A CRITICAL REVIEW OF RESEARCH IN LANDSCAPE AND WOODLAND PERCEPTIONS, AESTHETICS, AFFORDANCES AND EXPERIENCE

REPORT

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1. THE BRIEF

The aim of this study is to provide policymakers and reflective practitioners with an overview of recent and current research trends and their implications for innovation and good practice in the management of green space. The study builds on a review of research with a similar title undertaken for the Forestry Commission in 1998 (Ward Thompson and Boyd, 1998) which looked at: a) landscape perceptions, especially those of forests and woodlands; and, b) landscape aesthetics. The present review aims to update this by exploring further the growing literature on people's perceptions, experience and understanding of green space, and woodlands in particular.

Rather than a systematic review, the reviewers were asked to use their own experience of research and practice in this field to make an informed choice of the literature to be covered. Nonetheless, a search methodology has been used, as described below, to ensure that key new research has not been overlooked. The underlying questions for this critical review relate to how research on the identified themes might inform, or is failing to inform, practice in the areas of land use, planning and policy relating to green space in both rural and urban areas. Regarding the latter, where gaps in research are identified, the review provides recommendations for new research.

2. METHODOLOGY

The detailed aims of the review were to try and gain a better understanding of the following:

a)   the processes of perception and human response that underlie landscape preferences and experience;

b)   theories (e.g. environmental affordances) and models which provide a philosophical basis for preferences and aesthetic responses;

c)   what is distinctive about the forest/woodland aesthetic experience compared with that of other landscapes;

d)   (empirical) studies on people's use and understanding of green space;

e)   the gaps in research and techniques, methodologies or principles, associated with the foregoing issues, which might fruitfully be pursued in future.

The literature search and review was conducted using a combination of techniques and focused on research published in or after 1998. It drew on the prior knowledge and experience of the OPENspace research team (which includes expertise in landscape architecture, environmental psychology, forestry and human geography),

references cited in key published works, conventional and computerised databases and internet websites.

2.1 Keywords and Search Tools used include:
- landscape + aesthetics
- environment + aesthetics
- forests + aesthetics
- land use + aesthetics
- perception (+ visual) (+ sensory)
- forest + preference
- landscape + preference
- greenspace + preference
- affordances + environment
- key authors

2.2 Electronic Databases searched include:
- Web of Knowledge
- Edinburgh College of Art
- University of Edinburgh
- National Library for Scotland
- On-line British University Libraries

2.3 The Internet search used key words and sites, including:
- www.scholar.google.com
- ASLA: http://www.asla.org/asla/nonmembers/bookstore.html
- EDRA (Environmental Design and Research Association): http://www.acs.ohio-state.edu/edra26/leadin/html
- IAPS: www.iaps.org

2.4 Post-1998 editions of periodicals searched include:
- Environment and Behavior
- Journal of Environmental Management
- Journal of Environmental Psychology
- Landscape and Urban Planning
- Landscape Journal
- Landscape Research
- Progress in Human Geography
- Urban Forestry & Urban Greening
- British Journal of Aesthetics

2.5 Other Research
- Literature Review on Greenspace (carried out by OPENspace for Greenspace Scotland, 2008)
- Conference Proceedings (i.e. EDRA, IAPS, AAG)

2.6 Limitations of the Methodology
The above approach has a number of limitations:

- no search can be fully comprehensive and it is possible that relevant articles in the non-academic press, work currently in progress, or work recently completed may not be included here;
- within the time available for the project, it was not always possible to locate or retrieve items, particularly from the Thesis and Dissertation Titles database;
- the potential range of disciplines whose interests overlap with those of this project is enormous and some discretion was necessary to limit and focus the search in directions predicted to be most useful.

Despite these limitations, the scope of the review is considered adequate for the purposes identified by the Forestry Commission

2.7 Presentation of Results
The results have been presented in three sections:

a)   an overview of the research and its findings, including a summary of the key points of the literature review carried out in 1998;
b)   reviews of individual papers or publications which are significant, either as landmark works or as summaries of an important body of prior work, or because they point to new understandings or opportunities and techniques for further research;
c)   a bibliography of relevant work identified in the literature search and surveyed as part of this project.

Where reviewed work under (b) lists other relevant references, not all of which may have been located and read as part of this survey, these are listed at the back of the review. All relevant published work located and surveyed as part of this project is listed in the bibliography.

3. OVERVIEW OF RESEARCH FINDINGS

3.1 SUMMARY OF KEY POINTS OF THE 1998 LITERATURE REVIEW

The review commissioned by the Forestry Commission (Ward Thompson and Boyd, 1998) surveyed theoretical developments in the fields of landscape aesthetics and perception and identified lacunae in empirical research. The review initially set out the different theoretical approaches to landscape perception and models for understanding responses to the landscape, aesthetic and practical or action-based. It then explored empirical studies on landscape preference and experience, and the methods used within such research, before identifying gaps and opportunities for future research.

In summary, the 1998 report identified:

a. a range of philosophical or theoretical approaches to landscape aesthetics and perception, highlighting in particular the role of affect and cognition;
b. a strong reliance on evaluation of photographs in empirical studies of environmental perception;

c. emphasis on the visual aspects of the landscape experience, almost to the exclusion of other senses, in empirical research and, to a lesser extent, much of the theoretical discussion;
d. a small number of studies taking into account affective and emotional engagement with the landscape;
e. an absence of studies on the role of particular non-visual elements of the landscape (e.g. microclimate) in environmental perception and experience;
f. opportunities for using objective, physiological measures as well as subjective measures of landscape experience;
g. a lack of studies exploring sub-group and individual level experience of landscape and responses to it

The report concluded with 11 recommendations of potentially fruitful areas and appropriate methodologies for further research.

The subsequent sections in this review sketch the outlines of a research landscape that in some respects has changed considerably in the 11 years since the previous one, while in others it has remained largely the same. It covers research published after 1997.

3.2. THEORIES OF LANDSCAPE PERCEPTION: COGNITION, AESTHETICS AND ECOLOGY

3.2.1 Theories of Landscape Aesthetics: Ongoing Debates

Gobster and colleagues have produced a useful functional definition of landscape aesthetic experience: "a feeling of pleasure attributable to directly perceivable characteristics of spatially and/or temporally arrayed landscape patterns" (Gobster et al, 2007 p. 964). Yet, among these landscape ecology experts "differences remain on which characteristics of landscape are considered directly perceivable and on how extensive, immediate, and direct a role cognitive processes and acquired value systems play in landscape aesthetic experiences. We especially disagree about how, and the extent to which, knowledge of the ecological significance of landscape patterns enters into aesthetic experience." (Gobster et al, 2007 p. 964). This is the nub of much recent debate and points up some of the key areas of divergent views.

In the literature on landscape aesthetics, the objective - subjective divide (if indeed it is a divide) remains a point of much debate: how much is aesthetic response an objective response as opposed to one based largely or entirely in the lived experience of the individual? This debate has acquired a new dynamic as concerns about conservation, climate change and sustainability focus attention on environmental aesthetics. The parallel debate, fuelled by these concerns, turns around whether aesthetics in art or artefacts is the same as aesthetics in landscape or nature. The key issue here is how aesthetics contribute to ethics and ethical responses; what characteristics do environmental aesthetics have that might inform environmental ethics and, in turn, environmental action, and is the theoretical mechanism the same in all aesthetic response or is there something special or different about environmental aesthetics?

For two of the key protagonists in the field, Allen Carlson and Arnold Berleant (2004),

there is an essential requirement for a unified approach. They argue that what is required for aesthetic theory is not an aesthetics that "…harbors two dissimilar types of phenomena, one concerning art and another nature" but rather an aesthetics of art and nature in which "both actually involve a single all-embracing kind of experience, which requires a comprehensive theory to accommodate it" (Berleant 2005: 161). However, others, such as Fenner (2003), argue that aesthetic appreciation of natural objects and environments, including landscapes, differs from the aesthetic appreciation of works of art due to essential qualities such as such as the necessary involvement in nature of the fourth dimension – time - and therefore of change. Fenner asserts that it is a philosophical error to regard works of art and natural objects as belonging to the same ontological category. Indeed, much recent discussion in aesthetics comes back to issues of ontology – what categorisations are meaningful and supported by empirical evidence of the way we relate to the world? The debate has important and far reaching repercussions not only for how landscape aesthetics are theorised (see for example Brady, 2006), but also for approaches to understanding how natural beauty is perceived and whether it is grounded in cognition or affective response (the underlying issues are set out in Ward Thompson and Boyd, 1998). The debate in turn influences what methodologies are appropriate for the research and documentation of popular notions of natural beauty.

In their edited volume on *The Aesthetics of Natural Environments,* Carlson and Berleant (2004) provide a comprehensive overview of many of the theoretical discussions in environmental aesthetics. However, their recent writings highlight the continuing difference of opinion between these two on whether aesthetic appreciation stems from an objective, disinterested criterion (Carlson, 2006), or from personal engagement with the natural world (Berleant, 2007). This reflects Lothian's (1999) earlier framing of the landscape perception debate in terms of a contest between 'objectivist' paradigms of landscape perception, regarding landscape quality as inherent in the physical landscape, and 'subjectivist' paradigms, regarding landscape quality as a product ultimately residing in personal experience or 'the eye of the beholder'.

Allen Carlson and other 'objectivist' theorists (e.g. Parsons, 2002) promote an aesthetic that calls for some kind of distance or separation between the object and the subject of aesthetic experience. Carlson argues that appreciation of nature is a necessary consequence of acquiring some level of scientific information about it, a thesis he terms 'scientific cognitivism' (Carlson & Lintott, 2008). "The idea is that scientific knowledge about nature can reveal the actual aesthetic qualities of natural objects and environments in the way in which knowledge about art history and art criticism can for works of art. In short, to appropriately aesthetically appreciate nature "on its own terms" is to appreciate it as it is characterized by natural science" (Carlson, 2008)

On the other hand, for aestheticians such as Berleant, the grounds of aesthetic appreciation of nature, art, or indeed any object or environment, lie not in any abstract, and primarily cognitively-grounded, criterion but in a more direct perceptual engagement. As he puts it, "we find in an aesthetic encounter a complex situation of interacting and interpenetrating features, not an appreciative subject confronting an art object" (Berleant, 2007: 317). Berleant regards subjectivity and objectivity not as binary categories but as parts of a perceptual continuum, identifying the aesthetic

"not by a single, unique feature but by a syndrome that rests on an engaged experience of connection whose strong perceptual content is, inevitably, shaped by cognitive, cultural, and personal influences" (Berleant 2007: 316). The consequence of this approach is the proposition that the greater the sensory engagement and involvement (the ultimate of which Berleant calls 'synaesthesia' – the complete union of sensory modalities), the greater the depth of appreciation, identity and recognition of interconnectedness.

Heft and Nasar (2000) point to grounds for claiming that "the spectator stance" and the engaged, active perceiver stance are distinctive modes of experiencing the environment. A similar critique is made by Gobster (1999),from the perspective of landscape ecology. He challenges the usefulness of the idea of disengaged gazing at the landscape as a picture, which he considers the basis of notions of 'scenic beauty'. Instead, he advocates an ecological aesthetic, based both on scientific understanding and on aesthetic appreciation of what is good for the ecosystem. However, he asserts that humans cannot directly sense ecological quality. The disjuncture between aesthetic experiences and ecological functions is at the heart of what Gobster and colleagues refer to as "the aesthetics–ecology debate" (Gobster et al, 2007: 962), where there is no consensus on whether "the pleasure that derives from recognizing the ecological, ethical, cultural or societal value of a landscape ''counts'' as an aesthetic experience" (Gobster et al, 2007: 966). Fenner (2003) gets around such problems by suggesting that an aesthetic response may be shaped by different processes in different contexts, such as art vs. nature.

Much of the discussion around notions of perceptual engagement are informed by James Gibson's seminal work: *The ecological approach to visual perception* (1979). James Gibson's concept of affordance, which he developed with his wife, Eleanor (see E. Gibson, 2000), has received considerable attention, rather belatedly, in recent literature on landscape experience. Affordances are per ceptible properties of the environment that have functional significance for an individual. Harry Heft (2001) has devoted much of his work to developing and promoting this concept of affordance, which he sees as bridging the divide between the false dichotomy (as Berleant would also have it) of objective and subjective. Affordances, says Heft (2010) are not mental constructs that a perceiver subjectively imposes on the world, nor are they interpretations of a physical world in the 'head' of a perceiver. Affordances are properties of the environment that are both objectively real *and* psychologically significant. In discussing the delayed emergence of the theory of affordances in environmental perception, Heft (2003) brings to our attention what William James has called the psychologists' fallacy: the all too common identification of *what* is perceived with the *process* by which it is perceived. Heft calls for a refocusing of our interest to immediate experience, approached through a phenomenological framework. Immediate experience can both ensure the connection of interpretative concepts with the actual experience of the world and help to uncover new qualities of perceptual experience. He points out that affordances are multidimensional and located within the flow of immediate experience, development, and socio-cultural processes. Perceiving and acting are intertwined, according to Heft (2010) as we engage dynamically, in movement and in time, with the environment.

Ingold's (2000) influential work as a social anthropologist (discussed further in section 3.3.2) is also influenced by Gibson (1979). "Perception, Gibson argued, is not the achievement of a mind in a body, but of the organism as a whole in its environment, and is tantamount to the organism's own exploratory movement through the world. If the mind is anywhere, then, it is not 'inside the head' rather than 'out there in the world'" (Ingold, 2000, p. 3).

Emphasis on personal engagement with the environment also resounds in suggestions that environmental values are grounded not in aesthetic appreciation, but in a sense of 'connectivity' with nature (Dutcher et al., 2007), that is based on "the dissolution of boundaries and a sense of shared or common essence between the self, nature and others" (p. 474). This notion is clearly informed by 'deep ecology' and/or its intellectual predecessors (e.g. the work of Aldo Leopold). Empirical research by the authors found that, among Pennsylvania land-owners, high levels of connectivity with nature correlates with high levels of environmental concern and pro-environmental behaviour.

At the other end of the theoretical spectrum, Barrett et al. (2009) propose the abandonment of 'aestheticism', i.e. the focus of aesthetical discourse on the processes of evaluation of object and subject, and the reconceptualisation of aesthetics as economy of survival across different levels of ecological organisation. Their proposed aesthetics as economy is grounded in: valuation of ecosystem services and natural capital; integration of ecology and economics; the eco-field concept describing species-specific cognitive approaches to the landscape; and the emergence of a new, integrative scientific paradigm (2009: 305). This 'integrative science' will, claims Barrett, wed the medical, ecological, and social sciences, including an interface with the humanities (Barrett, 2001).

At another level, the contest between 'objectivist' and 'subjectivist', disinterested, phenomenological or engagement-focused theories of aesthetic appreciation of nature is reflected in the contest between 'expert' and public perception-based approaches to environmental management and conservation practice and research. As Daniel (2001) notes, expert approaches are more prevalent in environmental management practice, whereas public perception-based approaches are more frequent in research. The author reviews the ways both approaches have shaped systematic visual landscape and quality assessment, and notes that both are unequal to the ecological and ethical challenges of the 21st century and the consequent emergence of biocentric philosophies. He advocates a merging of the two paradigms in a psychophysical approach, which affirms that "landscape values result from the interaction between biophysical features of the landscape and associated human perceptual/judgemental processes" Daniel (2001: 278). This approach considers that, although interventions that change landscape features should be based on scientific understandings of biophysical processes, the appropriate indicators of visual landscape quality are perceptual judgements by the users of landscape.

3.2.2 Cognitive Psychology, Cognitive Science, Cognitive Landscape Ecology

Recent works within the expanding fields of cognitive psychology and cognitive science deal with underlying processes that form the basis of environmental

perception. Grush's (2004) 'emulation theory of representation', for instance, is proposed as a framework that synthesises various representational functions of the brain, including environmental perception, reasoning, theory of mind and language. Emulation theory postulates that, 'in addition to simply engaging with the body and environment, the brain constructs neural circuits that act as models of the body and environment' (p. 377). For Grush (2004), environmental perception results from the use of such models to form expectations of, and to interpret, sensory input. Some recent work in spatial cognition is also of relevance to questions of how humans perceive and interact with the landscape. Both Denis (1997) and Foo et al. (2005) focus on the cognitive aspects of human navigation in a landscape. Denis (1997) analyses verbal descriptions of routes to document how spatial cognition is externalized through discourse. This offers insights into the perception and mental mapping of landscape features (landmarks) and human actions within the landscape. Foo et al. (2005) look at how humans perceive known routes in the landscape: do we integrate known routes into a cognitive map that guides landmark navigation, or do we, instead, convert them into measured, quantified representations of the landscape? The authors found that, although participants failed to take successful shortcuts in a relatively featureless desert landscape, they managed to do so in a forest, which affords many dispersed landmarks. Foo et al. conclude that, like honeybees, humans appear to depend on landmarks when they are available.

Heft and Nasar's (2000) experimental work demonstrates how environmental perception is contingent, i.e. that it evokes a conditional response plan made in preparation for various future circumstances, including the unanticipated. It reported on the comparison between perceivers' assessments of static displays of environmental scenes with dynamic displays, consisting of videotaped routes with mysterious transition events, that is scenes that draw the perceiver into them with the prospect of more information (Kaplan and Kaplan, 1989). Perceivers assessed static and dynamic displays very differently, with overall higher ratings of preference, invitingness and comfort for static displays. Dynamic displays elicited higher ratings for the degree to which the scene motivated additional exploration and offered the opportunity to learn more. The segments with highest ratings for all factors except comfort were 'turn' segments, where the greatest amount of information change (things revealed and things occluded) occurs. The authors point out that these differences call for a better understanding of the dynamic quality of environmental perception.

Farina and Belgrano (2006) develop the theoretical basis for a 'cognitive landscape ecology' by incorporating theory of information, theory of meaning and the *Umwelt*, and biosemiotic models into a landscape ecology framework. Their eco-field hypothesis is a way to describe landscape processes from an organism-centred perspective. The authors define the eco-field as a spatial configuration that carries a specific meaning. This meaning is perceived by an organism when a specific living function is activated. Each species has a specific cognitive landscape, comprising all the ecofields (spatial carriers of information) activated by all the living functions of a particular organism. The authors propose the concept as bridge between different scales of perspective (from niche to the Umwelt) in spatial ecology and, also, in environmental psychology. Although framed in the technical language of systems theory, their basic concept is very similar to other ecological understandings of environmental perception (e.g. those offered by Gibson 1979 and Ingold 2000).

As stated earlier, the theory of affordances has informed much of the work since the 1998 review (Ward Thompson & Boyd) in environmental perceptions and preferences. A more detailed discussion of work based on the theory of affordances is provided in section 3.4.1.

3.2.3 Landscapes of Nations and Continents: History, Ideology and Aesthetics

Much of the recent theoretical discussion in environmental aesthetics focuses on the key role of particular landscapes in the aesthetic experience of nature. Forested landscapes occupy a central place in landscape aesthetics, both as a subject of theoretical discussion and as a preferred theme for empirical work. As discussed in detail by Holmes Rolston III (1998), for many of those who encounter them, forests are archetypal landscapes, evoking notions of deep time, the sacred and the sublime.

A small number of works offer a historical take on landscape aesthetics, situating the making of sublime natural landscapes in its historical and broader ideological context, and discussing the role of notions of scenic beauty in shaping modern practices of visitation. Ely (2003), for instance, explains how a new scenic aesthetic of Russian landscape was articulated within the historical context of Russian national ideology and how the modern practices of steamship tourism on the river Volga emerged from this process. Simon Schama's (1995) writings remain an important reference on the historical context and cultural milieu of changing attitudes to the British landscape, especially since the 17th century. He demonstrates how a landscape aesthetic is at the confluence of empire, changing agricultural practices, emerging industrialisation and demographic shifts, the grant narratives of 'Man and Nature' contributed by the Reformation, the Enlightenment and the emerging natural sciences, and, of course, shifting personal sensibilities that reflect and mediate all the above. At a much larger geographical and temporal scale, Griffiths (2002) provides an ecological-historical overview of cultural debates about vegetation change in Australia, focusing on the morals, politics and aesthetics that have shaped, and continue to shape, environmental perception of a landscape that has undergone rapid ecological change.

3.3 RESEARCH METHODOLOGIES IN LANDSCAPE PERCEPTION, AESTHETICS AND EXPERIENCE

Empirical studies in the perception and valuation of landscape are characterised by considerable diversity, as researchers from different disciplinary traditions work with different background theories and definitions. This is exemplified by Sanesi et al. (2006), who compared two empirical studies of the psychological and social dimensions of green spaces recently published in Italy. These two independently conducted studies revealed some overlapping elements but also discrepancies, reflecting the differing approaches and research methods applied by urban foresters and environmental psychologists.

3.3.1 Valuation of Visual Representations of Landscapes

As found in the 1998 review, empirical research is overwhelmingly focused on visual dimensions of the landscape. Most post-1998 research in landscape perception and aesthetic valuation consists of gauging the affective responses (usually expressed in terms of like/dislike, or equivalent) of research participants exposed to images of various landscapes, usually in settings removed from the actual landscape under evaluation. As in earlier research, these images are usually photographs.

In tandem with increased availability of digital image processing technologies in the last 10 years, there has also been an increased use of digitally produced representations of the landscape, such as computer models, digital landscape simulations and digitally-processed photographs (Daniel and Meitner, 2001; Karjalainen and Tyrväinen, 2001). The question arises as to what extent these different representations of landscape can be considered as equal in their potential to elicit affective response in viewers. In a study comparing the expressed preferences of people who rated the same scenes reproduced by different visualization methods, Daniel and Meitner (2001) found very low correlation between ratings of images produced with different reproduction methods. This study raises important questions about the representational validity of computer-generated landscape visualizations. Discussing the relative usefulness and appropriateness of landscape visualisation methods used for research in Finland, Karjalainen and Tyrväinen (2001), on the other hand, conclude that digitally processed images and mixed images may offer a degree of realism adequate for the purpose of research, and they continue to be used in a wide range of projects (e.g. Messager Belveze and Miller, 2005; Ode et al, 2009).

A number of Northern European researchers and research groups have focused on the development of indicators that can be used for assessing 'landscape character', as a way of including aspects of landscape experience in categorisations to inform the fields of landscape management, planning and monitoring (Countryside Agency & Scottish Natural Heritage, 2002; Ode et al., 2008, 2009). This has been given new impetus by the Council of Europe's 2000 European Landscape Convention (ELC), which was ratified by the UK in 2006. Since the ELC requires the identification and assessment of landscapes with the active participation of stakeholders, as well as the setting of objectives for landscape quality with the involvement of the public, it is worth asking whether methods are available that take into account the role of landscape aesthetics and experience in determining people's response to conservation and change. Personal Construct Theory (PCT), developed originally by Kelly (1955), and similar projective approaches offer potentially useful methods in this regard, although relevant work (e.g. Myers and Ward Thompson, 2003) has tended not to use visual methods to elicit responses from local communities (see section 3.3.2 below).

The Landscape Character Assessment (LCA) tool has been developed by the Countryside Agency in England and Scottish Natural Heritage in Scotland (Countryside Agency & Scottish Natural Heritage, 2002), matched by the GIS-based LANDMAP approach of the Countryside Council for Wales (2003). Such tools reflect the move from a focus on scenic beauty in landscape planning and management to one focused on landscape as a concept arising from the relationship between people and environment, the context for a range of functions (Jensen, 2006). The methods advocated are largely conventional public engagement approaches, including focus groups, interviews, questionnaires and public forums, and it is assumed (although

not apparently informed by any particular theoretical model) that these will elicit an understanding of landscape aesthetics and perception in relation to different stakeholders' landscape preferences and values.

By contrast, Ode et al. utilise concepts of landscape perception theory to develop indicators that can be used to capture and assess the visual character of landscape (2008) and landscape preference (2009). Their scheme, based on computer-generated visualisations of a hypothetical landscape containing pasture and broadleaved woodland, includes a wide array of indicators, reflecting landscape coherence, stewardship, historicity, complexity, imageability, visual scale, disturbance, and naturalness (Ode et al, 2008: 110). Perceived naturalness seems to be an important indicator of preference. The authors provide a comprehensive discussion of their method for identifying indicators and of the contingencies, varying availability and applicability and other limitations of each indicator. Ode et al. (2008) recognise the need for further research in visual indicators and their links with aesthetic theory.

3.3.2 Questionnaires, interviews, observations and (other) ethnographic methods

An increasing number of studies document landscape preferences, values and uses through questionnaires, interviews and a variety of ethnographic methods which permit closer interaction between researchers and research participants. The study of places preferred by citizens of Malaga by Galindo and Hidalgo (2005) and woodland and green space perceptions and preferences in Scotland and England by Myers and Ward Thompson (2003), Bell et al. (2003; 2004) and Ward Thompson et al. (2005; 2008) are cases in point. Much of the aforementioned UK work to elicit local community perceptions of landscape is based on Personal Construct (PCT) psychology (Kelly, 1955), using individual interviews or focus groups followed by a broader questionnaire survey. The analyses have helped to understand the way personal experience and socio-cultural contingencies influence landscape perceptions, and take a transactionalist understanding of people's engagement with place (Myers and Ward Thompson, 2003).

Idiographic methods based on Personal Projects (Little, 1983) have been used by Sugiyama and Ward Thompson (2007a; 2007b) to explore experiences of place for older people. Personal projects refer to a set of goal-oriented, self-generated activities a person is doing or thinking of doing (Little, 1983). They range from trivial, everyday routines to ambitious, long-term endeavours. The idea of personal projects emphasises the ecological aspects of activity in context and research has explored how well the environmental context supports or hinders people's personal projects (Little, 2000; Sugiyama and Ward Thompson, 2007b). The method offers a unique way of investigating how well individuals' needs, desires and aspirations are supported by their environment and how people respond to (and cope with) the environment in which they find themselves, reflecting the transactional relationship between person and environment.

Drawing on affordance theory, behaviour observation based on behaviour 'settings' have proved a useful way of analysing the environment. Behaviour settings were

initially proposed by Barker (1976) as environmental contexts in which a certain behaviour pattern can be repeatedly observed, i.e. environments which support or elicit certain behaviour. Behaviour settings provide a useful method for subdividing an area under study so that environment and behaviour can be directly linked. Moore and Cosco (2007; 2010) have demonstrated the value of a behaviour setting approach to behaviour mapping that provides a sound empirical method for exploring how people engage with the world through direct observation. It can be supported by interviews and additional methods to explore the reasons and perceptions behind certain behaviour patterns. Nonetheless it has value in its own right in providing evidence for landscape preference expressed through bodily engagement rather than words.

Extended interviews, guided walks and other kinds of participation-based methodologies of research afford the benefit of contextualising the research *in situ*. These methods may enable the researcher to gauge non-visual aspects of engagement with the landscape – aspects that tend to remain hidden in research focused on visual perception. In participant-led research using ethnographic and phenomenological approaches to record different groups' real-world experience of landscape, Scott et al (2009) found that "allowing people to share their perceptions and experience in the landscapes they are frequenting and talking about greatly enhances the analysis" (p. 417). They underline the variety of perspectives on landscape experience, noting that "the concept of multiple publics and their respective power and influence in the landscape debate […] is further complicated by the multiple identities that an individual may possess and which change over time and space" (p. 419).

Disposable cameras and digital cameras, voice and video recorders have added to the tools readily available for participant-led data collection in the last 10 years or so, making it easier to employ research methods that combine visual and non-visual approaches. Analysis of comments and discussions recorded by participants has been facilitated by computer software such as NVivo, that can assist in coding text and in discourse analysis. Despite these innovations, such ethnographic research into landscape perception remains, at its core, an attempt to elicit an understanding of people's response to their environment by accompanying them in normal activities within that landscape and recording their (ideally unprompted) comments, reactions and responses. Such an approach is exemplified in Scott et al.'s (2009) work, where the observer attempts to remain 'apart' and not to influence the phenomena being described, while accurately recording everything in as much detail as possible.

However, Ingold has challenged this approach in his paper 'Anthropology is *Not* Ethnography'. He says that, while ethnography is about describing the lives of "people other than ourselves", anthropology's objective is "to seek a generous, comparative … understanding of human being and knowing in *the one world we all inhabit*" (Ingold, 2007, p.69). Some of this language and the philosophy behind it mirror Berleant's and Carlson's argument for a single, unified aesthetic theory, a comprehensive approach to accommodate all kinds of aesthetic experience. The key point for Ingold is that anthropology seeks to understand commonalities as well as difference, and recognises the value of engagement with people and place. Unlike ethnography, where detailed, dispassionate observation in the field is followed by analysis at a distance, "…anthropology – as an inquisitive mode of inhabiting the

world, of being *with*, characterised by the 'sideways glance' of the comparative attitude – is itself a practice of observation grounded in participatory dialogue" (Ingold, 2007, p. 87).

Given that much debate about landscape aesthetics and perception arises in the course of planning for change, where different perspectives on the landscape are nonetheless focused on the same world, the same place that is inhabited by all involved, such an anthropological approach offers a useful conceptual way forward. How this translates into detailed methods of data collection and analysis are less clear but offer rich opportunities for future research to explore.

3.3.3 Soft GIS

Poised between quantitative approaches to landscape valuation and the still underrepresented ethnographies of engagement with the landscape is the methodology of 'soft' GIS, developed by Finnish research groups (Kahila and Kyttä 2006). This method is based on the assumption that inhabitants of a region, city or countryside district could produce localised soft data by evaluating their living environment. Through Information and Communication Technology (ICT) and Geographical Information System (GIS), new possibilities for developing useful methods are emerging. New technology helps researchers to gather a database of soft data, such as the locations of places people find most attractive, or those they visit most often, and the attributes or experience they associate with these places. As people in general become more familiar with ICT, it becomes easier to invite them to input their own data on a GIS-based system, for subsequent collation and analysis of this so called 'soft' data alongside 'hard' formal data such as land use typologies. A web-based GIS method called 'softGIS' is an example of tools developed along these lines to allow residents to map and evaluate the perceived quality factors of their neighbourhood environment.

SoftGIS can be used to measure the social values of residents in relation to woodlands and greenspace and to inform decision-makers and planners in an appropriate map form that is familiar to professionals and easy to work with (Tyrväinen, Mäkinen and Schipperijn, 2007). This tool is suggested as a useful aid in participatory design and decision-making.

3.4 EMPIRICAL RESEARCH IN LANDSCAPE AESTHETICS, PERCEPTION AND PREFERENCE

3.4.1 Landscapes and their Users: Landscape Experiences and Affordances for Different User Groups

The theory of affordances (Gibson, 1977; 1979) provides the theoretical grounds for much of the recent work on the experience of, and intangible benefits from, nature. Affordances are clues in the environment (at all scales) that indicate possibilities for action. Examples include: buttons for pushing, knobs for turning, handles for pulling, steps for climbing, etc.. Heft (1999) illustrates the variety of affordances that may be apparent to a small child from apparently minor features in the environment. An object that is smaller than the hand-span of the child, for example a twig, is

perceived by the child to be graspable, that is, it affords grasping. The twig also affords the child the opportunity to throw it away, to scratch the ground, to dig sand, and so on. Thus the twig, as an environmental feature, has multiple functional significances understood by the child through experiencing the environment.

Following Gibson's theory of affordances, environmental psychologists have tried to interpret the relationship of particular (physical) environments with people's activities and perceptions. For instance, Marketta Kyttä (2002) has applied the theory in her doctoral research on children's environments of varying degrees of urbanisation. Along with physical affordances, she proposed affordances for sociality. In the same light, Clark and Uzzell (2002) argue that the town centre is one of the most preferred and highly frequented places for teens due to the presence of others and the social opportunities it affords. The theory of affordances can be applied to many different environments, including greenspace (e.g. parks, forests, woodlands). For example, Ismail Said's (2005) research looked at the affordances of streams and rivers as children's outdoor playspaces in Malaysia. The results suggest that children perceived the affordances of streams and rivers through physical, cognitive and social interactions. The children, therefore, perceived the water bodies as playscapes affording varieties of functional meanings. In a more recent doctoral study about forest schools in Scotland, one of the key findings was the expansion of the theory of affordances to include the emotional cues that a particular setting, in this case a forest, can afford for young people at risk (Roe, 2009; Lovell & Roe, 2009). This conclusion demonstrates the diverse ways that affordances could be used as a way to interpret people's relationship with the environment (both natural and man-made).

More details of research findings on particular sub-groups within the population are described below.

a) Children and Young People: Much recent research deals with ways children and young people experience, and benefit from, green space. Kyttä's (2004) work, based on individual interviews with 8–9 year-old children in Finland and in Belarus in urban, suburban, small town, and rural environments in both countries, highlights important differences in affordances between these settings. Children in rural Finland and small town Belarus enjoying the highest number of affordances in their neighbourhood. Korpela, Kyttä and Hartig (2002) looked at the role of restorative experience and self-regulation in the formation of place preferences by Finnish children. Children reported using their favourite places for emotion-regulation, but children's favourite places were not predominantly natural. However, the value of natural environments for dealing with emotional stress is reinforced by Wells and Evans (2003), who found that nearby nature can function as a buffer that moderates the impact of stressful life events, such as family relocation, on children's well-being.

Bell at al. (2003) and Ward Thompson et al. (2008) explored the uses and meanings of forests and woodlands for children and teenagers in Central Scotland. Their work demonstrates that forests are important for children and teenagers, though to different degrees and at different times in their development. These studies also underline the key role of childhood experience in people's relationship with the landscape. Ward Thompson et al. (2008) documented a strong link between frequent childhood visits and adult preparedness to visit green spaces alone as an adult. Not

visiting as a child, by contrast, was associated with a very low likelihood of later adult visits. This finding is consistent with the conclusion by Bixler et al. (2002), that childhood play in outdoor settings influences later interest in 'wildlands', environmental preferences, outdoor recreation activities and occupations in outdoor environments.

b) Women Many studies on the use of open public space show that women have different experiences in the outdoors than do men, particularly when they are alone (Burgess 1998; Virden & Walker 1999). Unlike men, women find that when they are in the outdoors their personal space is frequently invaded by verbal or actual physical assault from strange men.

Moreover, Jacqueline Burgess' Woods Project (Burgess 1998) revealed that the physical quality of enclosure characteristic of woods and forests (density of tree growth, height of trees, thickness of tree canopy) was experienced by people – particularly women - in a negative way. Even if one of the recreational strengths of woodlands is the capacity of their landscape to absorb large numbers of users, people feel more isolated inside this enclosed landscape. In addition, people feel that woodland enclosure offers many different places where individuals who might constitute a threat to personal safety might hide. According to Burgess, what is more significant, however, for understanding anxieties in woodlands is not the natural setting but social factors. She discusses three such themes emerged from the Woods Project (encounters with strangers, the significance of verbal abuse and flashing) in risk perceptions in public open space, and the role of communication networks in disseminating and amplifying people's anxieties about personal safety. Underpinning the findings of Woods research is a sense that it is very difficult for women to trust other people who may be present in green spaces.

In a more recent study on women's experience of New York parks for physical activities and their aesthetic valuation of these parks, female participants reported enrichment and support both for relationships and for activities in the park among family, friends, and acquaintances, which provided feelings of safety and enjoyment (Krenichyn 2004, 2006)). This research showed that that the physical space of the park accommodated physical exercise, with all its associated benefits, and that aesthetic elements of the park were highly valued.

c) People from Black and Minority Ethnic (BME) Groups: A number of researchers suggest that people from BME groups in the UK, as in many other Western countries, use and perceive green space in different ways, and often attribute to it different meanings, than the majority population (e.g. Woolley and Amin, 1999; Agyeman, 2001; Risbeth, 2001). Access and equity of access appears to differ considerably across different ethnic groups in the UK, with some Asian groups experiencing good access to urban green space (although of variable quality) compared with other minority groups (Ward Thompson et al., 2009; Ravenscroft & Markwell, 2000),

Risbeth (2001) discusses differences in provision, access, use and signification of outdoors landscapes for people of BME groups in the UK. Her review of a number of British case studies urges the adoption of inclusive planning and management practices that take into account the different ways places may be interpreted by

people from different ethnic minorities. A more recent study (Rishbeth, 2004) found Asian/African minority ethnic groups were less likely to be attracted to 'wildness' compared to white British participants, suggesting 'wildness' in urban green space may be perceived as a barrier to access for the former groups. Across both groups, white and BME, quality and good management of a park space was highly valued. Ward Thompson et al's study of deprived urban communities (2009) found perceptions of urban green space as a restorative place to retreat and relax, offering breathing space from the stresses of everyday life, to be a common theme across all cultures and ages. However, green spaces with attractive views and their use for relaxation appeared to be less relevant to black and minority ethnic (BME) groups than to white British, while good maintenance was more important to BME groups. The findings also support some of the US literature suggesting different physical activity patterns amongst certain BME groups: Indians, Bangladeshis, and Pakistanis in the study were more likely to visit urban green space for exercise than white British or other BME groups.

Recent empirical work on provision and use of mainly urban green spaces in Europe and the US documents a picture of inequality in access similar to that in Britain. Germann-Chiari and Seeland (2004) examined the potential of urban green spaces in several Swiss cities to provide opportunities to integrate different groups, such as youths, elderly people, and foreigners. Their work showed that the degree to which each of these cities realises the social integrative potential of its available green spaces varies greatly. Gobster (2002) examined outdoor recreation use patterns and preferences among racially and ethnically diverse users in the US. Results showed that minority park users came from farther away, more often by car, to use the park, used the park less frequently and were more likely to visit in large, family-oriented groups.

In terms of the emotional response to landscape and green space by BME groups, there are a number of themes identified in Ward Thompson et al (2009):

> *(i) Nostalgia*: the experience of nostalgia may be particularly strong in minority ethnic groups, particularly in first-generation migrants (Rishbeth, in press). Specific landscape attributes facilitating this process are particular plants that resonate with cultural associations (Rishbeth, in press, Topia-Kelly, 2004), as well as perceived opportunities (especially for Asian women) for social gatherings in parks. This ability of landscape to trigger memories of something familiar helps facilitate a sense of belonging and locate minority ethnic groups in new contexts: "*they operate as gateway into other environments, moments and social experiences*" (Topia-Kelly 2004).

> *(ii) Identity creation*: Worpole and Greenhalgh (1995) first identified the value of parks in allowing ethnic minority groups to develop cultural identities, a theme also reflected by Rishbeth (in press) and Dines *et al* (2006), and of particular value to first-generation migrants, helping form some psychological continuity between old-self and new. Topia-Kelly (2004) also documents how the process of gardening enables first-generation Asian women to connect to former identities, and express a form of 'Asian-ness' in England.

(iii) Relaxation – 'being away: as suggested above, the processes of relaxation and restoration associated with green and natural environments across cultures may be working differently in BME groups. Rishbeth (in press) stresses 'being away' is a particularly important concept, related to the need for anonymity amongst first-generation migrants. She draws an important distinction between the value of further away urban landscapes, offering opportunities to experiment/test out new life options, and the local landscape which facilitates feelings of belonging and opportunities for interaction.

d) Older people and disabled people: A large number of recent works focus on the nature and landscape experience of older people and people with disabilities. Much of the work on the latter utilises the "social model of disability", that is, the understanding that disability is a construct of a disabling society (Blackman et al., 2003) which, instead of accommodating physical and mental difference of its constituents, bases expectations (including how things are communicated, constructed and maintained) on the assumption that all its members are similarly able-bodied/-minded.

Most of these works tend to focus on issues of use, access to, and inclusive design of green spaces rather than perception and signification of these spaces by older people and people with disabilities. Kweon et al. (1998), for instance, investigated the contribution of urban greenery to the social integration of older adults with their neighbours in deprived, public housing communities in Chicago. They concluded that exposure to common green space is associated with social integration, a key component of well-being, and recommended that modest improvements in well-being can be achieved through creating neighbourhood settings that support the formation of social and community ties, with, among others, the provision of green space.

In terms of perception and experience of green and natural landscapes, Sugiyama and Ward Thompson (2007a) have introduced the concept of 'environmental support': a link between environments that make it easy and enjoyable to go outdoors and older people's quality of life. They have shown that green places such as local parks and tree-lined streets are an important component of environmental support. I'DGO (Inclusive Design for Getting Outdoors) researchers have recorded a range of evidence from older people on the importance of greenery, trees, attractive scenery and wildlife in their research, underlining the aesthetic and multi-sensory appeal of engagement with nature when outdoors (I'DGO, 2008).

3.4.2 Preference for various types/elements of the landscape

Much empirical research has attempted to associate structural and ecological attributes of a landscape or habitat with its visual aesthetic and emotionally restorative appeal.

a) Is there an optimum landscape for our species? Following a research thread already well established by 1998, a number of studies concentrate on the restorative (i.e. stress-reducing) quality and scenic beauty of specific environmental settings, ranging across the six major terrestrial biomes (desert, tundra, grassland, coniferous forest, deciduous forest, and tropical forest) (Han, 2003, 2007). Han (2007)

employed a self-rating restoration scale to evaluate examples of all these environments in relation to three physical variables in each: complexity, openness, and presence or absence of water features. His earlier work (2003) evaluated the same six major terrestrial biomes in terms of scenic beauty, preference, and restoration and concluded that the most favoured terrestrial biomes were tundra and coniferous forest, while the least favoured ones were desert and grassland. Interestingly, the author uses the theory of 'psychological relics' from the evolutionary past of our species to claim that these findings have evolutionary repercussions: preference for forested landscapes instead of grasslands may provide support to the theory that critical phases of the human evolution took place in the forested rather than savannah environments. This research also indicates that physical and structural parameters (complexity, openness, water features) weigh more heavily that habitat type in shaping people's preferences. Han's interviewees, however, were exclusively North American and their cultural biases may have played a role in shaping their pattern of landscape preference. This is not adequately discussed by the author.

De Groot and van den Born (2003) explored images of nature, and of the appropriate relationship between people and nature, through verbal descriptions from a questionnaire among residents of a town in the Netherlands. They found that people distinguish consistently between set categories of imagined nature, such as between arcadian nature and wild nature, and between three concepts of the appropriate relationship of people and nature, namely mastership of nature, responsibility for nature, or participation in nature. These partly reproduce categories articulated in environmental philosophy. The mastership concept is only apparent in a small minority of the respondents, responsibility for nature is represented by the broad majority of responses (c. 75%), while the spiritual/romantic image of participation in nature is a minority (15%) but still more strongly represented than the mastership image.

b) Landscape preference across cultures: As mentioned above, cultural differences in landscape values are commonly recorded in empirical research on the use of green and outdoors spaces by ethnic minorities in Western countries. In the somewhat more specific field of landscape aesthetics and preference, a small number of works demonstrate that cultural biases play a significant role in shaping what types of landscape appeal to different people.

A cross-cultural study of perceptions of, and preferences for, Australian natural landscapes among Australians and Americans of diverse age and belonging to different subcultural groups was carried out by Herzog et al. (2000). Their results reveal a complex and nuanced picture of landscape preferences. Their work confirms the expectation of familiarity bias - the higher preference for familiar landscapes, commonly found in many similar studies – only to an extent determined by culturally mediated associations. They also found confirming evidence for significant age trends, with primary school students having the highest, and secondary school students the lowest, preference for natural landscapes (viewed as 'uncool'). Adults had the most highly variable preferences. Experts' (landscape architecture students) preferences were found to differ from those of non-experts. Remarkably, and in contrast with other studies (e.g. Han, 2003) both Australians and Americans were found to like rivers best and the open landscapes the least.

A cross-cultural perspective is also present in the comparative research by Koshaka and Flitner (2004). The authors used results of forest photo contests to explore forest aesthetics in Japan and Germany. Koshaka and Flitner (2004) found that the content of prize-wining photos in Japan and in Germany differed substantially, reflecting different discursive practices of forestry organisations in the two countries. They also found the perceptions of Japanese and German study participants to differ markedly, reflecting views of forests as commodities in Japan and the association of forests with mystery and romance in Germany.

c) Do we prefer typical landscapes? Hägerhäll (2001) looked at the relationship between landscape typicality and preference in the case of Swedish pasture and found a positive correlation between the two: the more 'typical' a pasture, the higher its preference rating. Herzog and Stark (2004) tested Hägerhäll's results in different settings (parks and urban alleys) and arrived at a more nuanced picture. Their study produced a contrast between settings of positively value (e.g. a park) and settings of negative value (an alley). Preference was found to increase with typicality for positively valued settings categories and to decreases with typicality for negatively valued settings. Moreover, greater typicality does not necessarily lead to increased consensus and reduced variance in preference ratings for all setting categories. In other words, typical landscapes are not favoured unequivocally.

d) Do we prefer heterogeneous landscapes? Although landscape heterogeneity was found to be important in determining visual aesthetic appeal of a Mediterranean-type landscape by de Val et al. (2006), research by Dramstad et al. (2006) produced a more equivocal picture. In a study carried out in Norway, Dramstad et al. (2006) found that different groups of people (students and locals) prefer different, including both more and less heterogeneous, types of landscape.

The conclusion that landscape heterogeneity is highly valued is supported by the results of public perceptions of spontaneously re-afforested, formerly agricultural land in Switzerland (Hunziker, 1995). This research found that landscape preferences were multidimensional, determined by notions of tradition, nature conservation, profit and emotion. Most interviewees were ambivalent about spontaneous re-afforestation and preferred diverse, only partly re-afforested landscapes.

e) Fearsome landscapes: Alongside preference, Herzog and Kutzli (2002) studied perceived danger and fear in fields and forested landscapes. They found that visibility and locomotor access were the two principal determinants of preference and fear. High visibility and good access made landscapes preferable, whereas poor visibility and access generated perceptions of fear. Poor access was the paramount predictor of feelings of danger and entrapment. As the authors warn us, nevertheless, this shouldn't be misconstrued as evidence that fear is simply the inverse of preference. After controlling for other indicators of visibility, mystery has a positive relation to preference. In this, as in many other settings, context is everything: In a non-threatening context, concealment may be comforting, but, when perceptions of danger are present, concealment may generate thoughts of entrapment, thus reinforcing fear. The author's rule of thumb for landscape design is that 'where danger is likely to be an issue, design should provide ample opportunity for locomotor access as well as visual access' (p. 834).

To a large extent, these conclusions are consistent with those of an earlier study by Kuo et al. (1998), which investigated inner-city residents' responses to the incorporation of trees and grass in their neighbourhoods, with a special emphasis on safety concerns. Contrary to predictions by law enforcement officials and housing managers, residents' responses indicated that basic landscaping would be very welcome. As far as residents were concerned, the greener the space the better. At the same time, this study suggested that residents feel safer when views are not blocked.

f) Soundscapes: Although sound is integral to the experience of any environment, only a small minority of studies extend their enquiry beyond the visual, to the contribution of sound to environmental perception. One of these rare exceptions is the empirical study by Carles et al. (1999), which looks at the interaction between sound and vision in perception of the environment. Carles et al. (1999) found that coherent combinations of sounds and visual stimuli are rated more highly by perceivers than single stimuli. Carles at al. recommend the identification of places (e.g. urban parks, natural spaces, cultural landscapes) where conservation of the sound environment is essential to environmental appreciation. There is a clear need for further empirical research on the role of sound in environmental perception, which can encompass non-urban soundscapes.

3.4.3 Beyond Woodlands

Alongside the dominant corpus of empirical research that concentrates on forested landscapes, there is a number of diverse works on perceptions and values of urban parks and agricultural landscapes.

a) Landscapes of the City and the Urban Fringe: Following earlier research in aesthetic preferences within urban settings, Galindo and Hidalgo (2005) investigated criteria by which citizens of Malaga, Spain, value places in their city. The authors paid particular attention to the role of the restorative capacity – as framed through Attentional Restoration Theory (ART) - of valued places in the city. Their questionnaire survey demonstrates a clear aesthetic preference for recreational sites suitable for leisure activities (e.g. walking) and sites linked closely to the city's historical-cultural identity. The work also identified places in the city that have the potential to be invested with meaning and be 'used as a focal point around which to centre future scenes in a city context'. This work provides insights into the multiple dimensions of underlying meaning that individuals use to categorize their environment and confirms the significance of environmental aesthetics for the general well-being of individuals.

The work of Jim and Chen (2006) furnishes insights on the perceptions of, and attitudes towards, various aspects of green space and green space management by residents in the rapidly expanding city of Guangzhou, China. The authors found widespread recognition of ecosystem services and strong support for urban green space programmes. Respondents expressed a clear preference for scenically beautiful, naturalistic design of urban green space and an appreciation of the formal and informal recreational opportunities the latter provides. Chiesura (2003) investigated the experience of nature among users of the Vondelpark, Amsterdam. People reported visiting the park to relax and to listen and observe nature. This

author also highlighted the important role of urban parks in enhancing the sustainability of the city.

A number of publications focus on various aspects of public perception and enhancement of naturalistic vegetation, a type of vegetation often expurgated from urban and other designed green space. Given that natural, native vegetation often has a high biodiversity value, there is particular interest in research which also demonstrates that, when thoughtfully incorporated in landscape design, it can furnish great aesthetic and restorative advantages (Kaplan, 2007; Jim and Chen, 2008). Kaplan (2007) found that urban workers expressed a clear preference for nearby natural vegetation – especially patches of less groomed areas with trees and pathways that allow walking. Exploring the use of patches of natural vegetation in Stockholm, Florgard and Forsberg (2006) found that these patches are mostly used by children and young people. The authors showed that areas with remnant original vegetation in the cities have a recreational value, as well as other values, and this needs to be taken into consideration in the planning and design process.

Noting that notions of living 'closer to nature' contribute to the continuing appeal of residential development in the rural fringe of cities, and that such development causes considerable environmental problems, Kaplan and Austin (2003) investigated meanings of closeness to nature to people living in those settings in the USA. This work suggested that there is a perceived typology of manicured/landscaped areas, trees, gardens, mowed areas, forest, open fields, and wetlands, and that preference for forests is overwhelming. Since forests are particularly vulnerable to urban sprawl, Kaplan and Austin (2003) recommend their preservation on both environmental and user satisfaction grounds. They suggest that forest protection is more likely where forests are viewed as integral, communally owned parts of the residential development.

b) Agricultural Landscapes: Gomez-Limon and Fernandez (1999) document the contrasting landscape preferences among users of a formerly agricultural landscape in central Spain. The landscape has changed uses and, thus, ecological structure, over the last 60 years, as abandonment of traditional agricultural uses resulted in an ecological succession of trees and bushes. Landscape preferences differ markedly between different groups of landscape users (livestock farmers, managers and recreationists): livestock farmers prefer open landscapes, whereas managers and recreationists prefer landscapes with denser vegetation cover. The authors attribute these differences to different cultural expectations regarding landscape use. They advocate that such contrasting landscape preferences should be taken into account alongside other parameters (expected landscape uses, environmental goods and services) in the process of participatory and democratic environmental planning.

3.5 AESTHETICS, CONSERVATION AND POLITICAL ECOLOGY

Recognising that the way(s) we perceive and value nature shape our attitudes towards it, a growing body of literature since 1998 makes the explicit link between landscape aesthetics and perception and environmental ideology and practice. Much of the recent theory and empirical research recognises the crucial role of the aesthetic value and experience of nature – often regarded as trivial and of low priority in policy debates and nature monitoring and conservation practice – in the

development of environmental ethics (Brady, 2006; Dramstad et al., 2006, Gobster et al., 2007) and ecological politics of resistance (Benediktsson, 2007).

Brady (2007), Benson (2008) and, somewhat more systematically, Gobster et al. (2007) discuss at some length the controversial relationship between aesthetics and the development of a non-instrumentalist environmental ethic. Gobster et al. (2007) focus on the possibility of an ecological aesthetic and the contribution of aesthetics in affecting environmental change. They formulate a conceptual model of the aesthetics-ecology relationship, starting with the observation that humans engage with environmental phenomena at a particular scale, that of the human experience of our landscape surroundings, and suggest this is the appropriate scale at which to explore aesthetics in relation to ecology. Although departing from a different point, these authors' understanding of human engagement with the environment as a whole-organism, all-senses experience that transcends the cognitive sphere has many parallels with anthropological and biosemiotic formulations of this relationship summarised above (e.g. Ingold, 2000; Farina and Belgrano, 2006). Gobster et al. term this scale of engagement the human 'perceptible realm', similar to the *Umwelt* (the organism-centred view of the world) discussed by Farina and Belgrano (2006), in which signs, their meaning and interpretation are embedded (biosemiotics). Aesthetic experiences generated by human interactions within this realm are dependent on context, e.g. landscape types such as wild, agricultural, cultural or urban landscapes, and on personal and social situational activities or concerns. The authors discuss how interventions through landscape planning, design, and management, or through enhanced ecological knowledge, might establish desirable relationships between aesthetics and ecology. An interesting aspect of their paper is its critical discussion of such ecological aesthetics, which, while drawing on aesthetics to help promote environmental sustainability on ecological grounds, are inherently normative and carry controversial ethical implications. Benson (2008), in his discussion of the aesthetic values of rural landscapes, also notes that the connections between aesthetics and other non-instrumental reasons for valuing nature are contingent, but not essential.

By contrast, Hepburn (1998) objects to the common critique of the humanising functions of aesthetic appreciation of nature as falsification and sentimental distortion. Instead, he argues that we can both respect nature and incorporate its forms in our aesthetic appreciation. Farrad's comparison of the aesthetic appreciation of works of art and natural objects (2003) also discusses the application of aesthetic theory to arguments for nature preservation in a vein similar to that of Hepburn (1998). Empirical work also shows that, alongside functional appreciation of urban green space (e.g. in the form of ecosystem services this green space provides), aesthetic appreciation can provide a pathway to enhanced ecological awareness among urban citizens (Jim and Chen, 2006).

Probing the limits of the nature-culture relationship, Grewe-Volpp (2006) discuss the aesthetic possibilities of using language and writings to giving speechless nature a voice. Their discussion of the literature as a potential means of communication between humans and the non-human world is based on an eco-critical perspective which, by contrast with radical poststructuralism, assumes the existence of nature as an autonomous, albeit culturally inscribed, agent.

Godlovitch (1998), on the other hand, identifies the 'external outlook of nature', whereby nature is externalized as a thing apart from humanity, as a problem at the heart of the discourse about aesthetic valuation and abuse of nature. Godlovitch (1998) argues that central to this outlook is a conception of nature as the victim of offence, best exemplified by the notion of nature as primordially innocent. For Godlovitch, an inescapable, albeit awkward, consequence of the external outlook is that any human use of nature constitutes abuse. What is often identified as aesthetic – or, for that matter, any other type of - abuse of nature stems from this externalizing outlook. By contrast, Ingold's (2007) anthropological approach, described earlier, and some versions of Naess's deep ecology (1973), would see humans and the world as essentially part of one whole.

Related to the discussion of the ways environmental aesthetics determine attitudes towards nature, there is a growing appreciation of the role of aesthetic values of nature in the shaping of ecological politics (Dunaway, 2005; Benediktsson, 2007; Humphrey, 2008). Dunaway (2005) documents the ways in which images of nature (films and photographs) have both shaped, and been shaped by, perceptions and politics of nature in 20th century USA. Benediktsson (2007) probes links between ecological politics of resistance and recent theoretical understandings of the intrinsic sociality of nature. Marxist understandings of the social production of nature, as a resource-bearing material realm transformed by human labour; awareness that meanings of nature are socially and culturally constructed; and the concept of close interaction and mutual shaping of human societies and nature feed into contemporary ecological politics worldwide. Using a case study from Central Island, USA, where hydropower and hydrothermal energy projects of the capital and state are resisted, Benediktsson illustrates the role of aesthetics in shaping radical environmental values. Taking his cue from Berleant's aesthetics of engagement, the author argues forcibly for a rehabilitation of aesthetics, including emotion, in a political geography of landscape.

Going beyond the aesthetic appreciation of nature, Brady (2006) demonstrates how aesthetic values and engagement with nature are instrumental in shaping both scientific study of nature, with the development of evaluative concepts of harmony, variety and diversity central to ecological science, and conservation practice (e.g. in the selection of particular species to be conserved).

3.5.1 Scenic vs. ecological aesthetics of the landscape

Scenic beauty is not without its critics. Following the thread of Allen Carlson's earlier writings, environmental aestheticians (e.g. Saito, 1998; Gobster, 1999) denigrate popular aesthetic preferences, commonly described as 'scenic beauty,' as superficial and malleable socio-cultural constructions. Both Saito (1998) and Gobster (1999) trace the origins of 'scenic' environmental aesthetics to the traditions of 17-18th century European landscape painting and 19th century Romanticism. These aesthetics permeate park design and other land management practices, resulting in landscapes that are picturesque and 'naturalistic' rather than natural, designed to be appreciated only visually, as 'a series of scenes consisting of two-dimensional settings' (Saito, 1998: 101). Gobster (1999) also critiques the methodological practices of landscape research, which often focuses on visual evaluation of landscapes and the affective (like/dislike) responses of disengaged viewers,

assessed through simple scalar reactions to photographs. Instead, Gobster (1999) and other environmental aestheticians argue for an 'ecological aesthetics' informed by the biocentric ethics of Aldo Leopold and his successors. This ecological strand of aesthetics, it is argued, will approach landscapes cerebrally, cognitively, with an interest in the ecological health rather than the aesthetic appeal of the ecosystem. While research has shown that what we know about a landscape influences preference for and appreciation of it, it is perhaps over-stating the case for ecological education to assume that such cerebral approaches will supercede affective responses to landscape, when there is also research to suggest that initial responses to real landscapes can be immediate, emotional, and perhaps unmediated by cognitive processes (e.g. a 'fight or flight' response).

Parsons and Daniel (2002) defend scenic landscape aesthetics by arguing that both its historical attribution to elite European traditions and the denigration of its basis in sensory information and affective processing to a lower level of engagement with the natural world are wrong. They argue that the imposition of normative environmental aesthetics is both inappropriate and premature. Instead, Parsons and Daniel (2002) call for a better understanding of the visual aesthetics of the environment. They suggest that affect generated from scenic encounters with landscapes can encourage people to form bonds with the land and, thus, develop a greater appreciation for sustainability goals.

3.5.2 Aesthetics, Perception and Public Attitudes to Environmental Management and Legislation

Aesthetic values and perception of the landscape play a prominent role in shaping public attitudes to projects that involve physical restructuring of the landscape, be they 'development' or environmental restoration projects. They also contribute to public acceptance or rejection of regulations and legislation for the protection of natural environments. The role of stakeholders and the wider public enshrined in the European Landscape Convention (as described in section 3.3.1) underlines the need to understand public responses to the landscape, especially familiar landscapes close to home or holiday locations.

Wind turbines, often met with public opposition on, among others, aesthetic grounds, perhaps exemplify the issues around which public response to development in the landscape centre. Empirical research by Johansson and Laike (2007) found that people's intention to oppose wind turbine projects was heavily influenced by their aesthetic consideration of the effects of wind turbines on the landscape, alongside few attitudinal factors such as personal and general public attitudes towards wind turbines and wind power.

Public acceptance of environmental restoration options, often accompanied by altering environmental conditions, may be contingent on perceptions of aesthetic qualities and knowledge of ecological benefits that the proposed restoration may involve. Most of the relevant work in this area comes from the US.

Public support for pre-emptive wildfire reduction strategies in the mid-Western United States, for instance, hinges on the trade-off between scenic beauty and the potential fire hazard (Daniel et al., 2002; Hill and Daniel, 2008). Experimental work by Hill and

Daniel (2008) tested the hypothesis that ecological information affects public judgements of scenic beauty and public acceptance of restorative interventions in forested landscapes. They found that densely wooded landscapes remained strongly preferred in spite of information manipulation that attempted to promote acceptance of restorative interventions that reduced tree density. The authors speculate that a more effective way to increase public acceptance of such interventions would be longer information campaigns, including stronger and more emotion-arousing messages and interactive experiences of the targeted landscapes.

The role of public perceptions of scenic beauty in strengthening public support for the introduction of scenic protection regulation is examined by Kearney at al. (2007), by focusing on the case of Lake Tahoe, on the California - Nevada Border. Kearney et al, (2007) found substantial agreement in preference among different stakeholders. Favoured development should include more nature, especially trees, and avoid contrasts with the environment. As way to resolve the controversy often generated by new landscape protection legislation, the authors advocate the use of environmental psychology methodologies that map the aesthetic common ground before such legislation becomes introduced

The commodification of the landscape, and the instrumentalist approach to valuing the environment, are reflected in the terms used in recent landscape planning and management policy documents: *ecosystem services* (e.g. Jim and Chen, 2006; DEFRA, in Haines-Young and Potchin, 2007); *quality of life capital* (e.g. Natural England and Scottish Natural Heritage, 2002; Morris and Therival, 2009); *cultural services* (Natural England, 2009). Natural England (2009) identified eight cultural services in their research:

· a sense of history (or heritage);
· a sense of place (identity, home);
· inspiration (stimulus);
· calm (relaxation, tranquillity);
· leisure and activities (recreation);
· spiritual;
· learning (education), and;
· escapism (getting away from it all).

They conclude that ""all landscapes matter", reflecting a central tenet of the European Landscape Convention" (p.10). Such categorisation may help to satisfy policy requirements for 'service delivery' approaches to the landscape but fail to address more fundamental questions about why and through what mechanism such aspects are part of the aesthetic experience or perceptual engagement. The authors mention the prospect-refuge theories of Appleton and Bourassa but go not further in exploring theory.

3.5.3 Aesthetic measures of landscape quality

Ribe (2002) examined whether perceptions of scenic beauty correspond with acceptable landscape management among people who are pro- and against environmental protection in Oregon and Washington State. He found that, while all participants found very beautiful scenes acceptable, their perceptions of acceptable

landscape management practices, and the levels of scenic beauty necessary for them to be acceptable, were determined by their environmental attitudes. Participants favouring resource production saw ugly scenes as acceptable. Those favouring environmental protection needed beauty to rate management as acceptable. Ribe concludes that scenic "beauty can be a proxy for acceptability only with careful interpretation across conflicting value orientations" (p. 757).

Dramstad et al. (2006) researched whether aspects of landscape content and configuration, commonly associated with positive landscape preference, could be also used as surrogate measures for visual landscape quality in remote sensing monitoring programmes in Norway. They found that expressed preferences correlated significantly with particular spatial metrics (number of land patches and land type diversity) and presence of water. They also found, however, that different groups of people (students and locals), have very different landscape preferences and such differences need to be taken into account when interpreting indicators of landscape quality.

3.6 LESSONS FOR LANDSCAPE DESIGN AND MANAGEMENT

A copious recent literature deals with practices of landscape (including green space) design and management. This literature ranges from reviews of design practice (Fry and Sarlöv-Herlin, 1997; Fries et al., 1998) to the implications of landscape attribute research for the design of aesthetically pleasing and valued landscapes. Many of the empirical works that document specific aspects of landscape perception and valuation also include conclusions relevant to design practitioners, if often at a rather generalised level.

The Landscape Character Assessment (LCA) tool has been developed by the Countryside Agency in England and Scottish Natural Heritage in Scotland (Countryside Agency & Scottish Natural Heritage, 2002), matched by the GIS-based LANDMAP approach of the Countryside Council for Wales (2003), to assist the landscape development and conservation process. Such tools reflect the move from a focus on scenic beauty in landscape planning and management to one focused on landscape as a concept arising from the relationship between people and environment, the context for a range of functions (Jensen, 2006). The impetus for this change has been a growing recognition of the importance of history as contributing to character and appreciation of the landscape, the political shift towards recognising multivalent perceptions of the landscape from different stakeholders, and a move away from focusing attention only on 'special', designated landscapes. LCA emphasises a distinction between landscape character (a descriptive approach) and landscape assessment, involving quality and value judgements (Morris & Therival, 2009). LANDMAP recognises the importance of 'Visual and Sensory' aspects of the landscape - multi-sensory experience - as one of five elements of its landscape evaluation method. LCA discusses aesthetic and perceptual aspects as if they are separate, with aesthetic focused on objective and formal visual qualities, while the perceptual is considered more subjective and multi-sensory. If anything there is a turning away from the philosophical language of aesthetics, to avoid any suggestion of a simplistic approach based solely on visual beauty or appreciation, now apparently considered outdated by the landscape planning and management professions. Yet the use of standardised descriptors for aesthetic and perceptual

aspects of landscapes – such terms as 'harmonious', 'angular' or 'garish' (Countryside Agency & Scottish Natural Heritage, 2002: 34) – hark back to an art aesthetic now largely left behind by environmental and landscape aestheticians (see section 3.2.1). The fact that there is no articulation of the theoretical basis on which landscape assessment is founded, a model to explain the mechanisms behind people's perceptions and experience of landscape, appears to go unremarked. Yet the practical tools of landscape planning and management, pragmatic though they need to be, might perform more effectively with a sounder theoretical foundation. The challenges thrown up by Carlson's (2008) scientific positivism, Berleant's perceptual engagement (2007) and alternative, phenomenological approaches, are not addressed directly in such tools but the tools could benefit from consideration of them. The recent research for Natural England on *Capturing the "cultural service" and "experiential qualities" of landscape* (2009) notes that, across the wide-ranging focus groups and interviews used in the study, ""scenic" and "beautiful" are words commonly used to describe many of the landscapes" (p. 20); this despite the determination of LCA and, to a lesser extent, LANDMAP, to move beyond landscape assessment based on scenic beauty. It would seem that the involvement of stakeholders and a wider public in the evaluation of landscape brings the argument full circle back to concepts of the 'beautiful'. Understanding what mechanisms lie behind these responses and drawing on a theory of aesthetics that embraces the perception of beauty alongside the cultural (including the historical) and biological (or ecological) dimensions of the aesthetic would seem to be an important way forward.

Work to elicit local community perceptions of landscape based on Personal Construct (PCT) psychology (Kelly, 1955), reinforces the importance of a transactional understanding of people's relationship with place, and of methods which take account of this, reflecting Berleant's thoughts on aesthetics as "an engaged experience of connection whose strong perceptual content is, inevitably, shaped by cognitive, cultural, and personal influences" (Berleant 2007: 316). The landscape in which important life events or activities happen can become part of people's identity, and this in turn influences how people respond to proposed changes in the landscape – often with an emotionally laden response, as Myers and Ward Thompson (2003) have illustrated for the Strathdon area of Scotland. The transactional approach suggests that, if changes are made to the physical environment, whether people think that these are good or bad changes will depend on the extent to which they affect the experience of carrying out their tasks and activities in daily life. Equally, if their responsibilities or opportunities change, what they want to do will also change, and so will their perception of the suitability and attractiveness of the physical environment. Such conceptualisations underline the importance of understanding people's beliefs, wants and experience in relation to the landscape, over time, if planners and designers are truly to anticipate how they are likely to respond to change (Myers and Ward Thompson, 2003).

In the non-UK context, Fries et al. (1998) provide a comprehensive review of Swedish practice in planning for multi-objective forests, aiming at timber production, maintenance of biodiversity, aesthetics and recreation. The authors distinguish three approaches: the species and the naturalness approaches, both of which integrate conservation objectives, and the multiple aspects approach, which also integrates,

social, economic, spiritual and other aspects. The multiple aspects approach was developed in areas dominated by private, nonindustrial forestry.

In their overview of woodland edges in agricultural land, Fry and Sarlöv Herlin (1997) discuss the design and management of these landscape features to achieve multi-functional – ecological, productional and recreation – objectives. The authors examine the major conservation, production and amenity functions of woodland edges in agricultural landscapes and propose guidelines for multiple-use management and design of these important landscape features. They analyse the structural properties of woodland edges that enhance their conservation and amenity values and suggest that the most significant factors are width, physical structure, the composition of woody species and the spatial dynamics of woodland edges at both site and landscape levels.

The softGIS methodology developed by Tyrväinen, Mäkinen and Schipperijn (2007) can help to reform decision-making and planning processes by facilitating the measurement of the public's values in relation to natural landscapes. Application of such methodologies to questions of planning and design of urban green space suggested that people in Finland valued a relatively sparsely built city structure and strongly disapproved of infilling of existing housing areas.

In their work on urban residents' safety concerns associated with tree planting, Kuo et al. (1998) suggest that, for the purpose of avoiding feelings of danger, the most promising tree configurations are dense, yet with maximised view distances. Kuo et al. (1998) found that tree planting and grass maintenance may be a cost-effective, viable step in addressing many of the ills plaguing inner-city neighbourhoods. The three general recommendations of this study, with potential applicability beyond its North American original setting, were: (a) the greener the better, (b) maintain view distances for sense of safety, (c) involve residents in all phases of greening efforts

Naturalistic design in urban parks is often opposed on the grounds that naturalistic vegetation makes park users feels unsafe. The work of Jorgensen et al. (2002) on the evaluation of different urban park designs by residents of Sheffield in terms of safety and preference suggests that the most important factor in determining safety – but not preference – is spatial arrangement. The authors conclude that, with well considered design interventions, more naturalistic vegetation can be introduced into urban green space without making its users feel unsafe. The challenges of planning and managing urban parks in densely populated Hong Kong are discussed in a similar way by Jim (2001) and Jim and Chen (2006) but not translated into specific design guidance. By contrast, Rachel and Stephen Kaplan have attempted to translate the findings of their voluminous research on landscape experience, perception and preference into practical management and design guidance (Kaplan, Kaplan and Ryan, 1998). Their work was supported by an urban forestry unit in the USDA Forest Service and promotes everyday engagement with nature for all people. The book provides copious illustrations – photographs and sketches – to guide designers and site managers by illustrating the kinds of environments their research has shown to be more or less attractive and inviting for people to use. The guidance draws on the Kaplans' theoretical models - the four dimensional preference matrix (coherence, complexity, legibility and mystery) and the characteristics of restorative settings (being away, extent, fascination and compatibility) – and on Robert Ryan's

practical experience as a landscape architect. Much of the practical advice will not be unfamiliar to trained landscape designers but it is a useful (and rare) example of taking theoretical findings and translating them into practical proposals at the level of detailed design, illustrated in the graphic language of designers.

4. GAPS AND SUGGESTIONS FOR FURTHER RESEARCH

4.1 Diverse landscape experiences and aesthetic responses

Although it is recognized that people's engagement with the landscape is multisensory, the dearth of research on non-visual aspects of this engagement, pointed out in the 1998 report, remains noticeable 11 years later. There is a clear need for the development of research methodologies focusing on as broad a sensory range as possible. Some of the approaches that appear to hold most promise are phenomenological and anthropological in their outlook and theoretical basis. Appropriate methods continue to be interviews and comparative methods, supplemented (but not supplanted) by ethnographic methodologies (e.g. in depth, participant-led observations).

Works on the significance of sound are very rare, and those on the role of smell in landscape perception are almost non-existent. Auditory and olfactory aspects of landscape perception, however, can be easily researched with only minor modification of current methodologies (e.g. use of sounds and smells instead of images in landscape perception experiments). It is possible that not much work is commissioned on non-visual aspects of the landscape because sound and smell are not thought to be amenable to design intervention.

Another significant gap is the landscape perception of people with physical and learning disabilities. Although we have learnt a lot about patterns of access to and use of different landscapes by people with disabilities, we still know very little about what these landscapes signify for their users. People with learning disabilities, in particular, remain a group virtually ignored from landscape perception research, and this despite the copious literature on the therapeutic potential of green and other open spaces.

The European Landscape Convention requires the participation of stakeholders and the wider public in setting objectives for landscape quality and planning decisions. Methods are needed that take into account the role of landscape aesthetics and experience in people's response to conservation and change. Such methods, in turn, need to build on understandings of people's transactional relationship with place. Personal Construct Theory (PCT) (Kelly, 1955), Personal Projects (Little, 1983) and similar projective approaches offer potentially useful methods in this regard, that have not fully been explored to date. A personal projects approach might prove especially effective in eliciting an understanding the different perspectives that various sectors within society bring to their experience of and response to the landscape. Other methodologies that build on the theory of affordances, behaviour settings, ethnographic fieldwork and the use of soft GIS offer researchers opportunities to observe and record a multitude of interactions of research participants with given landscapes and gauge responses to these landscapes that

extend beyond the cognitive and the affectual. With sensible research design, these methods can be used with participants across the age, gender, ethnic and physical and cognitive ability spectrum, thus building a more representative picture of landscape perceptions and values in our increasingly heterogeneous societies.

4.2. Theory informing understandings, policy and practice

It is important that research designs, and the guidance and decision-making that stems from them, in future reflect the significant theoretical and methodological advances in landscape perception and related fields in the last 11 years. It is noticeable that many practical landscape assessment tools and guides are only poorly related to aesthetic and perception theory. This is a weakness that should be remedied to ensure landscape planning policies are not founded in assumptions about the mechanisms behind environmental perception and response that lack any empirical foundation. Such issues will perhaps be considered when Landscape Character Assessment advice in England and Scotland is reviewed and revised (ongoing in 2009/10), but the principles are important for all such guidance.

The theory gap also reflects a failure to join up the different strands of relevant research relating aesthetics, perception, experience, behaviour and response to environment. Aesthetic theory and the philosophy of environmental aesthetics is at present highly engaged in issues of how the visual and the ecological interrelate and how these, in turn, inform environmental ethics and action. There is a recognition of the importance of knowledge about the landscape as part of the cultural and cognitive context within which perception and aesthetic response take place, even if the precise mechanisms are still debated. Yet current UK landscape assessment guidance, which continues to emphasise the importance of 'time-depth' in the landscape, often has little to say about how responses to the historical landscape might be informed by such an aesthetic theory. It has even less to say about ecological aesthetics, since the visual and the natural science basis for assessing the value of landscape occupy mutually exclusive categories in assessment and evaluation schemes. There is scope for a better alignment of theories on the visual, historical and cultural contributions to landscape experience with aesthetic theory and environmental or ecological aesthetics, in developing research, policy and practice.

Ingold's (2007) anthropological approach also offers a valuable way forward, sympathetic and responsive to many of the theoretical issues raised by environmental aestheticians. In a context of global anxieties about environment and the natural world, issues of ethics cannot be divorced from aesthetics and this also merits greater attention in future research. Ingold's description of anthropology's objective: "to seek a generous, comparative … understanding of human being and knowing in *the one world we all inhabit*" (Ingold, 2007, p.69), is important in this respect. Gobster and colleagues (2007) have proposed a non-instrumentalist approach to ecological aesthetics, yet much of the language used in environmental policy in the UK reflects a world in which commodification appears to be necessary before something can be valued or appreciated. 'Ecosystem services', 'cultural services' and 'quality of life capital' reflect such an instrumental approach to understanding people's relationship with the landscape. It is not clear, however,

whether this is the most effective way to harness aesthetic responses in the service of ethical action. Again, this would merit further investigation.

4.3. Landscape types

At a more practical level, some gaps in research relate to coverage of different dimensions in the landscape.

It is interesting to note how little discussion there is in the aesthetic literature on seascapes. The coast has received attention in the UK and Europe in the context of landscape conservation (e.g. Hill et al's 2001 study of seascape assessment for Wales and Ireland), although always treated as a separate concern from other kinds of landscape assessment. It might be worthwhile to explore how and in what ways environmental aesthetic theories accommodate seascapes and coastlines into theories of landscape perception and response. Are the issues essentially different or only in terms of practical application? For an island nation, this would seem to have some importance.

Urban landscapes have received some research attention, as described above, in relation to landscape perceptions and experience of parks and green spaces. Some attention has also been paid to landscapes of suburbia and preference. There are gaps in coverage of the urban landscape, however, where aesthetic responses may relate to views of nature at some distance from the viewer. Attention has been paid to views of nearby nature and immersion in natural environments as part of research on restorative environments, e.g. by Hartig (2007), Kaplan (2007),etc. However, research where the context for the viewer is largely an everyday built urban environment but the natural or green landscape is part of a distant visual scene merits further research.

4.4 Landscape and health

The most recent Natural England research on people's experience of landscapes notes that "We have been struck by the extent and emphatic nature of the feedback relating to quality time, relationships and de-stressing. These important quality-of-life issues take the benefits from the landscape well beyond the notion of relaxation" (Natural England, 2009, p. 111). The relationship between health and the landscape adds a vital dimension to explorations of landscape aesthetics and experience, highlighted by the growing body of research that is beginning to demonstrate the links between the two. Concepts of the restorative landscape have been explored for some time now, as mentioned earlier, but it is likely that the links between aesthetic theory and mental restoration have not been fully explained and would benefit from further research attention.

Another area of rapidly growing interest in environment-behaviour and health research is the way in which landscapes are perceived as attractive to walk in – their 'walkability'. While many of the issues behind landscape perceptions and preference are applicable to issues of access and use necessary for walking, walkability is nonetheless a more specialised focus and one of major public health relevance. Concepts of affordance theory are highly appropriate here, suggesting that such an approach to landscape perception and experience might reveal what aspects of the

landscape encourage and invite physical activity and walking. This is particularly relevant to woodlands and forests where it is known that safety concerns can be a major factor in inhibiting woodland use.

5. REFERENCES

Agyeman, J. (2001) Ethnic minorities in Britain: short Change, systematic indifference and sustainable development. Journal of Environmental Policy & Planning **3**: 15–30.

Barker, R. (1976) 'On the nature of the environment', in H. Proshansky, W. Ittelson, and L. Rivlin (eds), *Environmental Psychology: People and their Physical Settings*, New York: Holt, Rinehart & Winston.

Barrett G. W. (2001) Closing the ecological cycle: the emergence of integrative science. *Ecosystem Health* **7**:79–84

Barrett, T. L., Farina, A. and Barrett, G. W. (2009) Positioning aesthetic landscape as economy. *Landscape Ecology* **24**(3): 299-307.

Bell, S., Ward Thompson, C., and Travlou, P. (2003) Contested views of freedom and control: Children, teenagers and urban fringe woodlands in Central Scotland. *Urban Forestry and Urban Greening* **2**: 87-100.

Bell, S., Morris, N., Findlay, C., Travlou, P., Montarzino, A., Gooch, D., Gregory, G. & Ward Thompson, C. (2004) *Nature for people: the importance of green spaces to East Midlands communities*. English Nature Research Report no. 567. Peterborough: English Nature

Benediktsson, K. (2007) "Scenophobia", geography and the aesthetic politics of landscape. *Geografiska Annaler Series B-Human Geography* **89B**(3): 203-217.

Benson, J. (2008) Aesthetic and other values in the rural landscape. *Environmental Values* **17**(2): 221-238.

Berleant, A. (2005) *Aesthetics and Environment: Variations on a Theme,* Aldershot: Ashgate.

Berleant, A. (2007). Aesthetics and environment reconsidered: Reply to Carlson (Allen Carlson). *British Journal of Aesthetics* **47**(3): 315-318.

Bixler, R. D., Floyd, M. F. and Hammitt, W. E. (2002) Environmental Socialization: Quantitative Tests of the Childhood Play Hypothesis. *Environment and Behavior* **34**(6): 797-818.

Blackman, T., Mitchell, L., Burton, E., Jenks, M., Parsons, M., Raman, S. and Williams, K.(2003) The accessibility of public space for people with dementia: a priority for the 'open city'. *Disability and Society* **18**(3): 357-371.

Brady, E. (2006). Aesthetics in practice: Valuing the natural world. *Environmental Values* **15**(3): 277-291.

Burgess, J (1998) But is it worth taking the risk? How women negotiate access to

Urban woodland: a case stuty, in R. Ainley (ed.) *New Frontiers of Space, Bodies and Gender*.London: Routledge, pp.115-128.

Carles, J. L., Lopez Barrio, I. and Vicente de Lucio, J. (1999) Sound influence on landscape values. *Landscape and Urban Planning* **43**(4): 191-200.

Carlson, A. (2006). Aesthetics and environment: Variations on a theme. *British Journal of Aesthetics* **46**(4): 416-427.

Carlson, A. (2008) 'Environmental Aesthetics', *Stanford Encyclopedia of Philosophy,* online publication at URL http://plato.stanford.edu/entries/environmental-aesthetics/, accessed 8th December 2009

Carlson, A., and Berleant, A. (eds.) (2004) *The Aesthetics of Natural Environments*. Ontario, Broadview Press.

Carlson, A. and Lintott, S., (eds) (2008) *Nature, Aesthetics, and Environmentalism: From Beauty to Duty,* Columbia University Press

Chiesura, A. (2003) The role of urban parks for the sustainable city. *Landscape and Urban Planning, 68*, 129-138.

Coeterier, J. F. (1996) Dominant attributes in the perception and evaluation of the Dutch landscape. *Landscape and Urban Planning* **34**(1): 27-44.

Countryside Agency and Scottish Natural Heritage, 2002. *Landscape character assessment: guidance for England and Scotland*, Cheltenham: Countryside Agency,

Countryside Council for Wales (2003) *LANDMAP Methodology Chapters.* Countryside Council for Wales Policy Research Reports

Daniel, T. C. (2001). Whither scenic beauty? Visual landscape quality assessment in the 21st century. *Landscape and Urban Planning* **54**(1-4): 267-281.

Daniel, T. C., Weidemann, E. and Hines, D. (2002) Assessing public tradeoffs between fire hazard and scenic beauty in the wildland-urban interface. *Homeowners, Communities, and Wildfire: Science Findings from the National Fire Plan* **231**: 36-44.

Daniel, T. C. and Meitner, M. M. (2001) Representational validity of landscape visualizations: The effects of graphical realism on perceived scenic beauty of forest vistas. *Journal of Environmental Psychology* **21**(1): 61-72.

de Groot, W. T. and van den Born, R. J. G. (2003) Visions of nature and landscape type preferences: an exploration in The Netherlands. *Landscape and Urban Planning* **63**(3): 127-138.

de la Fuente de Val, G., Atauri, J.A. and de Lucio, J.V. (2006) Relationship between landscape visual attributes and spatial pattern indices: A test study in Mediterranean-climate landscapes. *Landscape and Urban Planning* **77**(4): 393-407.

Denis, M. (1997).The description of routes: A cognitive approach to the production of spatial discourse. *Cahiers De Psychologie Cognitive-Current Psychology of Cognition* **16**(4): 409-458.

Dines N and Catell V with Gesler W and Curtis C, 2006). *Public spaces and social relations in East London*, Joseph Rowntree Foundation.

Dramstad, W. E., Sundii Tveit, M, Fjellstad, W.J. and Fry, G.L.A. (2006) Relationships between visual landscape preferences and map-based indicators of landscape structure. *Landscape and Urban Planning* **78**(4): 465-474.

Dunaway, F. (2005) *Natural Visions: The Power of Images in American Environmental Reform*. Chicago, University of Chicago Press.

Dutcher, D. D., Finley, J. C., Luloff, A. E. and Buttolph Johnson, J. (2007) Connectivity with Nature as a Measure of Environmental Values. *Environment and Bahavior* **39**(4): 474- 493.

Ely, C. (2003) The origins of Russian scenery: Volga river tourism and Russian landscape aesthetics. *Slavic Review* **62**(4): 666-682.

Farina, A. and Belgrano, A. (2006) The eco-field hypothesis: Toward a cognitive landscape. *Landscape Ecology* **21**(1): 5-17.

Fenner, D. E. W. (2003). Aesthetic appreciation in the artworld and in the natural world. *Environmental Values* **12**(1): 3-28.

Florgard, C. and Forsberg, O.(2006) Residents' use of remnant natural vegetation in the residential area of Jarvafaltet, Stockholm. *Urban Forestry & Urban Greening* **5**(2): 83-92.

Foo, P., Warren, W. H., Duchon, A., and Tarr, M. J. (2005). Do humans integrate routes into a cognitive map? Map- versus landmark-based navigation of novel shortcuts. *Journal of Experimental Psychology-Learning Memory and Cognition* **31**(2): 195-215.

Fries, C., Carlsson, M, Dahlin, B., Lamas, T. and Sallnas, O. (1998) A review of conceptual landscape planning models for multiobjective forestry in Sweden. *Canadian Journal of Forest Research-Revue Canadienne De Recherche Forestiere* **28**(2): 159-167.

Fry, G. and Sarlöv Herlin I. (1997). The ecological and amenity functions of woodland edges in the agricultural landscape, a basis for design and management. *Landscape and Urban Planning* **37**(1-2): 45-55.

Gabr, H. S. (2004) Perception of urban waterfront aesthetics along the Nile in Cairo, Egypt. *Coastal Management* **32**(2): 155-171.

Galindo, M. P. and Hidalgo, M. C. (2005) Aesthetic preferences and the attribution of meaning: Environmental categorization processes in the evaluation of urban scenes. *International Journal of Psychology* **40**(1): 19-26.

Germann-Chiari, C. and Seeland, K. (2004) Are urban green spaces optimally distributed to act as places for social integration? Results of a geographical information system (GIS) approach for urban forestry research. *Forest Policy and Economics* **6**: 3–13Gibson, J.J. (1977) The Theory of Affordances. In R. Shaw and J. Brandford (eds.) *Perceiving, Acting and Knowing*. Hillsdale,NJ: Erlbaum.

Gibson, J.J. (1977). The theory of affordances. In R. Shaw & J. Bransford (eds.), *Perceiving, Acting and Knowing*. Hillsdale, NJ: Erlbaum.

Gibson, J.J. (1979) *The Ecological Approach to Visual Perception*. Boston: Houghton Mifflin.

Gibson, E. J. (2000). Where is the information for affordances? *Ecological Psychology* **12**(1): 53-56.

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

Gobster, P.H. (2002) Managing urban parks for a racially and ethnically diverse clientele. *Leisure Sciences*,**24**: 143-159.

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

Godlovitch, S. (1998) Offending against nature. *Environmental Values* **7**(2): 131-150.

Gomez-Limon, J. and Fernandez, J. V. D. (1999) Changes in use and landscape preferences on the agricultural-livestock landscapes of the central Iberian Peninsula (Madrid, Spain). *Landscape and Urban Planning* **44**(4): 165-175.

Greeno, J.G. (1994) Gibson's Affordances. *Psychological Review* **101**(2): 336-342.

Grewe-Volpp, C. (2006) How to speak the unspeakable: The aesthetics of the voice of nature. *Anglia-Zeitschrift Fur Englische Philologie* **124**(1): 122-143.

Griffiths, T. (2002). How many trees make a forest? Cultural debates about vegetation change in Australia. *Australian Journal of Botany* **50**(4): 375-389.

Grush, R. (2004) The emulation theory of representation: Motor control, imagery, and perception. *Behavioral and Brain Sciences* **27**(3): 377-+.

Hägerhäll C. M. (2001). Consensus in landscape preference judgements. Journal *of Environmental Psychology* **21**: 83–92

Haines-Young, R. and Potschin, M (2007) *The Ecosystem Concept and the Identification of Ecosystem Goods and Services in the English Policy Context - A Review Paper,* DEFRA project: England's Terrestrial Ecosystem Services and the Rationale for an Ecosystem-Based Approach (NR0107), available at URL www.ecosystemservices.org.uk, viewed 14th December 2009

Han, K. T. (2007) Responses to six major terrestrial biomes in terms of scenic beauty, preference, and restorativeness. *Environment and Behavior* **39**(4): 529-556.

Han, K. T. (2003) A reliable and valid self-rating measure of the restorative quality of natural environments. *Landscape and Urban Planning* **64**(4): 209-232.

Hartig, T. (2007). Three steps to understanding restorative environments as health resources. In Ward Thompson, C. and Travlou, P. (eds) *Open Space: People Space*. Abingdon, UK: Taylor and Francis, 163-179

Heft, H. (2010, in press) Affordances and the Perception of Landscape: An Inquiry into Environmental Perception and Aesthetics. In Ward Thompson, C., Aspinall, P. and Bell, S. (eds) *Open Space: People Space 2: Innovative Approaches to Researching Landscape and Health*, Abingdon: Routledge.

Heft, H. (2003) Affordances, dynamic experience, and the challenge of reification. *Ecological Psychology* **15**(2): 149-180.

Heft, H. (2001). *Ecological Psychology in Context: James Gibson, Roger Barker, and the Legacy of William James's Radical Empiricism*. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers

Heft, H. (2000) Evaluating Environmental Scenes Using Dynamic Versus Static Displays. *Environment and Behavior* **32**(3): 301.

Heft, H. (1999). Affordances of Children's Environments: A Functional Approach to Environmental Description. In J. J. Nassar and W. F. E. Preiser (eds) *Directions in Person-Environment Research and Practice*. Aldershot: Ashgate**.**

Heft, H., & Nasar, J.L. (2000). Evaluating environmental scenes using dynamic versus static displays. Environment & Behavior, 32, 301-322.

Hepburn, R. (1998) Nature humanised: Nature respected. *Environmental Values* **7**(3): 267-279.

Herzog, T. R. andStark, J. L. (2004) Typicality and preference for positively and negatively valued environmental settings. *Journal of Environmental Psychology* **24**(1): 85-92.

Herzog, T. R. and Kutzli, G. E. (2002) Preference and perceived danger in field/forest settings. *Environment and Behavior* **34**(6): 819-835.

Herzog, T. R.-H., Kaplan, E. J., and Crooks, C.L. (2000) Cultural and Developmental Comparisons of Landscape Perceptions and Preferences. *Environment and Behavior* **32**(3): 323.

Hill, M., Briggs, J., MInto, P., Bagnall, D., Foley, K. and WIllimas, A. (2001) *"Guide to best practice in seascape assessment"*,
Available at URL http://www.ccw.gov.uk/pdf/Guide-to-best-practice-in-seascape-assessment.pdf, accessed 15th December 2009

Hill, D. and Daniel, T. C. (2008) Foundations for an ecological aesthetic: Can information alter landscape preferences? *Society & Natural Resources* **21**(1): 34-49.

Humphrey, M. (2008) Seeing is believing? Aesthetics and the politics of the environment. *Environmental Politics* **17**(1): 138-146.

Hunziker, M. (1995) The spontaneous reafforestation in abandoned agricultural lands – Perception and aesthetic assessment by locals and tourists, *Landscape and Urban Planning* **31**(1-3): 399-410.

I'DGO (Inclusive Design for Getting Outdoors) (2008) Experiences of outdoor environments. Published at URL

http://www.idgo.ac.uk/older_people_outdoors/experiences_of_outdoor_environments.htm (visited 2nd December 2009)

Ingold, T. (2000) *The perception of the environment: essays on livelihood, dwelling and skill.* London: Routledge

Ingold, T. (2007) Anthropology is *Not* Ethnography. Radcliffe-Brown Lecture in Social Anthropology. *Proceedings of the British Academy* 154, 69-92

Jensen, L. H. (2006) Changing conceptualization of landscape in English landscape assessment methods, in Tress, B., Tress, G., Fry, G. and Opdam, P., (eds) *From Landscape Research to Landscape Planning: Aspects of Integration, Education and Application,* Dordrecht: Springer

Jim, C. Y. (2001) Managing urban trees and their soil envelopes in a contiguously developed city environment. *Environmental Management* **28**(6): 819-832.

Jim, C. Y. and Chen, W. Y. (2008) Pattern and divergence of tree communities in Taipei's main urban green spaces. *Landscape and Urban Planning* **84**(3-4): 312-323.

Jim, C. Y. and Chen, W. Y. (2006) Perception and attitude of residents toward urban green spaces in Guangzhou (China). *Environmental Management* **38**(3): 338-349.

Johansson, M. and Laike, T. (2007) Intention to respond to local wind turbines: The role of attitudes and visual perception. *Wind Energy* **10**: 435-451.

Jorgensen, A., J., Hitchmough, J. and Calvert, T. (2002) Woodland spaces and edges: their impact on perception of safety and preference. *Landscape and Urban Planning* **60**(3): 135-150.

Kahila, M. and Kyttä, M. (2006) The Use of Web-based SoftGIS-method in the Urban Planning Practices. In *Proceedings of the Conference on Urban Conditions and Life Changes*.

Kaplan, R. (2007) Employees' reactions to nearby nature at their workplace: The wild and the tame. *Landscape and Urban Planning* **82**(1-2): 17-24.

Kaplan, R. and Austin, M. E. (2004) Out in the country: sprawl and the quest for nature nearby. *Landscape and Urban Planning* **69**(2-3): 235-243.

Kaplan, R., Kaplan, S., and Ryan, R. L. (1998) *With people in mind: Design and management of everyday nature*. Washington, DC: Island Press.

Kaplan, R., and Kaplan, S. (1989). *The experience of nature: A psychological perspective*. New York: Cambridge University Press.Karjalainen, E. and L. Tyrvainen (2002) Visualization in forest landscape preference research: a Finnish perspective. *Landscape and Urban Planning* **59**(1): 13-28.

Kearney, A. R., Bradley, G. A., Petrich, C. H., Kaplan, R., Kaplan, S. and Simpson-Colebank, D.(2008) Public perception as support for scenic quality regulation in a nationally treasured landscape. *Landscape and Urban Planning* **87**(2): 117-128.

Kelly, G A, 1955, *The Psychology of Personal Constructs*, New York: W.W. Norton

Kohsaka, R. and Flitner, M. (2004) Exploring forest aesthetics using forestry photo contests: case studies examining Japanese and German public preferences. *Forest Policy and Economics* **6**(3-4): 289-299.

Korpela K., Kyttä M. and Hartig T. (2002) Restorative experience, self-regulation, and children's place preferences. *Journal of Environmental Psychology* **22(**4): 387-398.

Krenichyn, K. (2006) "The only place to go and be in the city": women talk about exercise, being outdoors and the meanings of a large urban park. *Health & Place* **12**: 631–643.

Krenichyn, K. (2004) Women and physical activity in an urban park: enrichment and support through an ethic of care, *Journal of Environmental Psychology* **24**(1): 117-130.

Kuo, F.E., Bacaioca, M., and Sullivan, W.C. (1998) Transforming inner-city landscapes. Trees, sense of safety and preference. *Environment and Behavior* **30**(1): 28-59.

Kweon B.C,, Sullivan W.C and Wiley A.R. (1998) Green common spaces and the social integration of inner city older adults. *Environment and Behavior* **30**: 832-858.

Kyttä, M. (2004) The extent of children's independent mobility and the number of actualized affordances as criteria for child-friendly environments. *Journal of Environmental Psychology* **24**: 179–198.

Kytta, M. (2002). Affordances of Children's Environments in the Context of Cities, Small Towns, Suburbs and Rural Villages in Finland and Belarus.*Journal of Environmental Psychology* **22**: 109-123.

Little, B. R. (1983). Personal projects: A rationale and method for investigation. *Environment and Behavior, 15*(3), 273-309.

Little, B. R. (2000). Persons, contexts, and personal projects: Assumptive themes of a methodological transactionalism. In S. Wapner, J. Demick, T. Yamamoto, & H. Minami (Eds.), *Theoretical perspectives in environment-behavior research: Underlying assumptions, research problems, and methodologies*. New York: Plenum.

Lothian, A. (1999) Landscape and the philosophy of aesthetics: is landscape quality inherent in the landscape or in the eye of the beholder? *Landscape and Urban Planning* **44**(4): 177-198.

Lovell, R and Roe, J. (2009): Physical and Mental Health Benefits of Participation in Forest School, *Countryside Recreation*, **17**(1): 20-23

Messager Belveze, P. and Miller, D. (2005) Pictorial quality and communication information in a rural landscape context. In: Paar Buhmann and Lange Bishop, (eds) *Trends in Real-time Landscape Visualization and Participation. Proceedings at Anhalt University of Applied Sciences* 26th–28th of May 2005, Dessau, Germany. Heidelberg: Herbert Wichmann Verlag, 226–236

Min, B. and Lee, J. (2006) Children's neighborhood place as a psychological and behavioral domain. *Journal of Environmental Psychology* **26**(1): 51-71.

Moore, R. and Cosco, N. (2010 in press) Using behaviour mapping to investigate healthy outdoor environments for children and families: conceptual framework, procedures and applications, In Ward Thompson, C., Aspinall, P. and Bell, S. (eds) *Open Space: People Space 2: Innovative Approaches to Researching Landscape and Health*, Abingdon: Routledge.

Moore, R. and Cosco, N. (2007) 'What makes a park inclusive and universally designed? A multi-method approach', in C. Ward Thompson and P. Travlou (eds), *Open Space People Space,* 85–110, London: Taylor & Francis.

Myers, M.S. and Ward Thompson, C, (2003) 'Interviews and Questionnaires', Chapter 3 in *Crossplan: Integrated, participatory landscape planning as a tool for rural development,* in Bell, S. (ed) Edinburgh: Forestry Commission: 17-29

Naess, A. (1973) The Shallow and the Deep, Long-Range Ecology Movement: A Summary. *Inquiry* **16**: 95-100.

Natural England (2009) *Experiencing Landscapes: Capturing the 'cultural services' and 'experiential qualities' of landscape*, Natural England Commissioned Report NECR024, Cheltenham: Natural England

Nohl, W. (2001) Sustainable landscape use and aesthetic perception-preliminary reflections on future landscape aesthetics. *Landscape and Urban Planning* **54**(1-4): 223-237.

Ode, Å., Fry, G., Tveit, M., Messager, P. and Miller, D. (2009) Indicators of perceived naturalness as drivers of landscape preference. Journal of Environmental Management **90**(1): 375-383.

Ode, Å. Tveit, M.S., Fry, G. (2008) Capturing landscape visual character using indicators: Touching base with landscape aesthetic theory. *Landscape Research* **33**(1): 89-117.

Parsons, G. (2002) Nature appreciation, science, and positive aesthetics. *British Journal of Aesthetics* **42**(3): 279-295.

Parsons, R. and T. C. Daniel (2002) Good looking: in defense of scenic landscape aesthetics. *Landscape and Urban Planning* **60**(1): 43-56.

Ravenscroft N and Markwell S (2000), Ethnicity and the integration and exclusion of young people through urban park and recreation provision, *Managing Leisure* 5: 135-150.

Rishbeth, C. (in press), Walking Voices: flexibility in place and meanings of place among first generation migrants.

Rishbeth C, (2004) Ethno-cultural Representation in the Urban Landscape. *Journal of Urban Design*, 9 (3): 311–333.

Ribe, R. G. (2002) Is scenic beauty a proxy for acceptable management? The influence of environmental attitudes on landscape perceptions. *Environment and Behavior* **34**(6): 757-780.

Rishbeth, C. (2001) Ethnic minority groups and the design of public open space: an inclusive landscape? *Landscape Research* **26**: 351–366.

Roe, J. (2009) *The Restorative Power of Built and Natural Environments* PhD thesis, Edinburgh: Heriot-Watt University

Rolston, H. (1998) Saving Nature, Feeding People, and the Foundations of Ethics, *Environmental Values* **7**: 349-357

Said, I. and Abu Bakar, M.S. (2005) Landscape For Children To Play And Learn: A Conceptual Comparison Between Natural Stream And Playground. *Jurnal Teknologi B,* **42** (B): 1-10.

Saito, Y. (1998) The aesthetics of unscenic nature. *Journal of Aesthetics and Art Criticism* **56**(2): 101 -111.

Sanesi, G., et al. (2006) Comparison of two different approaches for assessing the psychological and social dimensions of green spaces. *Urban Forestry & Urban Greening* **5**(3): 121-129.

Schama, S. (1995) *Landscape and Memory*. London: Harpers Collins.

Scott, A., Carter, C., Brown, K. and White, V. (2009) 'Seeing is Not Everything': Exploring the Landscape Experiences of Different Publics. *Landscape Research*, 34:4, 397-424.

Sheppard, S.R.J. and Harshaw **H**. W. (2001) Landscape aesthetics and sustainability: An introduction. In: S.R.J. Sheppard and H.W. Harshaw (Eds.) *Forests and Landscapes: Linking Ecology, Sustainability and Aesthetics*. CABI Publishing, Oxford.

Sugiyama, T. andWard Thompson, C. (2007a) Outdoor environments, activity and the well-being of older people: Conceptualising environmental support. *Environment and Planning A*, 39, 1943-1960.

Sugiyama, T. and Ward Thompson, C. (2007b). Measuring the Quality of the Outdoor Environment Relevant to Older People's Lives. In Ward Thompson, C. and Travlou, P. (eds) *Open Space: People Space*. Abingdon, UK: Taylor and Francis: 153-162.

Morris, P. and Therivel, T. (2009) *Methods of Environmental Impact Assessment*, 3rd Edition, Abingdon: Routledge.

Topia-Kelly, D. P. (2004), Landscape, Race and Memory: Biographical Mapping of the Routes of British Asian Landscape Values, *Landscape Research*: 29 (3), 277-292.

Tyrväinen, L., Mäkinen, K., and Schipperijn, J. (2007) Tools for mapping social values of urban woodlands and other green areas. *Landscape and Urban Planning, 79*, 5–19.

Ward Thompson, C., and Boyd, F. (1998) *Review of Research in Landscape and Woodland Perceptions, Aesthetics and Experience*. Literature review and report for Forestry Commission, May 1998. Available at URL http://www.forestresearch.gov.uk/forestry/HCOU-4U4JMQ, accessed 24/09/09

Ward Thompson, C., Aspinall, P., Bell, S., Findlay, C., Wherrett, J and Travlou, P. (2004) *Open Space and Social Inclusion: Local Woodland Use in Central Scotland*, Edinburgh: Forestry Commission.

Ward Thompson, C., Aspinall, P and Montarzino, A. et al. (2008) The childhood factor - Adult visits to green places and the significance of childhood experience. *Environment and Behavior* **40**(1): 111-143.

Ward Thompson, C., Roe, J., Aspinall, P., Zuin, A., Travlou, P, and Bell, S. (2009) Final Report, Part B: understanding the impact of quality of urban green space on well-being. Unpublished report for CABE Space, Edinburgh: OPENspace research centre.

Wells, N. M.and Evans, G. (2003). Nearby nature: a buffer of life stress among rural children. *Environment and Behavior, 35*(3), 311-330.Wooley, H., and Amin, N. (1999) Pakistani teenagers' use of public open space in Sheffield. *Managing Leisure* **4:** 156–167.

Worpole K and Greenhalgh, L. (1995). *Park Life: Urban Parks and Social Renewal*, London: Comedia and Demos.