Review of Research in Landscape and Woodland Perceptions, Aesthetics and Experience

Individual Reviews of Research

Author: Fiona Boyd, 1998

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People Trees and Woods: Review of Research

P,T&W ref: *Project Title:*

1 EFFECTS OF SOUNDS ON PREFERENCES FOR OUTDOOR SETTINGS

Description This paper investigates the ways in which vegetation modifies the human response to sound in an outdoor setting and examines acoustic impacts on aesthetic evaluations of different settings. In particular the researchers were looking for evidence that people perceive that noise has been abated due to trees and shrubs, even where planting is too sparse to produce a physical abatement of noise.

Methodology Following a variety of preliminary studies to establish a research methodology, ten sound stimuli covering a range of sounds heard in urban, rural, and natural settings were selected. These sounds were played to ten student subjects at each of five field test sites ranging form urban to rural in character. The results were compared to the reaction of other subjects to tape-slide presentations. It was found that the procedure used to obtain the results did not influence the results significantly.

Results The original research hypothesis was not substantiated. The authors concluded:

- *Naturalistic Sound Effects*: Naturalistic sound stimuli affect the quality of outdoor settings.
- *Types of setting*: Sounds have different impacts as a function of the setting in which they are heard
- *Vegetation Effects*: Scenes with vegetation seem to increase expectations of environmental quality. In undeveloped natural sites as well as in urban parks and residential streets associated with human activity, human and mechanical sounds were considered detracting. People are less tolerant of certain human and mechanical sounds in areas where there are trees than in areas with no trees.
- *Acoustic versus visual evaluation*: In urban streets with and without trees, the scene with trees received an average scenic or visual evaluation considerably higher than the scene lacking trees. Differences among sounds at different sites were not statistically significant and not as substantial as other site differences found. The authors conclude that acoustic quality of the environment is less responsive to vegetation than is visual quality. Trees are still better than no trees!

Published Environment and Behavior **15** (5): 539-566

Authors Anderson, L.M., Mulligan, B.E., Goodman, L. S. and Regen, H.Z.

1 EFFECTS OF SOUNDS ON PREFERENCES FOR OUTDOOR SETTINGS

Date September 1983

Publisher Sage Publications Inc.

Price subscription c. £183 p.a. (6)

Keywords acoustic, environmental aesthetics, environmental noise

Comments There is little research into the acoustic impacts on aesthetic evaluations of the environment. The authors suggest that the reasons for the emphasis on visual features of a setting are twofold. First, that researchers consider visual features of paramount importance and second that there is a lack of generally accepted methods for assessing the aesthetic impact of sounds outdoors. This research addresses the second issue and gives useful guidance on the management of research into the interaction of sound and setting including suggestions for the methodology of future research.
The paper gives interesting examples of how sound and setting interact but does not examine in any depth the role acoustics play in determining our aesthetic response to the natural environment.

References:
Reference is made to the following studies of acoustic impacts on urban and recreational setting:

Southworth, M. (1969). The sonic environment of cities. *Environment and Behavior* **1***:* 49-70 (auditory information enhances settings).
Kariel, H. G. (1980). Mountaineers and the general public: a comparison of their evaluation of sounds in a recreational environment. *Leisure Science* **3***: 155-167.*
Rylander, R., and Sorenson, S., and Kajland, A., (1976). Traffic noise exposure and annoyance reactions. *Journal of Sound and Vibration* 47*:* 237-242.

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People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

2 SCENIC ASSESSMENT: AN OVERVIEW

Description The authors present a synthesis and overview of the early techniques developed for evaluating the scenic beauty of natural resources up until the mid 1970s.

Methodology The central theme of this report is the relationship between research into scenic beauty assessments and the management of scenic resources. Literature is grouped into three categories: descriptive inventories, public evaluations, and economic analysis. Both quantitative and non-quantitative methods within each category are discussed, strengths and weaknesses of the general approaches noted, and some alternatives suggested.

Results Critical review and summary of methodology.
Draws attention to the empirical evidence which suggests that there is no clear linear relationship between opinions (or stated visual preferences) and behaviour, (p121). They quote a number of papers to support their view that there is a significant difference between scenic beauty judgements and scenic preferences, (p120-121).

Published Landscape Planning

Authors Arthur, L.M., Daniel, T.C. and Boster, R.S.

Date 1977

Publisher Elsevier Scientific Publishing Co, Amsterdam

Price subscription

Keywords landscape preference; environmental preference; environmental aesthetics; forest management.

Comments The authors' stated aim is to find a consistent way to measure public appreciation for those landscape features which can be influenced by management practice. The review catalogues the early work on landscape preference including the seminal work of Daniel and Boster, (1976) and provides a useful critical appraisal of techniques.
The relationship between scenic beauty and landscape preference is discussed. Whilst some research suggests that the two are not correlated (e.g. Rabinowitz and Coughlin, 1970), others have found no substantial differences between scenic beauty and preference ratings (Daniel and Boster, 1976; Zube, Pitt and Anderson, 1974).

2 SCENIC ASSESSMENT: AN OVERVIEW

References:

Daniel, T.C. and Boster, R.S. (1976) Measuring Landscape aesthetics: The Scenic Beauty Estimation Method. *USDA, Forest Service Research paper, RM-167* Rocky Mountain Forest and Range Experiment Station, Fort Collins, Co

Rabinowitz, C.B. and Coughlin, R.E. (1970) *Analysis of Landscape Characteristics Relevant to Preference*. Regional Science Research Institute Discussion Paper No 38, Philadelphia, 38pp

Zube, E.H., Pitt, D.G. and Anderson, T.W., (1974) *Perception and Measurement of Scenic Resources in the Southern Connecticut River Valley.* Institute for Management and His. Environment No R-74-1, Amherst, Mass., 191pp.

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People Trees and Woods: Review of Research

P,T&W ref.: *Project Title*

3 THE AESTHETICS OF ENVIRONMENT

Description Taking a philosopher's approach to the 'aesthetic of landscape', the author provides a discourse on the environment as an aesthetic category, relating this to the aesthetic of art. Berleant argues that a study of the aesthetic experience of the natural environment must be contextual and suggests an 'environmental aesthetics of engagement'.

Methodology Review of literature, theory and ideas.

Results Advocates the need to improve understanding of environmental aesthetics as means of balancing environmental needs and values. He places environmental aesthetics in the context of morals and social values.

Published The Aesthetics of Environment

Authors Berleant, A

Date 1992

Publisher Philadelphia: Temple University Press,

Price £35.95 (hardback); £17.95 (softback).

Keywords landscape assessment, environment /aesthetics; nature /aesthetics

Comments Chapter Two sets out Berleant's view that environmental perception 'engages the entire, functionally active human sensorium' (p17). He considers that it is necessary to overcome established tradition to introduce the other senses into aesthetic perception, and to recognise synesthesia. He develops his theme to suggest that sensory experience is central in aesthetic perception but does not alone constitute environmental experience. Sensation and meaning cannot be separated: 'aesthetic perceptions are never purely physical sensations, never discrete and timeless..... always contextual' (p21). He introduces the concept of 'cultural aesthetics' and speaks of 'the quality of engagement' in environmental aesthetics. In a more recent book, Berleant (1997) relates his theory of environmental aesthetics to the 'active appreciation' of the landscapes which surround us at home, at work and at play.

Other References:

Berleant, A. (1997). *Living in the Landscape: Towards and Aesthetic of Environment*, Kansas: University Press of Kansas.

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P,T&W ref: *Project Title*

4 PREDICTION OF SCENIC BEAUTY USING MAPPED DATA AND GEOGRAPHIC INFORMATION SYSTEMS

Description The authors argue that by using the computational capabilities of a geographic information system (GIS), together with prediction equations based on assessment of video panoramas of locations affected by landscape change, more objective and cost-effective visual assessment prediction procedures may be developed.

Methodology The experiment used a raster database for a 6km square section of Oregon, USA. This information was encoded into a computer and used to generate a number of variables based on 360-degree panoramas of selected sites. Students were used to test the response to different sites and variables, providing the information which gave rise to the predictor equations, which in turn, provided the equation-derived prediction of scenic beauty estimates. The study assessed the results against both public and expert-based landscape opinion.

Results The study demonstrates the potential for the use of GIS in evaluating landscape beauty.
It raises questions regarding future research:

1. As the GIS databases become more sophisticated, will the potential for including seasonal and annual changes in GIS-based predictions improve as well?
2. Will the use of full-arc video sampling have a greater potential to capture the 'activity/form' context of a viewer's perception of beauty?

Published Landscape and Urban Planning, **30**: 59-70

Authors Bishop, I.D. and Hulse, D.W.

Date 1994

Publisher Elsevier Science B V

Price subscription c. £613 p.a. (20)

Keywords prediction of scenic beauty; landscape assessment/evaluation; geographic information systems;

4 PREDICTION OF SCENIC BEAUTY USING MAPPED DATA AND GEOGRAPHIC INFORMATION SYSTEMS

Comments

The paper provides a good introduction to the use of GIS to predict scenic beauty. The techniques could also be of use in research into the aesthetic response to landscape.
See also Harvey, R (1995) for use of GIS in the study of landscape perception.

References:

Harvey, R. (1995) Eliciting and mapping the attributes of landscape perception: An integration of Personal Construct Theory (PCT) with Geographic Information Systems (GIS). Unpublished PhD Thesis, School of Landscape Architecture, Edinburgh College of Art, Heriot-Watt University.

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P,T&W ref.: *Project Title*

5 THE AESTHETICS OF LANDSCAPE

Description Sets out to provide a comprehensive theoretical framework for research in landscape aesthetics.

Methodology Critical review of the history of ideas about landscape and aesthetic experience. Sets out conceptual framework combining 'biological, cultural and personal aspects' of aesthetic experience, reviews current theory and illustrates the application of theory to problems of landscape evaluation.

Results Concludes that there is a need to be explicit in distinguishing between, biological laws, cultural rules and personal strategies. Promotes the postmodern approach of 'critical regionalism' as logical progression of his arguments. 'Critical regionalism' he considers, recognises the importance of context, appreciates the role of local culture, social institutions, climate etc. and uses this to 'enhance the identity of places', (discussed in Ch.8.)

Published The Aesthetics of Landscape

Authors Bourassa, S.C.

Date 1991

Publisher Belhaven Press, London

Price N/A

Keywords landscape aesthetics, landscape evaluation, aesthetics.

Comments Concludes that research in the field of landscape aesthetics has been extensive but fragmentary and has lacked any coherent foundation in aesthetic theory. Sets out the positions of both the biological and cultural explanations before analysing the nature of aesthetic experience at sensory, formal and symbolic levels. Recommends a tripartite framework of biological, cultural and personal modes of aesthetic experience as an organising strategy. Includes critiques of several quantitative evaluation methods. Suggests that quantitative techniques based on objective formal quantities must be viewed with scepticism (p122) but offers landscape criticism as a model for the evaluation of landscape. He uses Kant to support his view that the aesthetic model is the symbol of the moral or practical and that content and meaning must be considered simultaneously with form and other objective qualities.
Reviews Scenic Estimation Model : acknowledges that the model emphasised the interactive nature of aesthetic experience but suggests that cultural values were not adequately addressed, (p127). Refers to Carlson (1990) to advocate the role of the expert in landscape evaluation.

5 THE AESTHETICS OF LANDSCAPE

References:

Carlson, A. (1990) "Whose Vision? Whose Meanings? Whose Values? Pluralism and Objectivity in Landscape Analysis" in P. Groth, ed. *Vision Culture and Landscape: working papers from the Berkeley symposium on cultural landscape interpretation*. Dept Landscape Architecture, Univ. of California, Berkeley.

Daniel T.C. and Boster, R.S. (1976) Measuring Landscape aesthetics: The Scenic Beauty Estimation Method. *USDA, Forest Service Research paper, RM-167.* Rocky Mountain Forest and Range Experiment Station, Fort Collins, Co

Daniel, T.C. and Schroeder, H. (1979) "The Scenic Beauty Estimation Model: predicting perceived beauty of Forest Landscapes," in *Proceedings of Our National Landscapes: a conference on applied techniques for analysis and management of the visual resource,* USDA, Forest Service General Technical Report PSW-35, Pacific Southwest Forest and Range Experiment Station, Berkley, Ca.

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6 GOETHEAN SCIENCE AS A WAY TO READ LANDSCAPE

Description A demonstration of the method of Goethean observation as a means of surveying and appraising landscape which "allows for a schooled subjectivity". Similarities between this method and the phenomenological studies are made.

Methodology Discussion of Goethean methodology and the application of this method to the study of a specific location. Analysis of the consistencies and discrepancies arising from group appraisal work.

Results Recommendations for future research and discussion of the application of this method to landscape appraisal.

Published Landscape Research **23**(1)

Authors Brook, I

Date 1998

Publisher Landscape Research Group Ltd

Price subscription c. £114 p.a. (3)

Keywords phenomenology, landscape survey, pathways, sensory awareness, perceptual modes, genius loci

6 GOETHEAN SCIENCE AS A WAY TO READ LANDSCAPE

Comments

The article is subjective and written from a personal perspective. It does not provide guidance for empirical research.

The study arises from the author's interest in the philosophy of science and in particular the way in which Goethe's methodology has been developed and adopted in current research. It looks at the Goethean application of observation listing the key features as:

- observing with patience and rigour;
- deepening a sense of wonder to the world;
- using sensual and emotional awareness to experience phenomena as fully as possible;
- attending to connections between phenomena;
- acknowledging an ethical dimension to the practice of science;

It concludes by suggesting that Goethean observation can be used to "respect and use the findings of other sciences, the views of local people, aesthetic judgements, etc. but maintain as central a guided and trained receptivity to the phenomenon itself." The article is arguing that a phenomenological response can be isolated through training of the individual. Although, the author quotes Goethe's acceptance of the role of the mind in rendering experience meaningful she also points out his disagreement with Kant's contention that what is revealed by the mind is not what is there but what appears to the human intellect.

Using Goethe's observational methodology, as interpreted in this article, the phenomenological approach is seen as having a contributory but not paramount role in appraising landscape.

The article is of limited interest for study of perception in the population in general: it is based on an individual response to landscape following a particular course of study to improve self awareness. For further discussion of phenomenological studies see Porteous (1996).

References:

Porteous, J.D. (1996), *Environmental Aesthetics* London: Routledge.

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7 VISUAL PERCEPTION

Description Comprehensive text book which provides a useful overview of recent psychophysical research and theoretical models. It gives a background to the development of psychological and physiological theory. Gibson's 'ecological' approach to visual perception is examined and used selectively in support of Marr's work to develop the authors' own theoretical position.

Methodology Critical review of theoretical and empirical studies on visual perception
.

Results The authors conclude that both retinal image and dynamic patterns of light play an important part in visual processing. They accept that human perception operates in a cultural as well as physical environment but advocate further investigation of the psysiological bases of visual perception and the formulation and testing of algorithmic theories pioneered by Marr (p.379).

Published Visual Perception

Authors Bruce, V., Green, P.R., and Georgeson, M.A.

Date 1996

Publisher Psychology Press, Hove,

Price £35.95 (hardback) £14.95 (paperback)

Keywords physiology, psychology, ecological theory, visual perception

Comments Useful text book which contrasts traditional psychological theories of perception, which rely on the concept of processing of one or more retinal image, with 'direct' theories of perception. The review of research and theoretical debate is given dynamic force by the authors' own, clearly stated theoretical standpoint. Several chapters of the book involve the interpretation of the work of Gibson and Marr. Further reading of the text and source material is recommended.

7 VISUAL PERCEPTION

Comments

Ecological Approach to Visual Perception

Direct theory believes that there are two levels at which perception can be explained: the 'ecological' level and the 'physiological' level. The ecological level considers that light intensity is directly detected. The physiological level is concerned with the way in which nerve cells are organised. Direct theories consider that there is no need to study the link between the ecological and physiological levels. The authors consider that whilst direct theories are a useful basis for study, further research of these links is necessary.

Chapter 11 outlines the ecological approach to visual space perception developed by Gibson, (Gibson 1966, 1979; Reed and Jones, 1982).

Gibson holds that perception is direct and unmediated by inference and problem-solving. He contends that movement is essential for seeing and that it is the flow and disturbances in the structure of the total optical array rather than bars and blobs or forms in an image which provides the information for perception, (p255).

The successes of the ecological approach have been in understanding *seeing* - how we use information to walk upright or catch a ball - but its attempts to explain *seeing as* have not progressed beyond general assertions (p377).

Perceptual Organisation

Chapter 6 provides a brief review of the Gestaltists' phenomenological way of seeing. It comments on Marr's use of the Gestalt principles of organisation. Gestalt laws are suggested as useful descriptive tools for discussing perceptual organisation in the real world but, it is suggested, they do not provide an adequate theory of *why* the principles work or *how* perceptual organisation is achieved, (p118).

Computational Model of Visual Perception

Marr argues that there must be a set of computational procedures that enable the detection of structures in light and that these procedures are implemented by the nervous system. He considers that a theory of algorithms is needed to explore perception at a psychological level.

Marr's theories outlined in Ch. 4, suggest that early visual processing involves a '*primal sketch'* made from the light reflected by the physical structures being viewed and focused by the observer's eye. The '*raw primal sketch'* locates edges and blobs and their orientations, etc. From this complex set of statements larger structures, i.e. boundaries and regions, are differentiated through grouping procedures to form a '*full primal sketch'*. Depth, motion and shading yield a '$2\,^{1}/_{2}\,D$ *sketch'*: a second level of representation which is viewer centred. This is followed by a third level, termed a '*3D model representation'* which is centred on the object(s) being viewed. Object recognition is achieved when the image viewed matches a representation of a known object stored in the brain.

7 VISUAL PERCEPTION

Conclusions: contrasting Theories of Visual Perception

The author's reach their conclusions from contrasting 'traditional' and 'ecological' approaches:

- They adopt aspects of 'direct' theories which suggest that properties of the world can be detected without "cognitive" processes of inference, interpretation, and judgement, but argue with 'indirect' theorists such as Marr and Ullman, that such processes of detection do rely on computation (p370.)
- They suggest that perception involves representations and computations. Different kinds of computation require different sorts of representations. Computations may be different, for example, if a dynamic pattern of light and not a retinal image is considered as the input to visual processing.

We cannot always assume that different perceptual tasks are actually tapping the same underlying visual processes, however similar they appear. (p378)

- They accept that people may *see* objects and events in terms of a culturally given conceptual representation of the world.

References

Gibson, J.J. (1966). *The senses considered as perceptual systems.* Boston, MA: Houghton Mifflin.

Gibson, J.J. (1979). *The ecological approach to visual perception.* Boston, MA: Houghton Mifflin.

Marr, D. (1982). *Vision: A computational investigation into the human representation and processing of visual information.* San Francisco, CA: Freeman.

Marr, D., and Poggio, T. (1979). A computational theory of human stereo vision. *Proceedings of the Royal Society of London, B,* **204**, 301-328.

Marr, D, and Ullman, S. (1981) Directional selectivity and its use in early visual processing. *Proceedings of the Royal Society of London, B,* **211**, 151-180.

Reed, E., and Jones, R. (Eds.) (1982). *Reasons for Realism: selected essays of J.J. Gibson.* Hillsdale, NJ: Lawrence Erlbaum Associates Inc.

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8 LANDSCAPE ARCHITECTS' INTERPRETATIONS OF PEOPLE'S LANDSCAPE PREFERENCES.

Description This study sought to find out the degree to which landscape architects could understand their clients' preferences, and the degree to which they agreed with them.

Methodology Landscape architects were asked to rank a series of photographs in a way similar to the client group, based on the readings of the descriptions which the client group gave to the photographs.

Results Landscape architects could use the written information to come quite close to reproducing the client group's perceptions, even though the personal preferences of the landscape architects did not correspond to the client group's personal preferences.
Bohyoff notes from this study that:

- simple, open-ended questioning of visitors to a park is a cost effective method to gauge the order and magnitude of landscape preferences.
- planners cannot assume that their preferences will match those of the general public.

Published Journal of Environmental Management, **6**: 255-262.

Authors Buhyoff, G.J., Wellman, J.D., Harvey, H. and Fraser, R.A.

Date 1978

Publisher Academic Press Inc. (London) Ltd

Price Subscription c. £285 p.a. (3)

Keywords environmental management; landscape preferences; environmental aesthetics; visual perception.

8 LANDSCAPE ARCHITECTS' INTERPRETATIONS OF PEOPLE'S LANDSCAPE PREFERENCES.

Comments

This is part of a body of work by Buhyoff and others which Zube (1982) includes in his psychophysical paradigm. This paper is reviewed here because it typifies a range of studies concerned with landscape evaluation for planning purposes and is regularly cited in reviews of research. Buhyoff's methodology is simple: it involves a series of tests, usually the ranking of slides or interviews, to establish and monitor landscape evaluations of the general public. The studies are directed to specific planning, design and management issues to which the outcomes of the research can be applied.

Other papers of interest include Buhyoff, Leuschner and Wellman (1979) where the aesthetic impacts of southern pine beetle (SPB) damage were studied. Subjects, all known to have different levels of knowledge of SPB were shown a variety of slides illustrating damaged and undamaged areas of forest. Using rank correlation methods, it was found that preference for forested landscape diminishes with increases in SPB damage. The effect was pronounced for knowledgeable subjects, while naive subjects may actually prefer landscapes with orange-brown stages of damage. However Buhyoff suggests that it was not clear from this research which landscape elements influenced preference (what people looked at), and how they interpreted what they saw (what did they think caused the damage). Seemingly straight-forward psychophysical research may raise more questions than it answers. Buhyoff also questioned how such research findings should be applied. Negative reaction to damage to forests by pests, for example, could be minimised by reducing publicity. Such action, however, could conflict with other management responsibilities to the public.

References

Buhyoff, G.J. Leuschner, W.A. and Wellman, J.D. (1979) Aesthetic impacts of southern pine beetle damage. *Journal of Environmental Management*, **8** (3): 261-7.

Zube, E.H., Sell, J.L. and Taylor, J.G. (1982). Landscape Perception: Research, Application and Theory. *Landscape Planning*, **9**: 1-33.

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P,T&W ref: *Project Title*

9 "WHOSE VISION? WHOSE MEANINGS? WHOSE VALUES? PLURALISM AND OBJECTIVITY IN LANDSCAPE ANALYSIS

Description Carlson states that landscapes are valued differently, have different meanings attributed to them, and are even perceived in different ways by different individuals. He considers the roles that the concepts of 'vision', 'meaning', and 'values', play in the descriptive, interpretative and evaluative judgements used in environmental research, analysis and design.

Methodology This study uses philosophical argument to examine the issues of pluralism and objectivity concerning vision, meanings, and values.

Results Carlson (p168) criticises the use of preference studies and recommends the need for landscape professionals to make the "descriptive, interpretative, and evaluative judgements about landscape".

Published P. Groth, ed. *Vision Culture and Landscape: working papers from the Berkeley symposium on cultural landscape interpretation*.

Authors Carlson, A.

Date 1990

Publisher Dept Landscape Architecture, Univ. of California, Berkeley.

Price not available

Keywords environmental aesthetics; environmental aesthetics/criticism; environmental preference studies.

9 WHOSE VISION? WHOSE MEANINGS? WHOSE VALUES? PLURALISM AND OBJECTIVITY IN LANDSCAPE ANALYSIS

Comments

Carlson is an environmental philosopher whose views can incite controversy, (Foster, 1991). He has written extensively on environmental aesthetics. In this study he provides a critique of the use of empirical research and preference studies to guide design and management. Bourassa (1991), following Carlson (1990), asserts the role of expert judgement and criticism in environmental aesthetics.

Carlson (1976) has also attacked the use of photographs and other visual simulations in experimental research. He states that the use of such stimuli overemphasises the formal qualities of environment and neglects the sensuous qualities such as colour, texture and smoothness.

For further discussion of Carlson's work see Bourassa (1991), Foster (1991) and Porteous (1996).

References:

Bourassa, S.C. (1991) *The Aesthetics of Landscape* London: Belhaven Press

Carlson, A., (1976). Environmental aesthetics and the dilemma of aesthetic education. *Journal of Aesthetic Education* **10**: 69-82.

Foster, C. A. (1991) *Aesthetics and the Natural Environment*, unpublished PhD. Thesis University of Edinburgh.

Porteous, J. D. (1996), *Environmental Aesthetics* London: Routledge.

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P,T&W ref: *Project Title*

10 ENVIRONMENTAL ASSESSMENT

Description Environmental legislation has created a need for environmental assessments in a number of countries. Craik and Feimer argue that environmental assessments are an important area of scientific research within applied environmental psychology. They consider that any research that manipulates, contrasts, or specifies environmental characteristics uses environmental assessment in some form (p. 912). This paper outlines the salient features of techniques used in environmental assessments.

Methodology The paper describes the early environmental assessment work, explaining the logic behind its development. Three types of assessment were identified: evaluative, descriptive and predictive. The methodological and technological issues raised by these assessments were reviewed. Empirical studies of the effectiveness of different types of simulations were analysed.

Results The need for standard methods of assessment is acknowledged by the authors who consider that this is hampered by the variety of relevant units of analysis in use. The lack of research into the effectiveness of simulation techniques is noted. Craik and Feimer suggest wider applications for environmental assessments in design and decision making processes.

Published D Stokols and I. Altman (eds.) *Handbook of environmental psychology*. Ch 23, pp. 891-918,

Authors Craik, K.H. and Feimer, N.R.

Date 1987

Publisher New York: Wiley (out of print)

Price £170 (Hardback)

Keywords environmental assessment; environmental psychology; environmental planning

Comments This paper provides a good critique of environmental assessment techniques. It is frequently cited in research and discusses issues which are also relevant to landscape evaluations and preference studies. The authors are primarily concerned with assessing the validity of quantitative techniques used in assessments and the practical application of environmental psychology to the design, planning and management of the environment. Theoretical issues are largely ignored.

ECA/HW Landscape/FB March 1998

11 FOCUS ON LANDSCAPE AESTHETICS

Description Dearden considers the different approaches to landscape aesthetics. He comments on the eclectic nature of this field of study and attempts to cover divergent viewpoints as well as provide an overall perspective.

Methodology Literature review and critical analysis of general research theories from a geographer's perspective.

Results Considers that there is a considerable diversity of philosophy and approach in the papers he reviews yet he notes that they are all concerned with understanding landscape and its visual quality. He concludes that landscape quality is not a simple concept and cannot be fully appreciated through the application of one universal approach or technique. He argues that in some cases where it is known that there is likely to be a high consensus of landscape evaluation, external influences predominate over internal. Thus measuring external landscape influences makes sense. In other cases, where it is demonstrated that there is little consensus in evaluation, then it is clear that internal factors are predominating and that these are the factors which should be investigated.

Published The Canadian Geographer **29** (3): 263-73

Authors Dearden, P.

Date 1985

Publisher Canadian Association of Geographers

Price subscription Can. $45

Keywords landscape aesthetics, visual quality of landscape, environmental aesthetics.

11 FOCUS ON LANDSCAPE AESTHETICS

Comments

Useful general review summarising the debate which Dearden considers to have developed between those who view landscape beauty as being in the eye of the beholder, (a social scientists' approach) and those who believe that beauty is inherent in objects, (a physical scientist approach). Dearden presents some preliminary ideas to link philosophy, theory, and method. He rejects the '*objectivist'* and '*subjectivist*' philosophical poles on the nature of beauty and adopts a *'relational'* one. In his opinion, a simple theoretical framework, focused on the degree of societal consensus on landscape aesthetics, could give guidance in selecting the method of approach.
He refers to Dearden (1984) and Zube, Pit, and Anderson, (1974) as examples of research which show that varying degrees of consensus on landscape quality do exist.
Dearden (1984) investigated the influence on landscape preference of professional training, environmental awareness, familiarity according to landscape type and various socio-economic factors. Dearden concluded that familiarity was a significant factor in determining landscape preference. He cites Lyons, (1983) in support of this view.

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Dearden, P. (1989) "Societal Landscape Preferences: a pyramid of influences," in P Dearden and B. Saddler, eds., *Landscape evaluation: approaches and applications, Western Geographical Series, Vol. 25*, Dept of Geography, University of Victoria, Victoria, BC.

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ECA/HW
Landscape/FB

March 1998

People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

12 AESTHETICS AND THE NATURAL ENVIRONMENT

Description From a philosophical perspective on aesthetics of the natural environment, Foster argues that contemporary theories are based on art/history criticisms or scientific approach and suggests a philosophical basis for environmental aesthetics.

Methodology This work reinterprets Kant and Schopenhauer to place their work in a contemporary context. Foster examines the contribution of art and science to the field of environmental aesthetics before suggesting an aesthetic framework for natural environment based on philosophical argument.

Results Suggests a way of looking at aesthetic appreciation and judgement which is "neither bound to art or science" but to "perceptual features, aesthetic properties and descriptive qualities" (p222)

Published Aesthetics and the Natural Environment

Authors Foster, C. A.

Date 1991

Publisher unpublished PhD. Thesis University of Edinburgh

Price N/A

Keywords aesthetics, natural environment.

Comments Accessible introduction to environmental aesthetics which covers a wide range of literature on philosophy, with a more limited review on discourses on aesthetics in art and science. Clear and simple arguments are used to support the central thesis of the work which emphasises aesthetic appreciation as the subjective engagement of the individual in a multi-sensory environment. Foster draws a distinction between aesthetic appreciation and judgement. Foster rejects the need to formulate laws to govern aesthetic response through theories of art, psychology and physiology. She suggests that it is not fruitful to examine the causes of aesthetic pleasure but considers that we should explore the way we experience and articulate our pleasure in certain environments, (p221-223). This thesis does not establish a framework for research into *why* certain environments are more pleasing than others, or in predicting aesthetic responses.

12 AESTHETICS AND THE NATURAL ENVIRONMENT

Discussion

Foster rejects the emphasis placed on cognitive influences on landscape preference put forward by Penning-Rowsell and Lowenthall (1986), and concludes that the importance of the sensuous experience of nature must be recognised (p94). She also takes issue with Carlson et al (1982) who suggest that appreciation is influenced by ethical values and states that aesthetic matters must not be confused with ecology or environmental politics (Ch.6). However she does support Brennan's (1988) view that there is an ecological dimension to ethics and adopts his ecological humanism as a potential model for a theory of environmental aesthetics, (p173-175). She attacks the bias to the visual and aural in aesthetics and draws from Brennan (1988) and Sparshott (1972) to advance the case for a multi-sensuous aesthetic appreciation of nature. She quotes Saito (1984) who considers that various sensory qualities of the natural environment combine to give us a unique sense of place, (p182). Foster reasons that the changeability of a given natural environment makes judgements temporal and argues that nature should be appreciated in its natural context and not through representations viewed at a remove from that setting.

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Saito, Yuriko (1984), Is there a correct appreciation of Nature? *Journal of Aesthetic Education* **18** (4): 35-46.

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ECA/HW
Landscape/FB

March 1998

People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

13 THE DIMENSIONS OF AESTHETIC PREFERENCE: A QUANTITATIVE ANALYSIS

Description This study sets out to assess the ability of physical, artistic and psychological descriptor dimensions to predict the aesthetic preferences for river, forest, and agricultural landscape scenes. An objective of this paper is to provide environmental managers with guidance on the appropriate choice of terminology to characterise and assess the aesthetic quality of particular landscape types.

Methodology The study used colour photographs of selected types of scenes, all taken in the summer to control seasonal effects. 74 college undergraduates participated in the study. The salient dimensions that subjects used to express their aesthetic preferences for scenes within each type of landscape scene were identified. These dimensions were interpreted quantitatively through correlation with sets of descriptor rating scales. The descriptors were identified from a review of 50 major empirical and non-empirical studies in landscape research literature.
The aims of the study were:

1. to identify the dimensions untrained subjects used to make aesthetic preference judgements;
1. to interpret these dimensions using physical, artistic, and psychological landscape descriptors;
2. to assess the relative effectiveness of descriptors in predicting aesthetic preference within a landscape type; and
3. to assess the relative effectiveness of descriptors across different landscape types.

Results In general, the results showed "a strong commonality in the dimensions of preference across landscape types".
A principle finding of this research was that the dimensions people use to make judgements about aesthetic preference can be interpreted in a variety of ways. The authors concluded that multidimensional scaling (MDS) was a useful base for defining the structure of aesthetic judgements. They shared the view of Oostendorp and Berlyne (1978) and Ward and Russell (1981), that MDS solutions are interpretable by multiple sets of properties.

Published Journal of Environmental Management, **29**: 47-72.

Authors Gobster, P.H. and Chenoweth, R.E.

Date 1989

Publisher Academic Press Ltd.

13 THE DIMENSIONS OF AESTHETIC PREFERENCE: A QUANTITATIVE ANALYSIS

Price Subscription c. £285 p.a. (3)

Keywords landscape perception; aesthetic preference; river, forest, agricultural, descriptor schemes, multidimensional scaling

Comments The authors (p68) conclude that:

> "Aesthetic theories based solely on formal-artistic, bioevolutionary, or other single-set properties (i.e. physical-ecological, psychological-affective, etc.) may not do justice to the richness of human aesthetic response to landscapes. To build an aesthetic theory of landscapes, investigators need to broaden their understanding of the multi-dimensional nature of aesthetic preference."

This review is frequently cited along with Hull, Buhyoff and Cordell (1983) in discussion of landscape descriptor dimensions. It does perhaps illustrate the problems identified by Zube, Sell, and Taylor (1982) of trying to use landscape descriptors and predictors that don't fit together. It also reveals the theoretical void which Zube et al. (1982, p25) have identified in environmental aesthetics. Porteous (1996, p143) notes that by the mid-1980s traditional, laboratory based experimental models, of which this is a representative example, were considered inadequate for the task of understanding human-landscape interaction.

References:

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Ward, L. and Russell, J. (1981). Cognitive set and the perception of place. *Environment and Behavior,* **13**: 610-632.

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ECA/HW
Landscape/FB

March 1998

People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

14 ENVIRONMENTAL PERCEPTION: THE RELATIONSHIP WITH AGE

Description Reviews two broad areas of research:
1. the child's perception of space and place;
2. the environmental perception and behaviour of the elderly.

Methodology Literature review.

Results Considers that there is a need for research to discover the impact of age on perception across the whole of the age spectrum.

Published Progress in Human Geography, **13** (1):99-106

Authors Gold, J.R. and Goodey, B.

Date 1989

Publisher Elsevier Scientific Publishing Co.

Price subscription c. c. £146 p.a. (4)

Keywords environmental perception (age) cognition and age; cognitive maps

Comments Suggests that it is difficult to consider other factors on perception (gender, ethnicity, social, etc.) without understanding the influence of age. Provides a useful summary of research related to age and landscape perception in children and the elderly. The authors conclude that further research is required over the age spectrum but make no reference to the work of Lyons, (1983) for example. The review covers interdisciplinary research but from a geographer's perspective. It does not cover new ground but does indicate possible areas for further research

Reference

Lyons, E. (1983) Demographic Correlates of Landscape Preference, *Environment and Behavior* **15** (4) :487-511.

ECA/HW Landscape/FB March 1998

15 PERSONAL CONSTRUCT THEORY IN THE MEASUREMENT OF ENVIRONMENTAL IMAGES

Description This study assumes that an understanding of the mental images of the environment which people form is a necessary prerequisite for any development of theories relating human behaviour and the environment. Personal Construct Theory and the associated 'Repertory Grid Test' are suggested as useful in the measurement and understanding of these mental images.

Methodology This paper assesses the usefulness of the repertory grid in measuring the environmental images held by two different groups of urban residents. The study is set in Bath using a sample of twenty married, middle class women living within the city. The participants were interviewed. In the course of the interviews people were asked to name 15-20 places important to them in their everyday life in Bath. These responses were then sorted into constructs derived from pilot interviews; literature on environmental perception; and form ideas about the neighbourhood (e.g. feel at home/feel strange). A substantial amount of time was then spent with respondents trying to refine construct definitions to fit the bipolar format of the repertory grid. This information was then used to scale the categories of response. The interviews also included a semi-formal life history to abstract age, education level and other socio-economic information.

Results The grid test did produce information on the elements of the image to which respondents attached significance and the way in which respondents evaluated these elements using personal constructs.
The study concluded that:

- repertory grids produced more sophisticated image maps than had been achieved with previous research methods;
- the structure of the images vary with the personal and locational characteristics of respondents.

Published Environment and Behavior, **7** (1): 3-59

Authors Harrison, J. and Sarre, P

Date 1975

Publisher Sage Publications, Inc.

Price subscription c. £183 p.a. (6)

15 PERSONAL CONSTRUCT THEORY IN THE MEASUREMENT OF ENVIRONMENTAL IMAGES

Keywords personal construct theory, mental images, cognitive maps; mental maps; environmental preference;

Comments

This has become a seminal study and is used to validate the use of the repertory grid system and Personal Construct Theory (PCT) as a basis for understanding and measuring mental images.
PCT, developed in the work of Kelly (1963), assumes that idiosyncratic ideas are used by individuals to discriminate between environmental elements. Personal Constructs are the ideas used in this discrimination of environmental stimuli and are used to create the repertory grid. The repertory grid is a binary matrix showing the similarity of environmental stimuli, and is defined by dimensions which represent personal constructs. (ref. Pomeroy, et al. 1983, p266) Ward and Russell (1981) have also used repertory grids and multidimensional scaling successfully in their work on cognition and the environment. The use of the repertory grid, although standard in Personal Construct Psychology (PCP), is now seen as too rigid by theoreticians. The sophisticated statistical analysis may not be revealing anything more than the initial constructs imply.

The Harrison and Sarre (1975) research has been based on a very small, carefully selected group of people because of the considerable time and commitment required from the participants to complete the interviews. Interview techniques would have to be refined if they were to be used on larger, randomly selected groups of participants.

More recent work in this field includes the use of measurement techniques which integrate Geographic Information Systems (GIS) with Personal Construct Theory, (Harvey 1995).

References

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Ward, L.M. and Russell, J.A., (1981) Cognitive set and perception of place. Environment and Behavior, 13: 610-632.

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Landscape/FB

March 1998

People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

16 NATURE EXPERIENCE IN TRANSACTIONAL PERSPECTIVE

Description The author uses a 'transactional' perspective to review a wide range of literature investigating both the natural and built environment.
A 'transactional' approach to environmental psychology is described as one which takes an event as its unit of analysis: time and change are studied as an integral part of that event. An event can be described as a convergence in time and space of activities, people and setting (Altman and Rogoff, 1987). This is contrasted with the 'interactional' approach. Here the interaction between person and environment is deconstructed into discrete elements and analysed through the interaction between psychological variables and natural features, modified by distinct personal, situational and temporal factors. A 'transactional' approach, by contrast, studies person-environment systems, formed and defined by the simultaneous and combined action of their aspects (Altman and Rogoff 1987).

Methodology The paper examines major theoretical and empirical studies.

Results Hartig suggests that there is a close relationship between the natural and built aspects of the human environment, an 'experiential bond' which is evidenced by 'environmental evaluations, motivations for outdoor recreation, and benefits attributed to nature' (p17). Hartig advocates greater research of the behavioural implications of our conceptions of the natural and non-natural environment, including studies of the links between preferences, motivation and the benefits of nature. The author outlines the merits of a transactional approach to research on environmental policy and planning.

Published Landscape and Urban Planning **25**: 17-36.

Authors Hartig, T

Date 1993

Publisher Elsevier Science Publishers B.V. Amsterdam.

Price subscription c. £613 p.a. (20)

Keywords environmental psychology; transactional approach; environmental preferences.

16 NATURE EXPERIENCE IN TRANSACTIONAL PERSPECTIVE

comments

An abstruse article which nevertheless contains some interesting notes. The author follows the route of previous reviewers in this field, by trying to find an overarching concept in which to develop a theoretical framework for further research.

Evaluations

Hartig reviews studies which could be loosely characterised as forming an 'interactional' perspective but which collectively support Hartig's central premise. It is suggested that research must take a holistic view of the interaction between people and their environments, and of their different experiences of 'natural' and 'human-altered' environments (p21).
Parallels are noted between transactional and phenomenological approaches (Altman and Rogoff, 1987): both approaches consider that "person and environment are mutually defining" (p19). However, Seamon (1982) in his review of phenomenological research highlights differences between the two approaches (e.g. transactional research can use existing explanations to account for an event and is not limited to qualitative descriptions of an event by the observer).

Motivations

Hartig quotes Ittelson (1973, p18) to emphasise that individuals cannot be viewed independently from the situation in which they are placed, "nor is the environment encountered independent of the encountering individual". An important corollary of this is that people may evaluate situations and environments which have been selected for them by researchers, differently from the way in which they evaluate places which they encounter while acting on their own inclinations (p25 and see Hull and Stewart, 1992). Motivation may also reveal differences in the way people evaluate aspects of natural and man-made environments.

Benefits of natural experience

This paper includes a useful review of empirical research into the benefits of nature experience. In particular Hartig refers to Ulrich (1981) and to his study of the differential effects on recovery from stressful experience of videotaped displays of urban and natural scenes (Ulrich et al. 1991). Muscle tension, skin conductance, and pulse transit time were recorded and it was found that recovery trajectories differed for different types of environment viewed. In common with other, similar studies, natural scenes were seen to promote "positive psychological functioning" and recovery.
Parson's (1991) (reviewed separately) speculates that evolutionary theories of environmental aesthetics can be linked to the hypothesis that natural environments can be stress-reducing. Referring to Ulrich (1983), Parson's speculates that natural environments are not uniquely restorative but that urban environments are stressful because they are not discernibly habitable in evolutionary terms. This suggestion relies on the notion that there is an immediate affective response to environmental stimuli which can explain environmental preference (Ulrich 1983).

16 NATURE EXPERIENCE IN TRANSACTIONAL PERSPECTIVE

comments

Other aspects of the benefits of nature are reviewed and used to establish Hartig's position that there is a distinction between the way the built and natural environments are viewed e.g.:

- Kaplan (1983, 1985): studies linking residential satisfaction and proximity to nature.
- R. Kaplan and S Kaplan (1989), Mang (1984), Hartig, et al. (1991): studies showing the benefits of natural scenes on the relief from attention fatigue.

References

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Ulrich, R., (1981). Natural vs. urban scenes: some psychophysiological effects. *Environment and Behavior,* **13:** 523-556.

Ulrich, R., Simons, R.F., Losito, B.D., Fiorito, E., Miles, M.A. and Zelson, M., (1991). Stress recovery during exposure to natural and urban environments. Journal of Environmental Psychology., **11**: 201-230.

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People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

17 EXPLAINING THE EMOTION PEOPLE EXPERIENCE IN SUBURBAN PARKS

Description This study looks at the way in which physical characteristics of parks influence emotion. The paper also examines the relationship between affective or emotional response and preference.

Methodology The park environment was simulated by photographs. Results were evaluated using the 'circumplex model of affect' suggested by Mehrabian and Russell (1974) and Ward and Russell (1981) with the major axis of pleasure and arousal (see comments below). The park's tree densities, under-storey vegetation densities, and the presence or absence of pathways were used to explain the visitors' evaluation of affect.

Results The researchers concluded:

- Evaluations in pleasure are influenced more than evaluations in arousal by variations in the physical characteristics of the park.
- In general, pleasure increases as tree density and size increases and understory density decreases.
- Arousal increases with increasing understory vegetation density, which may be because 'way finding' is more difficult without pathways.
- People prefer parks that are pleasant and arousing in general. People differ slightly in the affect they associate with different park characteristics but not in the level and type of affect they prefer to experience in parks.
- Results suggest that considerable control over affect can be exercised through manipulation of a park's physical characteristics.
- The authors conclude that the circumplex model of affect seems a useful tool for the study of environment and behaviour.

Published Environment and Behavior, **21**(3):323-345, May 1989

Authors Hull IV, B.R. and Harvey, A

Date May 1989

Publisher Sage Publications, Inc.

Price subscription c. £183 p.a. (6)

Keywords cognition (affect/ emotion/experience); perception (built environment/natural environment); landscape (assessment/evaluation/preference)

17 EXPLAINING THE EMOTION PEOPLE EXPERIENCE IN SUBURBAN PARKS

Comments

Emotions are said to be pancultural, innate and independent of sense modality. It is argues that emotions mediate the impact of environment on behaviour (Mehrabian and Russell, 1974).

This study is concerned with helping to establish the reliability and validity of the circumplex model of affect as refined in Russell and Lanius, (1984) and Russell and Snodgrass (1987).

The paper is of primary interest as a commentary on a research method and provides useful discussion of the pitfalls encountered with the use of this model. It illustrates, for example, the following points:

1. The arousal index did not discriminate well among parks. Problems were encountered with the selection of words used in the arousal index: in some cases words take on specific denotative meanings while in other situation the words imply affect. Perhaps affective and denotative constructs are distinct and should be measured separately. The physical characteristics of the parks associated with arousal may have been too similar.
2. The level of analysis i.e. molar (in this instance 'park') or molecular (physical characteristics of these parks) may be significant. Molar environments, or places, may differ from one another in ways not fully explained by differences in the "molecular", physical characteristics of environments. Thus a backyard may share characteristics such as amount of open space, tree density etc. at molecular level but the two environments may be recognised and regarded as different by the potential user, (p326). The researchers conclude on balance that the circumplex model is valid regardless of the level of analysis, (p341). *(but see also Daniel and Ittleson, (1981))*
3. The authors accepted that it was possible that people differ in their emotional responses to parks: (p327)
   a) people may differ in the emotion they feel in a park;
   b) people may differ in the emotion they prefer to experience in a park.
   However they concluded that there were not significant variations in response based upon personality, style, and past experience. They did concede that the subject groupings may not have been sensitive enough to these factors.

They list, in passing, the influence of past experiences, current expectations, and previous moods on affective responses (Mehrabian and Russell, 1974) and mention that age, culture, gender and lifestyle may be important. These issues are not addressed in this research project.

For a fuller discussion of emotion and cognition in environmental preference see Russell, J. and Snodgrass, J. (1987)

17 EXPLAINING THE EMOTION PEOPLE EXPERIENCE IN SUBURBAN PARKS

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ECA/HW
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March 1998

People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

18 THE LANDSCAPE ENCOUNTERED WHILE HIKING

Description

The focus of research is on the *experienced landscape*. This study explores the relationship between the landscape encountered on a walk and the response which it elicits from the viewer. The authors eschew theory and adopt a pragmatic approach to the definition of research parameters. The research encompasses:

1. the *encountered landscape* (views, people and objects seen in situ);
2. the *sequence* in which the scenes or objects are encountered;
3. the *feelings*, thoughts and other subjective qualities experienced concurrently with these views.

The interaction between the views and objects encountered were examined in relation to mood, satisfaction and scenic beauty appraisal.

Methodology

At various times during a hike, people were interrupted and instructed to photograph what they were looking at, to rate the scenic beauty of the view, and to report on their current satisfactions and moods. Views were categorised by the type of object that was the focus of attention (trail, vegetation, water, ephemeral, people, terrain) and by the distance of the object from the viewer.

Results

Results suggest that :

- objects near to the trail (up to 15m) received most attention from participants, although they were not necessarily the most important in affect or pleasure;
- scenic beauty and landscape preference are enhanced by the presence of ephemeral features, distant views, rugged mountains and water, reflecting the results of other studies;
- the use of three variables (mood, scenic beauty and satisfaction) did not cover the range of feelings experienced by participants;
- more similarities than differences were found in what people chose to view whilst hiking.

Although the type and distance of objects in the landscape have a small but significant influence on preference judgements, other factors which influence personal response to landscape remain unexplained.

Published

Environment and Behavior, **27** (3): 404-426

Authors

Hull IV, R. B. and Stewart, W.P.

Date

1995

18 THE LANDSCAPE ENCOUNTERED WHILE HIKING

Publisher Sage Publications Inc.

Price subscription c. £183 p.a. (6)

Keywords landscape preference; environmental preference; environmental aesthetics; forest management; cognition and emotion.

Comments This study provides a relatively simple method of recording the effects of sequential landscape experience in the field. The research is based on a hybrid of diverse theoretical and practical research. For example, the questionnaire used in the study is based on the work of Russell and Pratt, (1980) Russell and Snodgrass (1987).

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ECA/HW Landscape/FB March 1998

People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

19 ENVIRONMENTAL PREFERENCE: A COMPARISON OF FOUR DOMAINS OF PREDICTORS

Description The authors set out to examine four domains of variables which they have identified as useful in explaining environmental preference: physical attributes; land cover types; information variables; and perception based variables.

Methodology The study compared the effectiveness of the four domains as predictors of scenic beauty as well as examining the influence of particular variables selected in each domain. The report was based on photographs of a selected study area located in the Great Lakes Region. Photographs were selected which deliberately excluded various urban landscapes and also any scenes which included rivers and lakes. Researchers assessed each slide for predictor ratings which were compared to the preference ratings given by psychology students.

Results The researchers concluded that:

- Physical attributes lacked predictive power;
- Land cover types proved effective with weedy fields, scrubland and agriculture all significant negative predictors;
- Of information variables (as described in Kaplan and Kaplan 1982) only mystery was significant;
- Perception based variables were most effective, with '*openness'* and *'smoothness'* being most significant.

Published Environment and Behavior, **21** (5): 509-530

Authors Kaplan, R., Kaplan, S. and Brown, T.

Date 1989

Publisher Sage Publications, Inc.

Price subscription c. £183 p.a. (6)

Keywords Environmental psychology, environmental preference,

19 ENVIRONMENTAL PREFERENCE: A COMPARISON OF FOUR DOMAINS OF PREDICTORS

Comments

This research build on earlier work by the Kaplans and is similar to a number of other studies.

The 'predictors' used in this study were drawn from previous research. In this case the predictors were sorted into four domains (p 511-520):

1. physical landscape attributes of landform (slope/ relief; edge contrast; spatial diversity) and landcover (naturalism; compatibility; height contrast; variety.) (Zube, Pitt and Anderson, 1975).
2. Land cover types: forest; cut grass; weedy field; agriculture; scrubland; woodlawn.
3. Information variables: coherence; complexity; legibility; mystery. (Wohlwill, 1976; Kaplan, 1987; Kaplan and Kaplan, 1989).
4. Perception-based variables which try to explore how one might move in the landscape: openness; smoothness; ease of locomotion. (Kaplan, 1985; Kaplan, 1987).

The study attempts to draw together various strands of research but fails to discover a coherent approach. The authors reach the tentative conclusion that predictors may vary in their effectiveness according to landscape type. Further research into landscape categories and variables which affect preference judgements using the research parameters set out in this study may be of limited use.

References:

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Kaplan, R. (1985), The analysis of perception via preference: a strategy for studying how the environment is experienced. *Landscape Planning* **12**: 161-176.

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Zube, E.H., Pitt, D.G. and Anderson, T.W. (1975), "Perception and Prediction of scenic resource values of the northeast," in Zube, E.H., Brush, R.O., and Fabos, J.G. eds. *Landscape Assessment*. Stroudsburg, PA: Dowden, Hutchinson and Ross.

ECA/HW
Landscape/FB

March 1998

P,T&W ref: *Project Title*

20 TOWARDS A METHODOLOGY FOR THE MEASUREMENT OF KNOWLEDGE STRUCTURES OF ORDINARY PEOPLE (THE CONCEPTUAL CONTENT COGNITIVE MAP) (3CM)

Description

The research project focuses on the cognitive factors in environmental perception, decision making and problem solving. The theoretical basis for the study is the cognitive map. The authors define cognitive maps as 'hypothesised knowledge structures embodying people's assumptions and beliefs, 'facts' and misconceptions about the world'. (p.580). They contend that these assumptions and beliefs provide people with a framework for interpreting new information and for determining appropriate responses to new situations.

Methodology

The method used in this study is referred to as the 3CM method and is developed from previous research by e.g. Kaplan S. (1976) and Kaplan and Kaplan, (1989). It is a technique for "measuring peoples' cognitive maps of complex domains" (p599). It is used here in two forms: the 'open-ended 3CM' suitable for small samples; and the 'structured implementation' method, more suitable for larger sample sizes. An example of the latter method is given below:

To discover the impact of two forms of information (stories and fact sheets) on employees' views on car-pooling to work, participants were randomly selected and placed in three groups (control, those given story based information and those given fact sheets). Groups were given a list of 46 concepts and an envelope with 50 cards and 8 paper clips for securing the final categories. They were each instructed to imagine that they had to present their views on car-pooling and organise their thoughts accordingly. The way in which participants sorted the concepts and labelled the groups was analysed.

20 TOWARDS A METHODOLOGY FOR THE MEASUREMENT OF KNOWLEDGE STRUCTURES OF ORDINARY PEOPLE (THE CONCEPTUAL CONTENT COGNITIVE MAP)(3CM)

Results

The results suggested that story based information was more effective than fact based information in changing peoples' views on car-pooling.
Participants were considered to have differentiated between those objects they 'own' from those they do not. For example no one chose to categorise all 46 concepts and participants were likely to ignore concepts which they had not encountered before.
The authors claim that the method is valid and is complementary to other 'traditional techniques':

- 3CM places the focus on 'owned' objects and involves identifying concepts which are perceived to be important and then organising them. Q-sort, by contrast, generally involves arranging a given set of cards along a single, researcher defined, dimension.
- 3CM tasks are more useful in identifying differences in groups' cognitive maps whereas survey information reveals more about a group's ability to use knowledge.
- 3CM is user friendly. It allows participants greater freedom of expression and facilitates the thought processes. It 'allows individuals to explore their knowledge structure in the process of externalising it' (p611).
- 3CM fills the gap between qualitative and quantitative research approaches and can approximate hierarchical relationships between objects.

Published Environment and Behavior, **29**(5):579-617

Authors Kearney, A. R. and Kaplan, S.

Date 1997

Publisher Sage Publications, Inc.

Price subscription c. £183 p.a. (6)

Keywords cognitive maps; mental maps; landscape preference; environmental preference; environmental aesthetics; forest management.

20 TOWARDS A METHODOLOGY FOR THE MEASUREMENT OF KNOWLEDGE STRUCTURES OF ORDINARY PEOPLE (THE CONCEPTUAL CONTENT COGNITIVE MAP) (3CM)

Comments

The objective of this research paper was to develop a measurement procedure using key concepts from the SESAME theory of cognitive maps developed by Kaplan and Kaplan and others. Whilst this method has not been used by the researchers on visual material it is one which has potential for wider application in research into landscape aesthetics and cognition.

Pomeroy et al (1983) for example used similar task based research to develop their theories on the perception of non-spectacular landscape. The research was based on the personal construct theory (Harrison and Sarre, 1976) and used a repertory grid methodology (Ward and Russell, 1981). The study required participants to sort forty colour prints of riverscape into as many piles as they wished, based on any criteria they chose. By analysing the clusters the common attributes of the photographs were used to identify factors significant to landscape evaluation.

References:

Harrison, J. and Sarre, W. (1976) "Personal Construct Theory, the repertory grid, and environmental cognition.." in G.T. Moore and G.G. Golledge, eds, *Environmental Knowing: theories, research and methods.* Stroudsburg, Pennsylvania: Dowden, Hutchison and Ross.

Kaplan, S. (1976). "Adaption, Structure and Knowledge". in G.T. Moore and G.G. Colledge, eds, *Environmental Knowing: theories, research and methods.* Stroudsburg, Pennsylvania: Dowden, Hutchison and Ross.

Kaplan S. and Kaplan, R. (1989). *Cognition and Environment: Functioning in an uncertain world.* Ann Arbor, MI: Ulrich's.

Pomeroy, J.W., Green, M.B. and Fitzgibbon, J.E. (1983) Evaluation of Urban Riverscape Aesthetics in the Canadian Prairies. *Journal of Environmental Management* **17**: 263-276.

Ward, L. and Russell, J. (1981). Cognitive Set and Perception of Place. *Environment and Behavior.* **13**: 610-632.

ECA/HW
Landscape/FB

March 1998

P,T&W ref: Project Title

21 UNDERSTANDING SPATIAL CONCEPTS AT THE GEOGRAPHIC SCALE WITHOUT THE USE OF VISION

Description Review of literature that has sought to determine how people with visual impairments or blindness form 'mental landscapes'. This work is linked to the development of navigational and orientation aids for people who are blind or are visually impaired.

Methodology Literature review which examines the arguments surrounding whether people with visual impairments or blindness can understand geographic relationships such as distance, configuration and hierarchy.

Results Considers that more research must be carried out within the environments with which people will interact and not limited to the laboratory. Concludes that very little research has been done in real environments.
Asks whether the sighted/non-sighted/partially sighted have different knowledge of geographic space and if this knowledge is structured in a different way.

Published Progress in Human Geography **21** (2): 225-242

Authors Kitchin, R., Blades, M., and Golledge, R.G.

Date 1997

Publisher Arnold

Price subscription £146 p.a. (4)

Keywords visual impairment; spatial cognition; environmental perception

Comments The intention of the article is to stimulate further research. The authors conclude that despite the research interest in the spatial activities of the blind and partially sighted the spatial abilities and activity patterns of this group are unknown.
Hill et al (1993) conducted a detailed survey of wayfinding and search activities of the blind and vision-impaired. Strategies to establish orientation and boundaries used by groups of blind, vision-impaired, blind fold and sighted were compared. Methods used were similar and included use of anchor points, establishing patterns in the layout of the environment, and using sounds, textures, smells as landscape cues. However Loomis et al. (1993) found that there were individual variations in wayfaring strategies among the visually impaired and that the types of strategies used were related to the degree of visual impairment.

21 UNDERSTANDING SPATIAL CONCEPTS AT THE GEOGRAPHIC SCALE WITHOUT THE USE OF VISION

The review provides a useful commentary on existing research fields and outlines fruitful areas of future research. In particular the authors suggest that the design of the environment can contribute to the ease with which the visually impaired can learn and remember new environments and give greater access to the environment.

References:

Hill, E.W., Rieser, J.J., Hill, M., Halpin, J. and Halpin, R. (1993), How persons with visual impairments explore novel spaces: strategies of good and poor performers. *Journal of Visual Impairment and Blindness* **87**: 295-301.

Loomis, J.M. et al., (1993) Non-visual navigation by blind and sighted: assessment of path integration ability. *Journal of Experimental Psychology: General* **122**: 73-91.

HW/ECA/ Landscape/FB

March 1998

People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

22 COMPARING LIVE EXPERIENCE WITH PICTURES IN ARTICULATING LANDSCAPE PREFERENCE

Description This study investigated the affect of live experience on people's perception of landscape. The results were then contrasted with the same group of people's responses to photographs of the same type of scenes.

Methodology Twenty-five respondents were taken along a trail in southern Indiana through sixteen representative settings, providing ratings for each. They were asked to articulate their feelings about the sites. The same group repeated the study in a laboratory using slides.

Results The study concluded that preferred landscape compositions, and the degree of preference stated, differed between laboratory and field conditions:

- peoples' ability to rate a scene for preference increased under field conditions;
- peoples' preferences in laboratory conditions were more divergent;
- verbal descriptions indicate that tactile and dynamic factors contribute to preference;
- a five point preference system is too narrow for rating preference in the field;
- the sequence of experience is an important factor in determining preference;
- verbal data collected indicated a decreased ability to articulate preference in a laboratory situation.

Published Landscape Research, **17**, (2): 58-69

Authors Kroh, P.D. and Gimblett, R.H.

Date 1992

Publisher Landscape Research Group Ltd.

Price subscription £114 p.a. (3)

Keywords cognition; multi-sensory experience; landscape preference; environmental preference;

22 COMPARING LIVE EXPERIENCE WITH PICTURES IN ARTICULATING LANDSCAPE PREFERENCE

Comments

One of the most significant findings of this study is the importance of the contextual information acquired as people move through the landscape. The sequence of the unfolding landscape can also influence preferences.
This study attempts to provide a methodological framework for assessing, categorising and interpreting experiential data. It concludes:

1. Multi-sensory, on-site experience of landscape can be articulated and analysed;
2. People respond differently to on-site landscape experience than they do to simulations.
3. Verbal response can provide dynamic contextual information which can be used to define preference;
4. The recall of experience was less than expected. Respondents did not reveal any memory of the experiential qualities of the site in their subsequent description in the laboratory tests. (see also Pocock, 1982, for comparisons between on-site experience and subsequent recall)

If accurate measures of preference are to be obtained from photographs or slides, allowance must be made for the absence of stimuli and remembered experience in forming predictive models, (p68).

The researchers do acknowledge that a number of papers support the use of photographs or slides as substitutes for field research in environmental preference studies. Stamps (1990), from an analysis of research papers comparing data collected in the field with research using photographic simulation, takes the view that photographs can accurately represent landscape. Shuttleworth (1980) concluded from a review of previous research that there was no significant difference in preference between landscapes viewed in the field and colour photographs (although the reactions to black and white images were significantly different).

However, Kroh and Gimblett (p60) point out that much of the research into the use of photographs is concerned with visual preferences and ignores the multi-sensory experience. Hetherington, et al (1993) concluded that the influence of sound and motion on preference varied with the type of landscape: replication of sound and motion were more important in studies of dynamic riverscapes than in more static environments.

22 COMPARING LIVE EXPERIENCE WITH PICTURES IN ARTICULATING LANDSCAPE PREFERENCE

References:

Hetherington et al (1993) Is motion more important than it sounds?: the medium of presentation in environmental research. *Journal of Environmental Psychology* **13**, 283-291.

Pocock, D.C.D. (1982)The view from the bridge: experience and recall of landscape. *Occasional Paper (New Series) No17, Dept of Geography, University of Durham. 1982*.

Shuttleworth, S., (1980), The Use of Photographs as an Environmental Presentation Medium in Landscape Studies. *Journal of Environmental Management* **11**:61-76.

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ECA/HW
Landscape/FB

March 1998

People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

23 DEMOGRAPHIC CORRELATES OF LANDSCAPE PREFERENCE

Description The study examines the influence of age, gender and residential experience on landscape preference ratings.

Methodology 283 subjects were asked to rate five biomes (tropical rain forest, temperate deciduous forest, northern coniferous forest, savannah and desert.) Slides were selected which eliminated seasonal differences and which did not include any features such as water, animals, people or elements of human habitation which were known to influence preference. Therefore only one major landscape component was used: vegetation type.
The subjects ranged in age from 8-67 years and there was an even balance between males and females.

Results The research findings suggest that the development of landscape preference is a cumulative process sensitive to socio-economic factors. The authors conclude that social and demographic characteristics influence preference judgements. In summary the findings suggested that:

- Preferences changed through the life cycle. Young children (6-12yrs) were more enthusiastic and less consistent than others. Between the ages of 12-20 there was a dip in preference levels generally. This rose again slightly after 20 yrs of age. From 36 yrs onwards there was a continuing, slow, downward trend in preference levels.
- Preferences diverged in adolescence for males and females and for urban and rural residents. The influence of gender and residence on preference ratings was different for different age groups.
- Preferences were highest for the most familiar biome.
- Preference for savannah and coniferous forests were most variable as age increased.
- No evidence was found to support the hypothesis that landscape preference is shaped by evolutionarily determined factors

Published Environment and Behavior, **15**(4): 487-511

Authors Lyons, E.

Date 1983

Publisher Sage Publications, Inc.

Price subscription c. £183 p.a. (6)

23 DEMOGRAPHIC CORRELATES OF LANDSCAPE PREFERENCE

Keywords landscape preference (age); environmental preference; environmental aesthetics; demographic/social studies/preference/ natural environments

Comments This study provides an interesting discussion of the cultural influences on preference. The research is closely related to a previous study by Balling and Falk (1982). Both studies revealed that overall preference for certain natural environments changed with age. Balling and Falk, (p22) conclude that there is some evidence to suggest that people have an innate preference for savannah-like environments. Lyons (p505-507) takes the view that the evidence for an innate, biologically heritable component of landscape preference has not been proved. Unlike Balling and Falk, (1982) who support the functionalist-evolutionary perspective of Kaplan (1972, 1976) and Ulrich (1977) for example, she interprets the variation in preference with age as evidence of the chronological change in contextual factors, (p507). Lyons cites the work of Kellert, (1978) and Zube et al. (1974) in support of the view that childhood experiences have an important bearing on later environmental attitudes.

Issues which Lyons identifies as being of particular interest in the management of landscape resources and in the understanding of divergent landscape preferences include:

1. Why do gender differences in preferences for different biomes appear in adolescence?
2. Why do landscape preferences in urban and rural residents diverge in adolescence?
3. What effects do gender, socio-economic status, education, race and life-stage have on landscape preference? How do they interact?

(Note: work by Ward Thompson (1995) and Aspinall and Ujam (1992) has used Personal Construct Theory in an exploration of children's landscape experience.)

23 DEMOGRAPHIC CORRELATES OF LANDSCAPE PREFERENCE

References:

Aspinall, P. and Ujam, F. (1992). A Projective Approach to Designing with Children, *Landscape Research* **17**(3): 124-131.

Balling, J.D. and Falk, J.H.(1982) Development of Visual Preference for Natural Environments *Environment and Behavior* **14** (1) :5-28

Kaplan, S. (1976). Adaption, Structure and Knowledge. G.T. Moore and G.G. Colledge, eds, *Environment and Knowing: theories, research and methods.* Stroudsburg, Pennsylvania: Dowden, Hutchison and Ross.

Kaplan, S. (1972) The challenge of environmental psychology: a proposal for a new functionalism. *American Psychologist* **27**:140-143

Kellert, SR (1978) Perceptions of animals in American Society. *The 41st North American Wildlife Conference Proceedings. pp533-546.*

Ward Thompson, C., (1995). School Playground Design: A Projective Approach with Pupils and Staff. *Landscape Research* **30**(3): 124-140.

Ulrich, RS (1977) Visual landscape preference: a model and applications. *Man-Environment Systems* **7**: 279-293.

Zube, E.H., Pit, D.G. and Anderson, T.W., (1974) *Perception and Measurement of Scenic Resources in the Southern Connecticut River Valley.* Institute for Management and His. Environment No R-74-1, Amherst, Mass., 191pp.

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March 1998

People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

24 EXPLORING FOREST AND RECREATION MANAGEMENT PREFERENCES OF FOREST RECREATIONISTS IN ALBERTA

Description This study supports the view that understanding the social values of stakeholder groups is an essential part of ecosystem management. It shows how familiarity with a place, and the lifestyle choices which show a preference for that place, influence perceptions about what is acceptable management policy.

Methodology Empirical research and literature review. Values of one stakeholder group, campers at managed sites in the Rocky-Clearwater Forest of Alberta, were examined using campground management preference and forest attitude scales. On-site and mail surveys were used to collect data from campers during 1994. Four specialisation clusters were delineated which identified differences in management preferences.

Results The study demonstrates that familiarity with a place, the type of participation in outdoor recreational activity and the degree of specialisation in that activity, all influence the values of the user group. Campers most familiar with the area and those with most camping experience were least supportive of traditional timber management. Overall, campers did not support increased facility development at campsites and may be supportive of an ecosystem approach to forest management.

Published The Forestry Chronicle, **72**,(6) : 623-629

Authors McFarlane, B.L. and Boxall, P.C.

Date 1996

Publisher Northern Forestry Centre, Canadian Forest Service

Price subscription

Keywords camping, ecosystem management, forest recreation, management preferences, recreational specialisation, social values

24 EXPLORING FOREST AND RECREATION MANAGEMENT PREFERENCES OF FOREST RECREATIONISTS IN ALBERTA

Comments

Shows how familiarity influences the perception of management practices. Reveals the need to identify and understand the underlying social values, lifestyle choices and experience which appears to affect the way in which stakeholder groups react to management practices.

In their overview of scenic assessment studies Arthur, Daniel and Boster (1977, p121-122) comment on the problem facing models based on public opinion because of the discrepancies between behaviour and stated opinions. They quote studies by Hendee and Catton (1968) and Hancock (1973) to demonstrate this point. Hancock (1973) found that campers prefered to pitch their tents in areas where vegetation was controlled. This conflicted with their stated preferences.

Other references:

Arthur, L.M. Daniel, T.C. and Boster, R.S. (1977). Scenic Assessment: an Overview. *Landscape and Planning,* **4**: 109-129.

Hancock, H.H. (1973) Recreation preference: its relation to user behavior. *J. For.,* **71**(6): 366-337.

Hendee, J.C. and Catton, W.R. (1968). Wilderness users - what do they think? *Amer. For.,* **74**(9): 29-31, 60-61.

ECA/HW
Landscape/FB

March 1998

People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

25 ENVIRONMENTAL AESTHETICS: THEORY RESEARCH, AND APPLICATIONS

Description A collection of essays from diverse fields including landscape architecture, environmental psychology and philosophy. The works include reviews of 'classic' theories and summaries of empirical data on preferences in the visual environment.

Methodology Review.

Results

Published Environmental Aesthetics: Theory Research and Applications.

Authors Nasar, J. ed.

Date 1988

Publisher Cambridge NY: Cambridge University Press,

Price £65.00 (out of print) £20.95 (paperback published 1992)

Keywords environmental psychology; environmental aesthetics.

Comments This is a diverse collection of essays on the aesthetics of the built and natural environment. The book provides some brief reflections on their own work by Stephen Kaplan and Jay Appleton for example, both reviewed below.
Jay Appleton, "Prospects and Refuges Revisited" Ch.3 pp 27-44
Appleton responds to critics and evaluates his theory's success. He asks: can it be substantiated/is it any use? He describes his original concept of prospects and refuges as a way of relating the idea of preference to a typology of landscapes through the medium of the biological and behavioural sciences. The concept isolates a set of circumstances and ignores the rest, based on the idea that men and women perceive their environment in similar way to the way animals perceive their habitat, i.e. "habitat theory". It is a 'reductionist's tool': prospects and refuges refer to concepts not objects. He cites the failure of empirical examination of theory by Clamp and Powell (1982) and relative success by (Woodcock 1982). Heyligers (1981) showed that whilst prospect/refuge can be useful in abstraction, aesthetic appreciation is a personal experience based on the integration of 'an environmental stimulus into one's own perceptual framework'.

25 ENVIRONMENTAL AESTHETICS: THEORY RESEARCH, AND APPLICATIONS

Kaplan, S. "Where cognition and affect meet: a theoretical analysis of preference." Ch.5 pp 56-63

Kaplan contrasts *preference* as a aesthetic judgement or affect, concentrating on the complexity of stimulus; and *preference* as a cognitive response based on the evaluation of choices and risk, or 'decision-theory'

Kaplan cites Zajonc (1980), who implies that preference is not a product of a rational calculation, before concluding that there is more to cognition than conscious thought.

From the study of 'mystery' as a factor in preference he argues that there is an intimate relationship between cognition and affect. He adopts an evolutionary approach to analysis of preference stating that this can aid accurate prediction and also the understanding of how preference functions in the human psychological make-up.

This is a summary article trying to relate affect to cognition. Kaplan suggests areas of study could include ease of locomotion, depth, safety, and the possibility of acquiring new information, as variables. He recognises the influence of recognition and prediction in landscape preferences. He considers facets of 'affect' as pleasure/pain/interest and divides cognition into 'constant' (good, bad and interesting) and 'process' (managing uncertainty, recognising, predicting and evaluating).

A good historical perspective on the Kaplans' work is given in Porteous (1996). Parsons (1991) also explores the conflicts which emerged between the Kaplan and Ulrich approach to environmental psychology.

References:

Clamp, P., and Powell, M., (1982), Prospect-Refuge Theory under test. *Landscape Research* **7**: 7-8.

Heyligers, P.C. (1981), Prospect-refuge symbolism in dune landscapes. *Landscape Research* **6**:7-11.

Woodcock, D.M. (1982), *A functionalist approach to environmental preference.* Unpublished doctoral dissertation, University of Michigan, Ann Arbor.

Zajonc, R.B. (1980) Feeling and Thinking: Preferences need no Inferences. *American Psychologist* **35**:151-175.

Other References:

Parsons, (1991) Potential Influences of Environmental Psychology on Human Health. *Journal of Environmental Psychology*, **11**(1): 1-23

Porteous, J.D. (1996). *Environmental Aesthetics*, London: Routledge.

ECA/HW
Landscape/FB

March 1998

People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

26 THE POTENTIAL INFLUENCES OF ENVIRONMENTAL PERCEPTION ON HUMAN HEALTH

Description This study provides a comprehensive survey of research and theory concerning the potential influences of environmental perception on health and well-being.

Methodology The literature suggests that people generally prefer natural environments to urban environments and believe them to be natural and restorative (e.g. Kaplan, 1983; Walker and Dufield, 1983, Ulrich 1984). This distinction between the natural and urban environments is used by Parson's to re-examine the evolutionary theories of environmental aesthetics expounded by the Kaplans and Ulrich.

Results

- Parson's concludes that exposure to natural environments can be stress reducing.
- He supports the evolutionary theory of environmental aesthetics and agrees with Ulrich's approach to environmental research. Ulrich (1983) proposed that the initial response to an environment is one of generalised affect, which can be independent of and primary to cognition.
- Parson's is sceptical of the view taken by the Kaplans (Kaplan, 1987) who suggest that there is a broad range of involvement of cognitive processes in preference judgement and promotes 'mystery' as the most dominant informational predictor (p5-6). He suggests that a judgement of 'mystery' is likely to be a more deliberate response, exerting its influence on environmental preference after the initial affective reaction has occurred, (if it forms any part of a preference judgement).
- He speculates that natural environments are not necessarily restorative, but that urban environments are inherently stressful. He argues that if certain environments trigger an immediate affective response and this response is driven by an evolutionary mechanism which responds positively to surroundings which are potentially habitable, then urban environments are uniquely stressful because they lack the *icons* of a preferred habitat (p16).
- He makes suggestions for the use of neuropsychological and immunosuppression evidence in environmental research, (e.g. stress hormones and indicators of immunocompetence).

Published Journal of Environmental Psychology **11**: 1-23.

Authors Parsons, R.

Date 1991

26 THE POTENTIAL INFLUENCES OF ENVIRONMENTAL PERCEPTION ON HUMAN HEALTH

Publisher Academic Press

Price Subscription c. £71 p.a. (4)

Keywords environmental psychology; environment/stress; environment/behaviour; evolutionary theory/aesthetics; environment/preference; neuropsychology;

Comments A reading of Parson's work reveals potentially exciting avenues of future research. He reviews three areas of research to investigate the notion of 'an evolutionary driven, initial response to environments':

Behaviour Evidence

From his review of behavioural evidence he concludes that human emotional response is, in part at least, evolutionary driven. He refers to various research to show that affective responding is innate. This includes a number of studies with children and cross-cultural studies of the expression and experience of emotions. He refers to studies which reveal support for the preference for 'savannah-like' environments, (Balling and Falk (1982), Orians, (1980), Woodcock, (1984), and Orians and Heerwagen, (in press)

Neuropsychological Evidence

Parson's uses neuropsychological evidence to support suggestions by Zajonc (1980) and Ulrich (1983) that processing of incoming stimuli is initially affective, and that the initial affective reaction influences environmental preferences. From LeDoux (1986) he suggests that the initial response to environmental stimuli is extremely fast, based on little stimulus information, and because it is completely subcortial and centred on the amygdala, the processing is likely to be primarily affective (p12). The amygdala and hippocampus (parts of the limbic system of the brain important for emotional reactions and for comparison of novel and stored stimuli) may have the potential to provide a neuropsychological link between affective responses to environments, physical health, and the supposed restorative value of natural environments (p9) (Henry & Meehan, 1981; Henry, 1982).

Neuroendocrine and CNS immunomodulation.

Parson's refers to previous reviews of research on psychological responses to stressors (Henry 1980; Henry and Stephens, 1977; Henry and Meehan 1981) to discuss the range of responses to different types of stress. He cites evidence that subcortial, limbic brain structures are implicated in the processing of immediate affective responses to environments and that these are also important components of neuro-endocrine influences on immunocompetence (pp.16-17).

26 THE POTENTIAL INFLUENCES OF ENVIRONMENTAL PERCEPTION ON HUMAN HEALTH

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Balling, J.D. and Falk, J.H.(1982) Development of Visual Preference for Natural Environments *Environment and Behaviour* **14** (1) :5-28

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Woodcock, D.M. (1984). A functionalist approach to landscape preference. *Landscape Research*, **9**: 24-27.

Zajonc, R.B. (1980). Feeling and thinking: Preferences need no Inferences. *American Psychologist,* **35**: 151-175.

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People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

27 EVALUATION OF URBAN RIVERSCAPE AESTHETICS IN THE CANADIAN PRAIRIES

Description This study measures perception of an urban riverscape. Its purpose is to determine the cognitive constructs used in evaluating a non-spectacular riverscape. The constructs are then used to determine which attributes of the riverscape influence the evaluation.

Methodology The basis for this study is the Personal Construct Theory. It uses the repertory grid methodology, validated by Harrison and Sarre (1976) and Ward and Russell (1981), to examine cognition of the physical environment. 30 University of Saskatchewan students from various background and disciplines were asked to sort 40 colour prints of different reaches of the South Saskatchewan River into as many piles as they wished, based on any criteria they chose. The participants thus formed a repertory grid, based on personal constructs. This information was then used to form a matrix (the aggregate repertory supergrid) which showed the degree to which a pair of photographs were considered similar by participants.

Results Multidimensional scaling of the resultant similarity matrix revealed three cognitive constructs (dimensions) used to evaluate the riverscape. Cluster analysis of the matrix developed clusters of photographs which were plotted on the three dimensions. Common attributes of the photographs in each cluster were determined using the 'aesthetic factors' postulated by Leopold (1969). The dimensions were then characterised in terms of attributes: natural vs. man-made; blighted vs. enhanced; barren and brown vs. lush and green. Attributes eliciting strong responses were colour, vegetation, soil, exposure, land use, blight and cultural features.
The authors claim that:

- the multidimensional scaling of repertory supergrids was found to be a flexible, precise and sensitive method of measuring landscape evaluations (pp. 271-272).
- perceptual constructs derived from this study were useful in a planning and management context. They appear to delineate the perceived similarities of landscape but are not directed towards a "preferred" landscape, if one exists (p 273)

Published Journal of Environmental Management **17**: 263-276.

Authors Pomeroy, J.W., Green, M.B., and Fitzgibbon, J.E.

Date 1983

Publisher Academic Press Inc. (London)

27 EVALUATION OF URBAN RIVERSCAPE AESTHETICS IN THE CANADIAN PRAIRIES

Price subscription c. £258 p.a. (3)

Keywords landscape assessment; riverscape evaluation; South Saskatchewan River; repertory grid; multidimensional scaling; urban aesthetics.

Comments This study sets out to gain an understanding of the public evaluation of non-spectacular scenery based on objective, quantitative research. The authors make strong claims for the reliability and applicability of this methodology (p.273):

> "The aesthetic impact of changes in landscape attributes can be measured quantitatively in a theoretically sound manner that takes into account present attributes of the region (cognitive set)."

However, there are certain criticisms of the techniques employed in this research which are worth considering. Hamill (quoted in Porteous, 1996, p203), suggests that "the prevailing establishment belief that objective knowledge is possible and that quantitative knowledge is superior to any other, leads to the making of, and persistence of, fundamental errors."
The evaluations of the participants selected for this study may not reflect the preferences of the general public or minority groups within the community. Whose evaluations and preferences should be selected and used to influence or direct managemnt or planning decisions?
The use of the repertory grid and Personal Construct Theory in environmental research are discussed in the review of Harrison and Sarre (1975).

References:

Harrison, J. and Sarre, W. (1976) "Personal Construct Theory, the repertory grid, and environmental cognition," G.T. Moore and G.G. Gollege, eds., *Environmental Knowing: theories, research and methods.* Stroudsburg, Pennsylvania: Dowden, Hutchison and Ross.

Leopold, L.B. (1969). Quantitive ccomparisons of some aesthetic factors among rivers. *US Geological Survey Circular 620.* Washington D.C.: Department of the Interior.

Ward, L. and Russell, J. (1981). Cognitive set and the perception of place. *Environment and Behavior,* **13**: 610-632.

Other References:

Hamill, L. (1989). "On the persistence of error in landscape aesthetics"; pp. 197-206. In P. Dearden and B. Sadler (eds) *Landscape Evaluation* Victoria, BC: Western Geographic Series.

Porteous, J.D. (1996), *Environmental Aesthetics* London: Routledge

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People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

28 SMELLSCAPE

Description Essay to 'pioneer the exploration of the landscape of smell' in response to the call for a more thorough examination of the non-visual senses by environmental aestheticians. Discussion of the role of smell in memory and childhood and the possible application of 'smellscape' studies.

Methodology Literature review of olfactory research in psychology, followed by an investigation of smell as a function of person, place and time.

Results

- Up to 90% of our perceptual intake is visual, and much of the rest is auditory and tactile.
- Smell seems to stimulate strong emotional or motivational arousal (affect) and little cognition, (Engen, 1982, 129) while visual experience is much more likely to involve thought and cognition.
- The perceived intensity of smell declines rapidly after one has been exposed to it for some time. Habituation is very important in smell: we get used to smells very quickly.
- Memory of smell does not decay with time. Unlike visual memory, memory of smell remains constant and can be accurate decades after the original stimulus, perhaps because smell is primitively linked directly to processing in the brain.
- We mostly like the smells with which we are familiar and dislike those which are strange.
- There are vast individual and group differences in the sensory response to smell which also relates to the familiar/unfamiliar and insider/outsider antinomy in smell perception, (Relph, 1976)
- Odour tolerances and preferences appear to be age related. Children before puberty appear to be much more sensitive to smell than after.

Published Progress in Human Geography", **9**(3): 356-78

Authors Porteous, J. Douglas

Date September, 1985

Publisher Elsevier Scientific Publishing Co.

Price subscription c. £146 p.a. (4)

Keywords Olfactory /smell/multisensory experience/ environmental aesthetics/psychology

28 SMELLSCAPE

Comments

Lucid and well argued essay which places the study of smell as part of a multi-sensory experience of the environment in the context of environmental aesthetics. Argues that more 'naturalistic' field studies of odour perception are required and encourages non-laboratory research. Useful guide to research to date linking aesthetic theories with psychological research.

References:

He makes particular reference to the work of Engen:

Engen, T (1977) Taste and Smell in Birren, J.E. and Schaie, K.W. eds. *Handbook of the psychology of ageing* New York: Van Nostrand, 173-81

Engen, T. (1979) The origin of preferences in taste and smell, in Kroese, J.H.A. ed. *Preference, behaviour and chemoreception,* London: Information Retrieval Ltd, 263-73

Engen, T. (1982) *The Perception of Odor* Reading, Massachusetts: Addison-Wesley

Engen, T. and Ross, B.M. (1973) Long term memory of odors with and without verbal descriptions. *Journal of Experimental Psychology* **100:** 221-27

On historical view:

Boring, E.G. (1942) *Sensation and perception in the history of experimental psychology* New York: Appleton Century

Humanistic study:

Relph, E. (1976) *Place and Placelessness* London: Pion

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P,T&W ref: *Project Title*

29 SOUNDSCAPE

Description This study defines 'soundscape' as the overall sonic environment of an area, ranging in size from a room to a region. Research into environmental aesthetics has largely concentrated on the visual and neglected the other senses. Acoustic science has been concerned largely with the study of noise. This paper seeks to redress the balance by a case study of 'soundscape'.

Methodology The 'soundscape' of an urban neighbourhood (South Fairfield, Victoria, BC. Canada) was examined both objectively and subjectively: objectively by machine recording and analysis, and by expert listening; and subjectively by a self-reported, postal survey of residents using a 'community sound list' developed from the objective study. A cluster analysis of the objective study revealed three distinct soundscapes. Subjective analysis was also mapped and compared with the spatial framework of the objective analysis.

Results

- Traffic noise was the most common sound which occasionally masked keynote sounds and was usually negatively perceived.
- Natural sounds were most preferred.
- 'Informational' sounds were also appreciated.
- Urban residents appear to have low levels of awareness of soundscape.

Published Journal of Architectural and Planning Research, **2**(3): 169-8.

Authors Porteous, J.D. and Mastin, J.F.

Date 1985

Publisher Elsevier Science Publishing Co., Inc.,

Price subscription

Keywords sound studies; acoustic science; environmental aesthetics; soundscape; multi-sensory perception; environmental preference.

Comments This paper reviews the limited amount of work in this field and discusses the problems of methodology in relating objective and subjective results. It provides a useful critical review of techniques. It emphasises the qualitative nature of sound.
(see also Rendel's (1977) work on Tranquil Area Mapping).
Rendel. S. (1997). A New Technique. *Landscape Design*, **257**: 17-18.

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30 ENVIRONMENTAL AESTHETICS: IDEAS, POLITICS AND PLANNING

Description This makes claim to be a multidisciplinary, comprehensive, integrated survey of environmental aesthetics.

Methodology The author gives a brief history of aesthetics and taste, then discusses the psychology of human-environment relations, the influences of literary, artistic and legal activism on the environment, and concludes with an analysis of the roles of public policy and of planning.

Results Porteous considers that environmental aesthetics can be usefully understood through an interrelated matrix of four major approaches: Humanist, Experimentalist, Activist and Planning paradigms. This matrix forms the structure for discussion in the book. Porteous believes that it is necessary to break down the barriers which prevent the flow of ideas and information between the four major approaches to environmental aesthetics.
The environmental aesthetics which Porteous advocates is the 'aesthetics of the public environment' and has an ethical and moral dimension.

Published Environmental Aesthetics: ideas, politics and planning.

Authors Porteous, J. D.

Date 1996

Publisher London: Routledge

Price £47.50 (hardback); £15.99 (softback).

Keywords environmental aesthetics, environmental psychology; environmental ethics; landscape; planning; environmental policy/politics.

30 ENVIRONMENTAL AESTHETICS: IDEAS, POLITICS AND PLANNING

Comments

This is a clear and concise review, structured in a similar way to an earlier review of landscape perception by Zube, Sell and Taylor (1982). It gives an up to date summary of multidisciplinary research and places landmark studies in context. However, whilst the Kaplan and Ulrich approaches, for example, are amply described other, more recent developments in environmental psychology receive scant attention e.g. Russell, Purcell, Seamon.

The author provides an interesting personal commentary and overview to this work, stating his moral and ethical views. He includes a report of his own study in 'transcendential experience' which is discussed in Brook (1998).

Porteous is particularly interested in the sensory variety and quality of the environment. He states that, because of the lack of research into environmental smell (Winter 1978, Corbin 1986, Le Guérer 1988) sound (other than noise) (Corbin 1994) and touch, this book is dominated by visual aesthetics (p41).

He also identifies problems caused by the dearth of work on childhood aesthetics ('childscape' in Porteous 1990), and insufficient work on gender and intergenerational differences in environmental aesthetics (p127).

References:

Brook, I (1998), Goethean Science as a Way to Read the Landscape. *Landscape Research* **23** (1): 51-67

Corbin, A. (1986). Le Miasme et la Jonquille: L'Odorat et L'Imaginaire Social XVIIIe-XIXe Siècles. Paris: Flammarion.

Corbin, A. (1994). Les Cloches de la Terre. Paris: Albin Michel.

Le Guérer, A. (1988). Les Pouvoirs de l'Odeur. Paris; Edition du CNRS.

Porteous, J.D. (1990). Landscapes of the mind. Toronto: University of Toronto Press.

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P,T&W ref: *Project Title*

31 PREFERENCE OR PREFERENCES FOR LANDSCAPE?

Description

This is a research project concerned with examining the physical and cognitive aspects of places which influence preference. The research investigated the cognitive categorisation of landscape into different types. It builds on research from Purcell and Lamb (1984) which suggested that the experience of landscape is structured round categories or more complex mental representations such as schemata. Purcell (1987, 1990) suggests that these schemata are the result of long term exposure to regularities in the environment.

Methodology

Students from Italian and Australian universities were asked to judge two examples of twelve different types of scene from slides from their own countries. These judgements were recorded on a seven point scale in response to a pre-set sequence of questions:

1. How much do you like the scene?
2. How much would you like to live and work in this place?
3. How familiar are you with this place?
4. How much would you like to visit this place for a holiday?

Participants also categorised the scenes as either natural or built.

Results

The results showed that preference is dominated by scene type. However there was a complex pattern of results which raised a number of theoretical issues.

- The concept of landscape as an all embracing term is too simplistic: landscape is not experienced as a simple range of types in a linear fashion from built to natural.
- A unitary measure of environmental preference may obscure differences in preferences which arise from people having different expectations of what a place can offer.
- For some scene types, preferences differed according to whether a scene was judged to be natural or built. Scale and the presence of water also influence preference.
- The study indicates that although there can be a variety of influences on preference, preference is strongly influenced by scene type. The effect is similar for both the Italian and Australian groups.
- The authors suggest that the concept of landscape is a cognitive construct rather than a phenomenon based entirely on direct experience. (p207)

31 PREFERENCE OR PREFERENCES FOR LANDSCAPE?

Published Journal of Environmental Psychology, **14**: 195-209

Authors A.T. Purcell, R.J.Lamb, E. Mainardi Peron, and S. Falchero,

Date 1994

Publisher Academic Press Ltd

Price subscription c. £71 p.a. (4)

Keywords Landscape preference/ environmental preference/ environmental aesthetics

Comments The paper reviews the concept of 'landscape' used in previous research (Kaplan et al. 1972, Ulrich 1981 and Brown and Daniel 1987) where a concept of 'naturalness' has been used to quantify preference. The landscape concept used in research is challenged by Purcell (1987) and Purcell and Lamb (1984) who consider that the term 'landscape' may mask the diversity of types of environments and mixtures of types of environments viewed by subjects. The authors conclude that variations in landscape type, and the way in which people categorise these types, may explain the range of preference judgements found when diverse sets of stimuli are used.
The paper also refers to previous research on preference judgements made by people from different geographic locations on the same set of slides, (Tips and Savasdisara, 1986, Zube and Pitt, 1981, Kaplan and Herbert 1987) but points out that this is the first piece of research concerned with groups of residents in different countries making judgements on comparable stimuli selected from within their own location.

The authors draw parallels with research by Herzog, (1984, 1985, 1987, and Herzog and Bosley, 1992) and Hull and Stewart, (1992). The authors interpret this research to support their view that a finer grained understanding of landscape type is required to interpret or predict preference judgements. Hull and Stewart, (1992) also assessed the differences which contextual effects had on judgements on scenic beauty. They found that mood, meaning and novelty of the same scenes were assessed and found to differ. From the results of this study by Russell, Lamb et al. (p. 207) the authors conclude that the contextual judgements referred to by Hull and Stewart (1992) are in some respects similar to the changing focus of preference used in their own study. The authors conclude that "(e)ach of these effects on preference results from cognitive coding of the scenes at a higher level than overall preference. Scenes not only have appearances, but also offer certain possibilities."
Russell, Lamb, et al. believe that future research should assess the cognitive coding effects on preference and the reasons respondents might give for preferences when these are judged from a different perspective.

31 PREFERENCE OR PREFERENCES FOR LANDSCAPE?

References:

Brown, T.C. & Daniel, T.C. (1987). Context effects in perceived environmental quality assessment: Scene selection and landscape quality ratings. *Journal of Environmental Psychology*, **7**:233-250.

Herzog, T. R. & Bosley, P. J. (1987). Tranquillity and preference as affective qualities of natural environments. *Journal of Environmental Psychology*, **12**:115-127.

Herzog, T. R. (1984). A cognitive analysis of preference for field-and-forest-environments. *Landscape Research*, **9**: 10-16.

Herzog, T. R. (1985) A cognitive analysis of preference for waterscapes. *Journal of Environmental Psychology*, **5**: 225-241.

Herzog, T. R. (1987) A cognitive analysis of preference for natural environments: mountains, canyons, deserts. *Landscape Research*, **6**: 140-152.

Hull, R.B. and Stewart, W.P., (1992). Validity of photo-based scenic beauty judgements. *Journal of Environmental Psychology*, **12:** 101-114.

Kaplan, R., and Herbert, E.J. (1987) Cultural and sub-cultural comparisons in preferences for natural settings. *Landscape and Urban Planning*, **14**, 281-293.

Kaplan, S., Kaplan, R. & Wendt, J. S. (1972). Rated Preference and complexity for natural and urban visual material. *Perception and Psychophysics*, **12**: 254-356.

Purcell, A.T and Lamb, R.J.(1984) . Landscape perception: an examination and empirical investigation of two central issues in the area. *Journal of Environmental Management.* **19**, 31-63.

Purcell, A.T. (1987) Landscape perception, preference and schema discrepancy. *Environment and Planning B: Planning and Design*, **14**: 67-92.

Purcell, A.T. (1990) Abstract and specific physical attributes and the experience of landscape. *Journal of Environmental Management* **34**: 159-177.

Tips, W.E. J. Savasdisara, T. (1986) The influence of the environmental background of subjects on their landscape preference evaluation. *Landscape and Urban Planning*, **13** (2): 113-24.

Ulrich, R. S. (1981) Natural versus Urban Scenes: Some Psychophysiological Effects. *Environment and Behavior*, **13** (5): 523-556.

Ulrich, R.S. (1986) Human Responses to vegetation and landscape. *Landscape and Urban Planning*, **13** (1) 29-44.

Zube, E.H. and Pitt, D.G. (1981) Cross-cultural perceptions of scenic heritage landscape. *Landscape Planning*, **8** (1): 69-87.

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People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

32 THE AESTHETICS OF FORESTRY: WHAT HAS EMPIRICAL PREFERENCE RESEARCH TAUGHT US?

Description Survey of research exploring the public preference for forest landscape and the factors which influence these preferences. The relationship between research into scenic beauty and forest preference and management practices is discussed. The scenic effects of forest treatments are evaluated and implications for management practices are evaluated.

Methodology Review of research

Results Challenges researchers to "prove the utility of science in the aesthetic management of forest management or return to intuitive criticism". (p71)

Published Environmental Management, **13** (1): 55-74

Authors Ribe, R.G.

Date 1989

Publisher Springer-Verlag, New York, Inc.

Price subscription $109

Keywords scenic beauty; forest management; multiple use; visual assessment; landscape preferences;

Comments Useful overview of research primarily concerned with providing information on public preferences and evaluation of scenic beauty which can then be used to develop management tools for 'multi-use' forests. Catalogues empirical research methods employed in landscape preference and scenic beauty assessments. He looks at the use of Scenic Beauty Estimation (SBE) and a variation of this method using views sampled over a long period of time (Scenic Beauty Temporal Distribution Methods (SBTD). He summarises some common preference responses but confirms that preference response is usually meaningful only when related to the local forest which has been sampled. Results cannot be extrapolated for other samples or provide a unifying theory to explain preference.

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P,T&W ref: *Project Title*

33 ADAPTATION LEVEL AND THE AFFECTIVE APPRAISAL OF ENVIRONMENTS

Description An affective appraisal is defined as a judgement about the ability of place to alter emotional feelings. The theoretical base for this research is discussed. The first theory concerns the description of the affective appraisal of places (Russell et al. 1981). In this model a value is assigned to a place on pleasantness and arousing quality, the 'circumplex model of affect'. Various descriptors can then be used to appraise the space. The second theory is Helson's (1964) Theory of adaptation level. According to Helson, judgements about a stimulus are always relative to the context of judgement, including peripheral and previously encountered stimuli. Wohlwill (1974) is quoted to show that adaption level is important: migrants from rural areas, for example, judge their city of residence as nosier and more polluted than do migrants from urban areas.

Methodology Three studies were undertaken, where photographs of various environmental scenes were shown to subjects alternating 'target' scenes with various 'anchor' scenes. The subjects were then asked to rate the environmental scenes. Each study employed different groups of subjects and had different numbers of participants. The first experiment had 234 female students, the second 180 male students and the third, 60 female students.

Results The study does not present evidence to test all of the assumptions of both theories.
Russell refers to the notion that a person's affective appraisal of a place plays a key role in the person's choice of where to go and in guiding his or her behaviour once in a place. This is discussed further in Russell and Snodgrass, 1987). In this study it appeared that one and the same stimulus can receive widely different affective appraisals.
Russell emphasises that whilst he has spoken about the judgement about the emotive capacity of the place, he has carefully avoided talking about the person's actual emotional state as influenced by the environment. At this stage of research he considers it important to distinguish affective appraisal from other emotional states.

Published Journal of Environmental Psychology, **4**: 119-135

Authors Russell, J.A. and Lanius, U.F.

33 ADAPTATION LEVEL AND THE AFFECTIVE APPRAISAL OF ENVIRONMENTS

Date 1984

Publisher London: Academic Press

Price subscription c. £71 p.a. (4)

Keywords environmental psychology, affective appraisal, emotion, visual preference.

Comments Reference to the text is advised for a detailed examination of research methods. This study is of particular interest because it attempts to conceptualise a multivariate response where previous studies have correlated studies of single responses.
There is a discussion of the need to study responses in actual scenes
Reference is made to previous work. Russell et al.(1981) is as an example of a study of affective appraisals in a real environment. Russell concludes that studies of affective appraisal in actual environments have been encouraging but warns that they are of necessity complex.

References:

Helson, H. (1964), *Adaption Level Theory.* New York: Harper and Row.
Russell, J. et al (1981), Affective quality attributed to environments. *Environment and Behavior*, **13:** 259-88
Wohlwill, J.F. (1974). Human adaption to levels of environmental stimulation. *Human Ecology* **2**: 127-47.

Other References:

Russell, J. and Snodgrass, J. (1987) "Emotion and Environment" in D Stokols and I. Altman (eds.) *Handbook of environmental psychology*. Ch 8, pp245-281, New York: Wiley

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P,T&W ref: *Project Title*

34 EMOTION AND THE ENVIRONMENT

Description The authors discuss the emotional relationship between people and the environment. They are convinced that the key to understanding the human relationship to landscape is emotion.

Methodology From a discussion of emotion, touching on conceptual and measurement issues, Russell and Snodgrass propose a framework for understanding how behaviour is organised in space and time. They use this framework to highlight different aspects of emotion by charting the sequence of actions involved in a person's interaction with a large-scale environment. Attention is focused on the emotion experienced at each step, as well as the potential after-effects.

Results The article provides a context in which to discuss emotion and the environment and describes, in detail, a specific approach to environmental research. The authors conclude with suggestions for future research topics.

Published D Stokols and I. Altman (eds.) *Handbook of environmental psychology*. Ch 8, pp. 245-281,

Authors Russell, J. A. and Snodgrass, J.

Date 1987

Publisher New York: Wiley (out of print)

Price £170 (Hardback)

Keywords environmental psychology, emotion and environment, affective appraisals, environment and behaviour, environment and cognition.

Comments This article has become a classic reference and provides a step-by-step introduction to the study of emotion and environment. It summaries theoretical and methodological studies and reviews empirical research in this field providing a clear definition of all the terms used. It explains the use of the 'circumplex model of affect' and Berlyne's concept of 'collative properties', for example, and provides a context in which to review methodological developments.

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P,T&W ref: *Project Title*

35 IS THERE A CORRECT AESTHETIC APPRECIATION OF NATURE?

Description Saito challenges the philosophical arguments used to support the view that scientific knowledge of the nature is an essential part of an appropriate aesthetic appreciation.

Methodology This paper uses philosophical argument to take issue with the concept of an appropriate appreciation of nature adopted by Carlson (1981). Carlson claims that there is a similarity between the aesthetic appreciation of art and nature. "According to him, just as some appreciations of art are aesthetically more appropriate than others, so there are more or less aesthetically proper interpretations of natural objects" (p. 37).

Results Saito draws distinction between aesthetic and ethical judgements:

> "If we take a purely aesthetic standpoint without regard to the ethical significance of the object or activity, then the aesthetic value of nature is not always spoiled by man's abusive treatment of it. On the other hand, if we allow our aesthetic judgement to be affected by ethical considerations (so that the abusive treatment of nature is always regarded as destroying the aesthetic value of the natural environment), then the appropriate attitude toward and appreciation of nature must be explained by reference to ethical considerations and not to aesthetic considerations."

However she does accept that aesthetic judgement is influenced by prior nonaesthetic judgement concerning the value of nature. She suggests that aesthetic arguments can be used to support the ecological cause.

Published Journal of Aesthetic Education **18** (4): 35-46

Authors Saito, Yuriko

Date 1984

Publisher Board of Trustees of the University of Illinois

Price Subscription $25

Keywords environmental aesthetics; aesthetic appreciation of nature; environmental ethics.

35 IS THERE A CORRECT AESTHETIC APPRECIATION OF NATURE?

Comments

This article contributes to the philosophical debate that surrounds the idea that certain aesthetic responses to nature are inappropriate because they are not based on scientific knowledge of the natural environment. This point is also discussed in Foster (1991). Saito accepts that ethical considerations may influence aesthetic judgements. She also supports the use of scientific knowledge to increase our understanding and perception of the natural world. She does not consider that ethical considerations should be used to define an appropriate aesthetic response.
The issues raised in this discourse on the difference between aesthetic judgement and appreciation supplement Zube's (1982, p.20-25) discussion on the need to find a theoretical, structural framework to determine what me mean by aesthetic appreciation.

References:

Carlson, A. (1981). Nature, Aesthetic Judgement, and Objectivity. Journal of Aesthetics and Criticism. **40**: 15-27.

Other References:

Foster, C. A. (1991) *Aesthetics and the Natural Environment* unpublished PhD. Thesis University of Edinburgh
Zube, E.H., Sell, J.L. and Taylor, J.G. (1982), Landscape Perception: Research, Application and Theory. *Landscape Planning*, **9:** 1-33

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People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

36 "WHERE DID YOU GO?" "THE FOREST". "WHAT DID YOU SEE?" "NOTHING".

Description Schneekloth considers that the tendency to value vegetation as insignificant background, as "nothing", is rooted in our cultural background. She suggests that in some forms of discourse, in drawing and literature for example, there are different systems of placing value. The article discusses the roots of attitudes to vegetation and the implications for children's perceptions and experience.

Methodology The article explores the author's belief that vegetation has been consigned to the background in our perception of the environment. She explores with reference to literature and philosophy attitudes to vegetation.
She uses information, drawn from her own short study of drawings by adults, to explore human perception of vegetation. Two groups of people (15 architecture students; and 83 academics in environmental education who were attending a conference) were asked to draw pictures of an experience, place or event that was important in forming their relationship with nature, and then talk about them.
Reference is also made to studies of children's drawings and observations of play to draw inferences on what children perceive and what they are being taught both implicitly and explicitly.

Results Schneekloth identified a difference in content between the drawings and narratives in her study. She concluded that "when people drew their experience, they located human beings as part of the picture; when they talked about place/event, the human action was central. (p.16)." "Vegetation is 'something' as is revealed in the discourse of drawing; it is given form" (p15), she concludes.

Published Children's Environments Quarterly **6** (1)

Authors Schneekloth, L.H.

Date 1989

Publisher Children's Environments Research Group, City University of New York

Price subscription

Keywords environmental perception; environmental education; anthropocentrism.

36 "WHERE DID YOU GO?" "THE FOREST". "WHAT DID YOU SEE?" "NOTHING".

Comments

This is a thought provoking article raising issues concerning the way we perceive the environment and the in the way we express those experiences of the environment in different media. Schneekloth considers that as a society we have become anthropocentric, viewing vegetation as an 'undifferentiated utilitarian resource' and disassociating experience and knowledge. In her opinion adults "see little" and the dominant message being given to children is that "vegetation is nothing". She suggests that we should discover more about the way children perceive the environment and understand what they are being taught both explicitly and implicitly.

Although this article is not of direct application to empirical research it does indicate the need for more information about variations in environmental perception with age; the differences in the ways we express environmental evaluations; and our response to different elements within the natural environment.

Some work has been done in measuring aesthetic response to vegetation. Hull and Harvey (1989) noted that pleasure heightens as tree density increases. Thayer, and Atwood (1978) also linked pleasure to planting. Balling (1982) concluded that people showed preference for grassland and groves of closely planted trees because these related to the savannah origins of early man.

The relation of age to environmental preference is also discussed in the review of Lyons (1983).

Other References

Balling, J.D. and Falk, J.H.(1982). Development of Visual Preference for Natural Environments, *Environment and Behaviour* **14** (1) :5-28

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People Trees and Woods: Review of Research

P,T&W ref: *Project Title*

37 CRITICAL IMPORTANCE OF EXPOSURE DURATION FOR AFFECTIVE DISCRIMINATION OF STIMULI THAT ARE NOT RECOGNISED

Description This study explores the phenomenon of the exposure affect. This is defined as the increase in positive affect that results from the repeated presentation of unfamiliar stimuli.

Methodology The subjects of the study were 160 university students between 18-24 years old. The subjects were shown 20 irregular polygons at various lengths of exposure and in various orders. Further trials followed where previously seen stimuli were shown alongside distracter shapes and subjects were asked to select the one they liked best from each pair or the one they had seen before.

Results The experiment was held to show that stimulus exposure duration has different effects on affect and recognition judgements. Affective judgements (do I like it?) can be made after very brief exposures (0-2msec) and are not influenced by extending the exposure time. Recognition judgements require longer exposure (8+msec) and are more directly influenced by length of exposure.

Published Journal of Experimental Psychology: Learning Memory and Cognition **10** (3): 465-469

Authors Seamon, J.G., Marsh, R.L. and Brody, N.

Date 1984

Publisher American Psychological Association Inc.

Price subscription $40

Keywords visual perception/ affective discrimination/ phenomenology / cognition

37 CRITICAL IMPORTANCE OF EXPOSURE DURATION FOR AFFECTIVE DISCRIMINATION OF STIMULI THAT ARE NOT RECOGNISED

Comments

This empirical study sets out to support the Zajonc (1980) theory that affective processing precedes recognition processing. The findings on the effects of exposure duration is highlighted as another independent variable to consider in the design of further research. From this study it would appear that it is a factor which differentially effects affect and recognition performance. This paper argues that affect and recognition are based on different processes.

See also Seamon (1983a) and (1983b)

References:

Seamon, J.G. et al (1983a) Affective Discrimination of stimuli that are not recognised: effects of shadowing, masking, and cerebral laterality *Journal of Experimental Psychology: Learning Memory and Cognition* **9**(3): 544-55.

Seamon, J.G. et al (1983b) Affective Discrimination of stimuli that are not recognised II: effect of delay between study and test. *Bulletin of Psychonomic Society* 21(3): 187-9.

Zajonc, R.B. (1980) Feeling and Thinking: Preferences need no inferences *American Psychologist* **35**:151-175.

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38 A PARADIGM FOR DISTINGUISHING SIGNIFICANT FROM NON SIGNIFICANT VISUAL IMPACTS: THEORY, IMPLEMENTATION, CASE HISTORIES.

Description This paper reviews visual impact assessment and design review procedures in the UK and US. It discusses the problems presented by legal judgements being made on aesthetics in environmental impact assessments. It asks whether we can distinguish "significant" from "insignificant" visual impact in visual impact assessments with sufficient precision for legal purposes from a study of the built environment.
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Methodology The paper refers to studies of environmental projects and includes case studies. Legal aspects of environmental impact aesthetics are given prominence. A statistical criterion for settling disputes about environmental aesthetics is proposed. The author relates the statistical model to a philosophical model.

Results Concludes that there are substantial difficulties arising on issues of subjectivity, vagueness of language, and measuring the intensity of visual impacts and summarises that:

- aesthetic judgements have objective and subjective parts.
- intensities of feelings can be expressed in terms of simple semantic differential ratings, and the attributes of the environments can be specified in terms of the mathematics of three dimensional space, materials and light.
- estimates of the strengths of the relationship between feelings and environmental attributes can be determined through standardised mean contrasts *d*.
- a threshold of 0.2 standardised mean differences of preference ratings between 'after' and 'before' scenes distinguishes significant from non-significant visual impacts.

General Considerations:

- Considers that photomontages for existing situations and digital montages for proposed conditions are valid simulation media.
- Considers that there is substantial consensus on the aesthetic merits of environmental scenes.

Published Environmental Impact Assessment Review **17** (4): 249-293

Authors A, E. Stamps, III

Date July 1997

38 A PARADIGM FOR DISTINGUISHING SIGNIFICANT FROM NON SIGNIFICANT VISUAL IMPACTS: THEORY, IMPLEMENTATION, CASE HISTORIES.

Publisher Elsevier

Price subscription c. £250 p.a. (4)

Keywords Visual Impacts/visual preference/visual environment

Comments Introduction covers much of the ground of the philosophy and theory of environmental aesthetics covered comprehensively elsewhere. Useful summary of Kant but interpretations of aesthetic judgements are open to question. The article does provide a useful summary of empirical research and methods in visual preference studies but the conclusions presented appear overly simplistic.
The author refers to Zimmerman and Zumbo (1993) in arguing for the validity of using normal parametric statistics to analyse semantic differential data which is ordinal.

References:

Zimmerman, D.W. and Zumbo, B.D. (1993) "The relative power of parametric and non-parametric statistical methods. In G. Keven and C. Lewis (eds) *A Handbook for Data Analysis in the Behavioural Sciences: Methodological Issues,* Hillsdale NJ: Lawrence Erlbaum Associates.

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P,T&W ref: *Project Title*

39 NATURAL VERSUS URBAN SCENES: SOME PSYCHOPHYSIOLOGICAL EFFECTS

Description Ulrich comments on the intuitive belief held by many people that contact with nature is good for them. He then evaluates this assumption for the specific case of visual exposure to outdoor environments. He asserts that this 'nature benefit assumption' underpins most actions establishing city parks, urban landscaping programmes and the provision of urban fringe nature areas.

Methodology The study examines the psychophysical effects of three categories of outdoor visual environment:

1. nature with water
2. nature dominated by vegetation
3. urban environments without water or vegetation

The experiments use alpha wave amplitude (eye closed alpha data which shows electrical activity associated with arousal, alertness and anxiety, etc.) and heart rate (electrocardiographs to show arousal or activation which can often accompany mental problem solving for example)as measures in the study of exposure to different landscapes. These were viewed in a room using a slide projector.

This was supported by a semantic questionnaire consisting of 36 scales to measure an individual's moods and feelings at the time of the test, and the *Zipers* (Zuckerman Inventory of Personal Reactions, Zuckerman, 1977).

Results The study showed that the subjects' psychophysical states changed in different ways during the slide presentations as a function of the type of environment viewed. Compared to the influences of urban slides, exposure to the two nature categories - especially water-had more beneficial influences on the psychological states.

Differences revealed by the alpha results are consistent with the conclusion, based on the self-ratings, that the most positive influences on well-being were produced by the nature scenes. However, findings from the psychological measures suggest that, compared with the influence of the urban scenes, exposure to natural scenes have more positive effects on emotions such as sadness and fear arousal. Thus it is possible that some effects of outdoor visual exposures interact in a complex way with other factors such as personality, time of day or mood prior to the test.

Published Environment and Behavior, **13,**(5):523-556

Authors Ulrich, R. S.

Date 1981

Publisher Sage Publications Inc

39 NATURAL VERSUS URBAN SCENES: SOME PSYCHOPHYSIOLOGICAL EFFECTS

Price subscription c. £183 p.a. (6)

Keywords visual perception, environmental perception, Berlyne, environmental aesthetics, psychobiology

Comments Results are related to Berlyne's theory, which Ulrich considers to be the dominant framework in experimental aesthetics. According to Berlyne the most important property of a visual stimulus is complexity, which refers generally to the number of independently perceived elements and their degree of dissimilarity, (Berlyne (1971). Most of the studies which support this theory are based on nonlandscape stimuli.
Ulrich suggests that complexity is a less important factor in attention/ interest than is landscape content and concludes that Berlyne's theory will have to be modified if it is to be applied to real life views. He also considers that development of realistic and accurate models of responsiveness to outdoor views should include the differential effects of nature versus built environment.

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Zuckerman, M. (1977) The development of a situation-specific trait-state test for the prediction and measurement of affective responses. *Journal of Consulting and Clinical Psychology,* **45**: 513-523.

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P,T&W ref: *Project Title*

40 LANDSCAPE PERCEPTION: RESEARCH, APPLICATION AND THEORY

Description This paper presents an analysis of the paradigms that have been followed in assessing perceived landscape values, and identifies the theoretical or conceptual bases which underlie these approaches.

Methodology Critical review: 'Four paradigms are identified from a review of over 160 articles during the period 1965-80. Publications in each paradigm (expert, psychophysical, cognitive and experiential) are reviewed with reference to contributions to pragmatic landscape planning and management issues and to the evolution of a general theory of landscape perception.'

Results Zube proposes a theoretical framework to guide future research to look at how human-landscape-outcome actions interrelate.
Zube concludes that our justification for worrying about landscape perception and making landscape beautiful is that landscape is important for human quality of life and is as significant as economic and social factors in influencing the human condition.

- Expert judgements of aesthetics are usually based on art or ecology.
- Non-expert judgements usually rely on psychological methods based on landscape stimulus and the objective properties of landscape.
- Cognitive approaches look at the landscape as meaning, including psychobiological work based on Berlyne's (1960, 1971) arousal theory and Wohwill's (1976) work on stimulus configurations. Greenbie (1975) suggests that neural patterns of emotion have a characteristic shape within the brain which can be recognised in similar shapes in the landscape and produce similar emotional responses. The Kaplans' (R. Kaplan, 1979; S. Kaplan, 1975,1979) evolutionary approach suggests landscape preferences are related to the adaptive need to make sense of the environment and also be stimulated by it. Appleton's (1975a) prospect/refuge theory follows a similar line.

40 LANDSCAPE PERCEPTION: RESEARCH, APPLICATION AND THEORY

Results

- The experiential approach looks at human-landscape interaction and suggests that aesthetic quality can lie in both the objective qualities of landscape and subjective meaning of landscape. It is difficult to separate the experience of landscape from the context in which it is viewed, and from other emotional experience. It is therefore difficult to develop techniques for this research other than unstructured phenomenological exploration. Much of the experiential study of landscape grew out of the geographers' study of landscape. Lewis, Lowenthal and Tuan (1973), Relph (1976) and Tuan (1977) explore the experience of interacting with landscape and its importance to people. Experiential work is usually carried out by examining literature and art, or even ordinary diaries (to avoid charges of elitism).

From 1965-80 the psychophysical paradigm showed the greatest increase in use, while the expert approach continued to be popular. This reflects the emphasis on problem solving research particularly focused on forests and forest recreation. Landscape journals, for example have primarily focused on expert and psychological paradigms. There has been less work on experiential and psychological approaches: fields of research in which both applied and theoretical issues are addressed.
Ephemeral conditions and change (e.g. weather-induced) are largely ignored. Zube (p. 20) quotes Appleton (1975b) who suggests that, because there is no underlying theoretical structure for landscape perception, there is a lack of a rational basis for "diagnosis, prescription and prognosis". Zube finds that it is not clear, from his survey of research, that researchers are even measuring the same aesthetic.

Published Landscape Planning, **9**:1-33

Authors Zube, E.H., Sell, J.l. and Taylor, J.G.

Date 1982

Publisher Elsevier Scientific Publishing Co.

Price subscription c. £146 p.a. (4)

Keywords landscape perception, (research) (theory), landscape beauty, aesthetics.

40 LANDSCAPE PERCEPTION: RESEARCH, APPLICATION AND THEORY

Comments

Comprehensive and detailed review providing the most successful attempt to date to draw together and categorise a diverse range of rearch. Current research is still making use of the theories developed during this review period and the article provides a useful context for this work. Zube attempts to provides an objective overview of the debate on visual perception and the nature of aesthetic appreciation.

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