (e.g. Gimblett 1990; Strumse 1994a,b; Coeterier 1996; Van den Berg *et al.* 1998). It was commonly found that one or more but not all of the informational characteristics positively predicted preference for scenes of widely varying kinds (e.g. Herzog 1989). Still other studies have found negative correlations between the informational characteristics and preference (Gimblett 1990). In a recent meta-analysis, Stamps (2004) directed attention to the heterogeneity of findings produced by the empirical work with the theory, which is the most extensively tested of the psychological theories on landscape preference. Stamps also suggested some methodological solutions and theoretical revisions to address the issue of non-reproducibility. Herzog and Leverich (2003; see also Herzog and Kropscott 2004) have addressed the non-reproducibility issue with specific regard to legibility.

A final theory of interest here has guided research, which directly examined a presumed functional correlate of landscape preference, namely, restoration from psycho-physiological

stress. Ulrich's (1983; Ulrich *et al.* 1991) psycho-evolutionary model of affective and aesthetic response to environments has a number of basic assumptions in common with the theories described above. It assumes that rapid-onset affective responses to certain visual configurations in the environment had adaptive value over the course of human evolution, and that people today remain biologically prepared to prefer those configurations. The affective response is assumed to be elicited by environmental "preferenda", which are features or stimulus characteristics of the environment whose vague nature may preclude cognitive judgments but which still suffice for eliciting generalized affect. Ulrich (1983) assumes three basic kinds of preferenda in natural environments: gross structural aspects of settings, gross depth properties that require little inference, and general classes of environmental content. More specifically, affective reactions are evoked by a scene's complexity, focality (degree to which it contains a focal point or an area that attracts the observer's attention), depth, and ground surface texture. Threatening features, deflected vistas, and water also may work in drawing out an initial reaction. In this specification of environmental features, one sees points of correspondence between Ulrich's model and the theoretical analyses of Orians, Appleton and the Kaplans.

The model of Ulrich (1983) also refers to the initial motivating state of the person on encountering the landscape. If the person is experiencing a high level of arousal, then an initial affective response of interest and liking may open the door to a process of restoration. Experimental work by Ulrich has documented differences in restoration from acute demands (an exam, a horrifying film) with measures of emotion and physiology (e.g. Ulrich 1979; Ulrich *et al.* 1991) under different environmental conditions, presented with photographic or video simulations. This work has encouraged direct empirical assessments of relations between landscape preference and psychological restoration as a functional outcome (e.g. van den Berg *et al.* 2003), an issue that we will return to later in this chapter when we discuss connections between theories about landscape as space and theories about landscape as place. We now turn to that latter group of theories and related empirical research.

Theories and studies regarding landscape perceived as place

Transforming spaces into places is existential activity, as through the creation of places people visualise, memorise and thus stabilise constitutive human goods such as the sense of belonging, social integration, purposes that give meaning to life (values) and the sense of self (Williams *et al.* 1992). Sense of place is perhaps the most general concept which describes the relationship between people and their (local) spatial settings, subsuming other concepts such as place attachment, place identity and place dependence (Jorgensen and Stedman 2001). Place attachment is described as a positive emotional bond that develops between groups or individuals and their environment (Altman and Low 1992; Korpela 1989). Place dependence refers to how well a setting serves goal achievement given an existing range of alternatives (Jorgensen and Stedman 2001; see also Stokols and Shumaker 1981). Finally, place identity represents those aspects of self identity which involve and are reflected by the environment and its social and personal meanings (Buchecker 2005; Korpela 1989; Twigger-Ross and Uzzell 1996; Proshansky *et al.* 1983).

A large amount of research on sense of place has been conducted over the last several decades. Much energy has been invested in differentiating and operationalising the diverse dimensions or aspects of sense of place. Some authors maintain that these attempts have so far essentially failed (Pretty *et al.* 2003; Jorgenson and Steadman 2001). The failure can be attributed to the strong linkages among the diverse aspects of sense of place. This view resonates with Relph's (1976) recommendation to use sense of place as a tool for

integration. Such an integrative approach encourages the researcher to take all aspects of people-place interaction into consideration, but it also bears the risk of asking far too much of him or her. Therefore, Hummon (1992) suggested differentiating sense of place into two "functional" dimensions: a) a cognitive dimension of sense of place which helps people to understand the place and thus allows them to establish an external orientation, and b) an emotional dimension which offers information on one's relationship to places and thus enables individuals to build up an internal (self-referent) orientation. According to Graumann (1983) a cognitive understanding of the place is a precondition (but not a sufficient condition) for establishing a relation to a place.

Especially in the last years, the cognitive dimension of sense of place has largely been neglected. Important older contributions to this research field stem from geographical "mental map" studies (e.g. Krüger 1987), which consider place knowledge and place representation, and studies in the ecological psychology tradition (Barker 1968; Fuhrer 1990), which focus on place-related behavioural rules. According to mental map studies, landmarks and clear borders support people's efforts to establish a clear representation of their places. Behavior setting studies show that people's meaningful interactions most commonly occur in settings in which they can connect with sufficiently clear behavioural rules (Proshansky *et al.* 1983; Buchecker 2005). This supports appropriation in that people know how to act within their environment in a secure way and thus build up a personal relationship to it.

In contrast to the cognitive dimension, the emotional dimension of sense of place has been a main issue not only in environmental psychology, but also in anthropology in the last years. However, not all aspects of sense of place have been equally embraced (Manzo 2003). Place research has focused in the last decades on people's favourite (or special) places and settings, and in particular those within their residential area. Empirical studies have found that informal meeting places (Oldenburg 1989), places symbolizing collective belonging (Buchecker 2005), places used in childhood, places frequented during leisure activities, and natural settings outside of the closer residential area often have particularly high emotional significance to a local residential population (see also Korpela *et al.* 2001). These places offer people opportunities to individually or collectively appropriate them.

Another considerable amount of recent place research has concentrated on the influence of time spent in a place on the people-place relationship. For example, Hay (1998) showed that as the amount of time spent in a place increases, the relationship to the place, and in particular the attachment, intensifies and becomes deeper (from "aesthetic experience" to "part of place") as well as more comprehensive (from special place to area-wide). Manzo (2003), however, emphasized that a more extended sense of place does not necessarily mean that the relationship has a better or more positive quality; sense of place might also be connected with negative or ambivalent emotions (Cooper 1995; Relph 1976), and it may also entail too much structure (Buchecker 2005). Thus, places to which we feel committed can also seem oppressive and imprisoning (Tuan 1974), and unknown and personally meaningless places can bring relief and new perspectives. The lack of attention to this ambivalent character of sense of place constitutes a shortcoming of recent research, according to Manzo (2003).

A less-studied emotional aspect of the sense of place involves people's relationships to groups and the relationships that hold between groups (Manzo 2003). Pratt (1984) emphasised the problematic character of this aspect in showing that the sense of people's rootedness and belonging is often obtained by the (symbolic) exclusion of others from that place. Similarly, Waitt (2000) found in her empirical study that the preservation of places often implies a preference for one group's cultural heritage over that of another group. In agreement with Dixon and Durrheim (2000) it can be concluded that while personal preferences and experiences influence people's relationships with places, these personal preferences can themselves be seen as products of a larger context.

In comparison to the long tradition of research on the causes of sense of place, the research on the consequences of sense of place is still in its initial phase. A starting point for this research was formulated by Greider and Garkovich (1994). When a person or a social group transforms space to place through direct experiences and interactions, it becomes part of the person's or group's "self". This may bring about a sense of responsibility for that place, as its loss or damage threatens the group's or person's self-identity (Breakwell 1986). A correlation between sense of place and a sense of responsibility for or even commitment to the given place has often been hypothesized (e.g. Buchecker *et al.* 2003; Volker 1997; Falk and Kilpatrick 2000), but the presence and magnitude of this correlation have not yet been sufficiently studied. There is, however, some structured empirical evidence (and much anecdotal evidence) that strong forms of sense of place representing unique ties between people and place are correlated with feelings of intense caring for the locale. Eisenhauer *et al.* (2000) showed that connections with 'special' places with particular meanings incorporate sentiments that go beyond judgements about utility. Such places cannot be substituted by other sites with similar attributes. A strong sense of place can therefore provoke people to react with high levels of concern about management practices (Schroeder 1992; Williams *et al.* 1992). For example, Syme *et al.* (1993) could show that in the context of wetland preservation, environmental concern – which is supposed to be closely linked to place attachment – is a motivating factor for involvement in nature preservation.

Sense of place also contributes indirectly to pro-environmental behaviour, as it is an important factor for social capital, which facilitates collective action for mutual benefit (Woolcock 1998). Falk and Kilpatrick (2000) found that social capital results from interactions that draw on (local) knowledge resources and identity resources. Sense of place not only contributes to both of these resources, but also fosters social interaction (Buchecker 2005).

The concept of sense of place encompasses an extremely broad area of inquiry. Arguably, the more specific concept of place identity is better suited for use as an analytical tool for understanding people-place relations, as it has a more well-elaborated grounding in psychological theory. The account in the following section will focus on this concept. As we will subsequently show, together with the psychological restoration concept, the place identity concept offers an opening to the integration of space- and place-focused theories of landscape experience.

Place identity as a particular element in sense of place

Place identity is not to be understood as a sub-aspect of sense of place, but rather as a specific perspective on people-place relations, namely, a self-reflective perspective.

According to Proshansky *et al.* (1983), place serves as an external memory for people's place-related aspects of their self-identity, called place identity. The function of place-identity is to regulate (stabilize and develop) people's self-identity (Fuhrer and Kaiser 1994). This regulating function of place for people's identity is crucial, because self-identity is a very unstable and at the same time existential cognitive construct constituted by social interactions and thus threatened by external changes (in relationships, resources) or internal changes (in confidence, anxieties) (Breakwell 1986). Places, and especially residential places, are suited to serve as external memories of people's place-related identity because they form the sceneries of people's (everyday) social interactions.

According to Graumann (1983), people's (social) identity is connected to place by the process of identification which unfolds in three steps: (1) identifying one's environment, (2) being identified by the others in the environment, and (3) identifying oneself with one's environment (or a part of it). In a further stage, more active forms of identification can take

place by appropriating a place, that is, by leaving physical or social traces there (Weichhart 1990). As soon as a place reminds an individual of the main features of his or her identity (social belonging and qualities, individual abilities and qualities, cultural values), that individual can re-build and thus regulate his or her identity, which is necessary after even slight set-backs in everyday life. And as identity development is a life-long process, a person may not feel well at a place unless he or she can periodically re-appropriate the place, which allows that person to update and develop his or her identity (Fuhrer and Kaiser 1994). Thus, individuals can establish a place identity in places which are characterised by continuity yet at the same time offer them sufficient opportunities for appropriating the settings and leaving individual and collective traces there.

These requirements are in agreement with the identity process theory advanced by Breakwell (1986; Twigger-Ross and Uzzell 1996), according to which the regulation and development of identity is, at least in our Western culture, founded on the principles 'continuity', 'self efficacy', 'distinctiveness' (both associated to appropriation) and 'self esteem'.

An empirical study by Fuhrer and Kaiser (1994) showed that people escaped from their private homes if they could not succeed in regulating their identity in them, trying instead to compensate in more distant places. Similarly, Röllin and Preibisch (1993) found that with the increase of urbanisation, local residents increasingly stayed away from their residential area and withdrew in their leisure time either into the privacy of their homes or into distant recreation areas. This raises the question of the impact of urbanisation and modernisation on two crucial aspects of place quality: place identity and the regulation of identity, in particular in residential areas. These areas have a special importance for identity formation for two reasons: they normally are the place of first socialisation, and residents commonly have a relatively greater degree of control within their home area, which is a precondition for an active spatial identification.

In the following, the interrelations among social change, place identity, and landscape perception will be considered on the basis of two qualitative studies. The deeper aim of this account is to provide an understanding of the current development of place-space relationship. For this end, we will contrast a cross-spatial comparison between two Swiss communities differing in their degree of urbanisation (Buchecker 2005) with a cross-temporal comparison within a relocation project in England (Speller *et al.* 2002).

The analysis of in-depth interviews in the two Swiss communities showed that the residents strongly identified themselves with their community, regardless of the degree of urbanisation. Within the given village (defined as the main settlement of the community), the residents mainly referred to symbols of collective belonging in expressing their place identities. However, whereas the residents of the less urbanised community thereby focused their identification on collective elements such as the village structure or the communal water catchment, those of the more urbanised community mainly referred to the more abstract idea of the (lost) village community. In spite of their strong identification, the residents also associated the village with feelings of restriction and imprisonment, and they missed having opportunities to individually appropriate the village in both a physical sense (e.g. far-reaching building restrictions) and a social sense (e.g. lack of informal meeting places). Strict traditional rules and norms seemed to allow the residents little room to leave individual traces in the village; only children and unadjusted adolescents could establish a personal relationship to places within the scope of social control. Consequently, most of the residents could only regulate and develop the social and collective aspects of their identity within the village, and not the individual aspects. As these aspects are especially vulnerable ones, the residents have had to regulate these aspects elsewhere.

Almost all of the interviewees admitted that they actively avoided their respective village in their leisure time and tried to get to natural areas as fast and often as possible (and

whenever possible by car or bicycle). The residents of the less urbanised community usually frequented the natural areas within their community, while the residents of the more urbanised community escaped to recreation areas outside of their closer region.

This seeming difference is also reflected in the relation between the residents and their communities' close-to-nature areas (defined as areas which are at least partly ruled by natural dynamics). Whereas the residents of the less urbanised community were very enthusiastic about these areas and could name many places to which they felt connected, in particular in a personal way, the interviewed residents of the more urbanised community found it difficult to indicate pleasant places there and complained about the omnipresent noise. Also, in the less urbanised community, only a few residents referred to places in nearby natural areas which they had physically appropriated (e.g. fire-places or tree huts). More residents there mentioned places reminding them of special (social and personal) experiences. But most of the residents referred to places they felt attracted to because of their beauty. Seel (1991) has argued that objects are in general experienced as aesthetically pleasing if they correspond with the observer's values or/and if the observer perceives it as a work of art and is thus animated to imaginative activity (i.e. to virtually shape the object). Speculatively, then, aesthetic experiences might be seen as an abstract form of appropriation and identification and may thus serve to compensate for or substitute the lack of active individual appropriation. Aesthetic experiences allow the residents and tourists to regulate their individual identity, but in a general or indirect way.

The findings of the qualitative research suggest that residential areas of peri-urban regions are (increasingly) split in two separated spheres in terms of identity regulation: the village as the sphere of collective identity and the close-to-nature areas (nearby or in more distant recreation areas) as the sphere of individual identity. As additional evidence for the existence of these two poles of identification, it seemed that the residents perceived and valued these areas with conflicting criteria. The criteria applied to areas in the village were harmony, orderliness, familiarity and serviceability. In contrast, those applied to the nearby natural areas were variety, beauty, surprise, silence and secludedness.

These fundamental differences between the spheres in terms of perception and evaluation per se may bring about conflicts concerning landscape development, as there seems to be little consensus among the residents (and especially between residents and visitors) about the exact location of these spheres. The schism of the residential area into two different spheres in terms of identification and identity regulation may complicate the residents' integration of individual and social identity and thus challenge the place's orientation-giving function (Hay 1998).

In the above-mentioned English study, the residents' relation to their old and new village was studied at five points in time during a relocation process (Speller *et al.* 2002). Before the relocation of the village, the residents identified themselves almost exclusively in a collective way with their old community. People there did not seem to feel the need to make the outside of their house different from the houses of the others. During the process of planning the new village, however, the residents began to verbalise the desire for future distinctiveness of their new houses. When they moved to their new houses they enjoyed individualising them, but at the same time they also started to miss the sense of community and complained about the lack of interaction. However, the desire for individual identification in this case appeared to be stronger than the desire for social belonging. The sudden change of preference from collective to individual identification with the village suggests that unwritten laws or norms had been inscribed into the structures of the old village, inhibiting its residents from expressing individuality within the old village. And with the disappearance of these structures, the residents started to express some seemingly repressed individual desires.

The two studies suggest that urbanisation and modernisation are accompanied by an increased desire for individual identification, whereas the old village structures maintain norms and meanings of the traditional collectively oriented society and thus inhibit individual appropriation and identification within the village. If this ban is not lifted by a fundamental change, such as a relocation of the village, then the residents may feel the need to regulate their individual identity outside of social control, in the transit sphere between place and space. This tendency seems to erode social interaction and thus contribute to a steadily proceeding though perhaps unwitting alienation from the village community, resulting in turn in the spread of dormitory villages and an increased demand for nature (abstract individual identity) as well as nostalgia (abstract social identity). Thereby the place-space dichotomy (self-regulated orientation vs. freedom) dissolves and ends in a new dichotomy of a place-space mixture (value-congruent areas) on the one hand and alienated space (value-free functional areas) on the other hand.

Toward Integrating the Concepts of Space and Place

To cope with the complexity in the experience of landscape, we grouped theories about landscape perception into those focused on space and those focused on place. The distinction between space- versus place-focused theories corresponds with the amount of attention that each accords to biological inheritance versus social-cultural background. We do not argue, however, that the distinction is a sharp one. Although the space-focused theories adopt assumptions about an evolutionary basis for rapid affective reactions to spatial and other features of the physical environment, they also acknowledge that the initial affective response can subsequently be modified by personal experience with the place and by cultural background (Kaplan and Kaplan 1989; Ulrich 1983, 1993). For their part, place-focused theories about the experience of landscape may not acknowledge the specific concerns of the space-focused theories, or they may discount the importance of specific evolutionary assumptions about the basis of landscape preferences. Ultimately, however, they cannot deny the fact of innate bases for the experience of landscape. After all, at the most fundamental level, the human perceptual apparatus as it has evolved allows us to "see" electromagnetic radiation within a certain range of wavelengths, to "hear" vibrations in the air within a certain range of frequencies, and so on. Thus, the issue in integrating space-focused and place-focused theories is not one of whether the basis for such an integration exists, but rather one of where to build solid and useful bridges between them.

We mentioned earlier that Ulrich's (1983) model of aesthetic response to the landscape helps to form a bridge between those theories concerned primarily with space and those concerned primarily with place. His theoretical account described restoration from stress as an extension of the initial affective response to particular configurations perceived in the landscape, a response that started from spontaneously emerging feelings of interest and liking. In postulating an immediate functional value for landscape preferences, his account resembles the other space-focused theories that we have overviewed here. In its reference to restoration, however, it suggests a particular approach to theoretical integration.

The approach builds on the concept of restorative quality and it appeals to us for three reasons. First, current theories about the restorative qualities of person-environment transactions are extensions of theories concerned with landscape preferences. We have already stated that this is the case for Ulrich's psycho-evolutionary model. It holds as well for the attention restoration theory of Kaplan and Kaplan (1989), and Kaplan (1995), which has roots in their information-processing model of preference. These theories place the process of responding to the immediate landscape in relation to what had come before as well as in

relation to what would follow. That a particular scene could support restoration of physiological arousal to more moderate levels as described in Ulrich's model assumes that the person had come to that scene from some other situation in which arousal had been elevated. Further, the model sees adaptive value in restoration in that the person may thus be better prepared to deal with what comes next. Thus, the concept of restoration draws our attention to recurrent changes and how particular kinds of preferred landscape experiences figure in those changes. This in turn leads us to consider how the different theories of landscape experience are arrayed along dimensions of the duration and significance of different forms or modes of landscape experience, from momentary aesthetic and affective responses to scenery to periodic restorative experiences to long-standing place attachments and place identity.

Second, and consequently, reference to environmental restorativeness also opens into a discussion of the development and maintenance of place identity. A developing line of research situates the purposive use of restorative environments in a larger context of ongoing self-regulation, and in doing so sheds additional light on the restoration-preference connection. Some of this research activity departed from Korpela's (1992) observations about adolescents' descriptions of experiences in their favourite (i.e. most preferred) places. His subjects often referred to some need for restoration on going into their favourite places and to changes that are characteristic of restoration while in those places. It appeared that the favourite place served an environmental strategy of self-regulation; by affording a restorative experience, the favourite place helped the person fulfil functional principles that are thought to guide self-regulation. That the place served the person in this way was seen as a basis for the person's liking for and attachment to the place (see also Korpela and Hartig 1996; Korpela *et al.* 2001; Korpela *et al.* 2002).

Finally, reference to environmental restorativeness can also inform a discussion about some of the practical consequences of sense of place. Hartig *et al.* (2001) have discussed how the perception of restorative quality in a non-spectacular natural environment is associated with ecological behaviour. They argued that people will seek to protect not only the specific natural places that they rely on for psychologically stabilizing experiences like restoration, but also other places like them. Moreover, they argued that people will seek to protect natural places through mundane activities that have rather indirect effects, such as recycling or driving less, as well as through activities that are dedicated specifically to preservation, such as activism and voting for legislation that creates new nature preserves. Their work thus builds on a theme common in the literature on environmentalism. Numerous prominent figures in the environmental movement have in their personal accounts described how some strongly felt emotional bond to the natural world motivated and sustained their activism (e.g. Fox 1985).

Conclusion

Studies of the "human dimension" of landscapes have become important in landscape research and will become increasingly so because of the roles that humans play in the landscape as sources of ecological impacts and as legitimate users of the landscape. A comprehensive understanding of the landscape requires a clear understanding of the character and the function of the human-landscape relationship. In a first step it is helpful to recognise that landscape experience can be differentiated into two modes, as place and as space. These experiential modes enable humans to fulfil different basic human needs: recreative and aesthetical activities and restoration on the one hand, regulation of identity and representation of meanings (values, norms, experiences) on the other hand. As we asserted at the outset, knowledge of people's needs is a prerequisite for designing nature conservation and

landscape planning measures that are acceptable to the public. Our discussion here of frequently used theories of landscape experience and of empirical research related to those theories should give a sense of the complexity of human needs connected with the experience of landscape. In this context it is, however, important to also see the complementary character of space and place as modes of landscape experience. The functions of space may over the life of an individual become intertwined with the functions of place. So far, relations between space and place functions have not yet been researched in a systematic form.

Concluding here, we wish to share a few ideas about directions for further integrative work. Clearly, given our foregoing discussion, the role of restorative experience in the development of place preferences and place attachments deserves further attention. In particular, the reciprocal character of those relations has received little attention. Having seen that restorative experiences can figure in the development of place preferences, we would like to know whether those who have strong preferences for particular kinds of places, such as natural areas, show more effective restoration when they enter such a place, even one that they have not visited before.

Little research has been done on the interaction between place identity (or sense of place) and landscape preference (though again see the work of Korpela and colleagues). According to the results presented above, it might be hypothesised that people who cannot regulate their individual identity within their everyday surrounding have a stronger preference for natural elements. Conversely, it would be worth studying whether people whose preferences do not match the predictions of the space-related evolutionary theories also show special characteristics in terms of their place identity.

Beyond reference to restorative experience as a bridging phenomenon, as we have proposed here, there are few attempts to integrate across a larger part of the above-discussed plurality of (overlapping) predictors of landscape preference. More comprehensive models would be helpful, however, when the landscape preferences of different parts of the population have to be determined. When such models are established theoretically, there is a need for testing their validity empirically, particularly when transfer into the practice of landscape planning and nature conservation is foreseen.

We discussed above the role of duration for landscape experience, assuming landscape as something static. Yet, of course, landscape changes over time. However, there is a considerable research gap regarding systematic analysis of the judgements of temporal landscape change (though see the work of Zube and Sell, e.g. Sell and Zube 1986; Zube *et al.* 1982). Here questions arise such as the effect of the rate of change or the significance of the symbolic meaning of landscape elements affected by change: do people get used to the changed landscape when the changes are small and slow enough? Are there any quantitative or qualitative (symbolic) thresholds of change where even slow and small changes lead to a loss of preference and thus to reactance? These gaps in the scientific work around landscape experience need to be bridged: one of the main challenges for planning and conservation involves these slow, small and thus less apparent changes in the landscape. Working in this field would not only mean doing integrative research regarding the space and place aspects of the landscape. Integration would go beyond social science and include other fields of landscape ecology, which also try to deal with small, slow changes and thresholds. A useful precedent on which such work could build is the limits-of-acceptable-change approach within wilderness management in the USA (e.g. Stankey *et al.* 1985).

Another unresolved problem is the scale-dependency of landscape preferences. Some landscape changes might be accepted when considered from large distance, but rejected when details can be observed. This issue should be further investigated in order to improve the reliability of generalisations. It would, in addition, provide a further possibility for integration of the social and natural science approaches in landscape research.

Scale-dependence has not only a spatial but also a social dimension: Whereas certain developments are well accepted by the majority of the population of a whole nation, they may be objected to by the inhabitants of the region where they take place or by those social groups otherwise affected by them. Further investigations and theoretical considerations are necessary to find out which types of landscape change are universally preferred or not, and which types of change are principally to be evaluated from a local or regional perspective. Here again, integrative consideration of the space and place aspect of landscape is necessary – and possible.

Finally, we observe that there are still numerous challenging research questions within each single field of landscape research. However, striving towards integration of landscape-experience research and, furthermore, towards integration of social and natural science work regarding landscape might not only be challenging, but fruitful and significant for practical work like landscape planning and nature conservation – and thus for the reality out there.

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