# *Nature versus Nurture:*

An Evaluation of Current Theories Accounting for Affective Responses to Visual Landscape Stimuli

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## Synopsis

This paper evaluates current research exploring the healing potential of nature and will focus in particular on landscape paintings. The discussion begins with an investigation into recent findings claiming engaging with the natural environment, representations of it included, can provide measurable therapeutic benefit. Continuing with an assessment of the research and its rationale for the positive affective responses to nature scenes, attention is quickly drawn to particular conflicts and deficiencies within these scholarly articles.

The first chapter elucidates the relevant theories of the leading expert in the healthcare and design field, Roger S. Ulrich, Ph.D., while exploring the notion of perception and begins to establish an alternative approach to viewing Ulrich's test results. With a more concrete understanding of the differentiation between 'looking' and 'seeing' in place, chapter two examines society's shifting interpretation of the land through eighteenth-century Northern European and British paintings.

Substituting the present evolutionary methodology used to account for physiological responses with that of a cultural model continues in chapter three, employing an historical illustrative with nineteenth-century American landscape painting. Underscoring the important role that the landscape genre has played in the formation of the American identity reveals how its impact still drives American ecological and environmental awareness today, inevitably affecting the significance and perception of the land. While establishing that the present scholarly method of evaluation needs to be readdressed, this dissertation concludes by attempting to resolve some of its insufficiencies and to provide an alternative and more productive path for future research into the fine art and health care relationship.

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## Introduction

The notion that nature provides therapeutic benefit is not new. Writings dating from ancient Rome describe the city's residents' belief that exposure to nature was a valued contrast to the urban pollutants such as noise and congestion.[1] However, it's only been in the last fifteen years that attempts to examine the potential health benefits resulting from *viewing* nature, even photographic or painted images of it, through rigorous scientific experiment have become extensive.[2] [3] Research has established that certain types of landscape scenes attract higher preferences and will actually produce stronger positive physiological responses for the viewer.[4] This information is being taken seriously enough that it's being added to an *evidence-base*, transforming building project blueprints and prompting designers, contractors, and hospital committees to rethink the construction of new healthcare institutions, inside and out.[5] Obviously impacting how much and which types of artwork will be purchased, interest

[1] Ulrich, Roger S., et al, "Stress Recovery During Exposure to Natural and Urban Environments", *Journal of Environmental Psychology*, Vol. 11, 1991, pp. 204

[2] Zuckerman Marvin, Ulrich, Roger S., & McLaughlin, John, "Sensation Seeking and Reactions to Nature Paintings", *Person. Individ. Diff*., Vol. 15, No 5, 1993, pp. 563-576

[3] Ulrich, Roger S., "A View Through a Window May Influence Recovery From Surgery", *Science,* 1984, p. 42 The initial thrust of this research began in 1984 when a study was carried out on the therapeutic value of window views overlooking a natural environment from a hospital recovery room versus recovery rooms without a window. Post-surgical recovery times for patients staying in hospital rooms with the window were recorded as improved, providing a reduction of 8.5% to their post-operative stay, with patients requiring less pain medication and suffering from fewer complications.

[4] Ulrich, Roger S., "Human Response to Vegetation and Landscape", *Landscape and Urban Planning*, Vol. 13, 1986, p. 37, and Ottosson, Johan, & Patrik Grahn, "A Comparison of Leisure Time Spent in a Garden with Leisure Time Spent Indoors: On Measures of Restoration in Residents in Geriatric Care", *Landscape Research*, Vol. 30, No 1, 2005, pp. 23-55. Ulrich's hypothesis in which a person suffering from stress and anxiety will experience a reduction in symptoms when introduced to a 'non-threatening' natural environment such as a park has been measured and confirmed with psychological (like/dislike) responses as well as with scientific analysis. Studies conducted in both Sweden and America recorded desirable physiological outcomes involving brain electrical activity and increased concentration levels as well as verifying reductions in heart rate, skin conductance (i.e. heat analysis), and blood pressure. Similar results from viewing landscape scenes suggest that landscape painting could also influence the mind's perception of pain, stress, and anxiety, which translates into direct health benefits.

[5] "Evidence-based healthcare designs are used to create environments that are therapeutic, supportive of family involvement, efficient for staff performance, and restorative for workers under stress." Source: The Centre for Health Care Design, (2006), *Definition of Evidence-Based Design*, Retrieved 23 October 2007, from http://www.healthdesign.org/aboutus/mission/EDB_definition.php. Also see website press releases for the numerous projects and recognition this organization is currently receiving. http://www.healthdesign.org/aboutus/press/releases/

and opinions are being strongly voiced by all concerned; artists, staff and professionals, media, and hospital boards dealing with finance to name a few.

Roger Ulrich, Director of the Centre for Health Systems and Design at Texas A & M University is the recognised leading expert in this area of research publishing numerous papers on the health/nature correlation since the late 1970s. Ulrich claims "substantial progress has been made in identifying visual characteristics of natural landscapes that influence aesthetic preference of liking… with aesthetic preferences for natural settings usually holding across individuals, groups, and even different Western cultures."[6] Psycho-physiological measurements of responses to the landscape images were assessed as research teams formulated rationales for the results based on evolutionary underpinnings.[7]

However, although this research is finding firm backing on both sides of the Atlantic, [8] upon closer scrutiny, in particular to that surrounding affective response to landscape paintings, the evidence-based conclusions do not appear to be as solid as one is led to believe.[9] Moreover, a preference for some paintings over others in Ulrich's study *Sensation Seeking and Reaction to Nature Paintings* (1993) seem to contradict the psycho-evolutionary model these studies presently employ to explain research responses, yet this approach is still being used.[10]

Conflicts arise when an investigation into the relationship between perception and the attribution of meaning takes place. Therefore, after annotating Ulrich's current psycho-evolutionary analysis methods, chapter 1 will continue with a semantic line of enquiry further frustrating the current assumptions. Delineating some of the complexities of how meaning is

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[6] See Appendix A for a list of the preferred natural characteristics. The photographic scenes for this study were noted as *unspectacular* natural views.
[7] Ulrich, R. S., 1991, pp. 207-209. This evolutionary approach will be explained in more detail in chapter 1.
[8] A search for Roger Ulrich on the Hospital Development (HD) website will confirm the impact he has had on the British health system. HD is the leading British information resource covering design, construction, refurbishment, facilities management and maintenance in healthcare establishments. Source: www.hdmagazine.co.uk. See also appendix C for news articles demonstrating Ulrich's impressive reputation within the NHS.
[9] The word *affective* will be used throughout this discussion synonymously with emotion, although it could also be understood in a somewhat broader context comprising both emotion and feeling in terms of physical states.
[10] See Parsons, Russ, et al., "The View From the Road: Implications for Stress Recovery and Immunization", *Journal of Environmental Psychology,* 18, 1998, pp. 134-135

formed, an exploration into the concept of the image and how it is actually *perceived* will proceed; this will provide the scaffolding on which the following chapters will be built.

Rather than concentrate only on its weaknesses however, this essay will endeavour to provide an alternative and more capable analysis to Ulrich's research while reinterpreting its conclusions. To effectively accomplish this, chapters 2 and 3 will enlist the use of an historical illustrative further developing the concepts presented in the first chapter while at the same time, attempting to cement a counter-approach to the psycho-evolutionary paradigm presently being used. It should be noted that this essay only focuses on particular representational paintings of the 1993 study rather than the expressionist and semi-abstract images also making up two of Ulrich's five categories.[11] This is to keep the focal point as refined as possible and due to previous findings claiming 'abstract' work does not provide the same positive health benefits that representational landscape painting does for patient recovery. [12]

As the impetus for this discussion has evolved from an interest in Ulrich's work, it makes sense to use his 1993 paper as the 'base camp' from which to launch a successful exploration. By subdividing the landscape paintings from this paper's present categories derived through formal characteristics to conditions instead of provenance, cultural implications will emerge with intent to establish a more plausible interpretation of the respondent's reactions. So while chapter 2 will take on a Northern European/British flavour as it delves into the history of the sublime and the consequent reinterpretation of both land and landscape painting, chapter 3 will trace the path of American nineteenth-century landscape painting as it played its role in the formation of the country's identity and consciousness which in turn has shaped its views of the environment today.

[11] See Appendix B for a list of the paintings used in the study and the five categories they were divided into.

[12] Ulrich, R.S., and O. Lunden, "Effects of Nature and Abstract Pictures on Patients Recovering from Open Heart Surgery." Paper presented at the International Congress of Behavioral Medicine, 27-30 June 1990, Uppsala, Sweden. In a study at Uppsala Hospital in Sweden, Ulrich found that while post-operative heart surgery patients responded positively to realistic nature scenes, abstract art made up of either curvilinear or rectilinear forms actually received a negative response compared to the control condition of a blank wall.

Word restriction has only enabled a serious investigation of a selection of the thirty-four paintings from Ulrich's study with four focus paintings divided into, as mentioned above, Northern European/British and American subgroups. Although a cross-cultural examination such as this could perhaps be seen as expanding the sphere of enquiry into unmanageable dimensions, it is essential to underscore as many cultural significations as possible as an applicable alternative to the research conclusions rests firmly upon this basis.

The following chapters will illuminate many of the hurdles research such as Ulrich's will have to overcome if it hopes to achieve greater acceptance but with the necessity to cover a broad range of topics, this discussion will also be opening itself up to unavoidable scrutiny. The discerning will recognise limitations emerging from the inability to provide fuller descriptions or examples, impacting the essay and denying Ulrich's work the possibility to fully defend itself. This limited description does however assert that the focus of this essay is concept-based rather than purely narrative. Regardless, although this discussion is neither meant nor able to be exhaustive, it will, through a logical line of enquiry aim to furnish the reader with a functional and constructive understanding of the fine art/health benefits debate.

## I The Landscape Perceived: Establishing the Boundaries of Reality

The environmental psychologist, Joachim F. Wohlwill (1928-1987) argued nature is a "natural psychological category" and that the differences between the natural and the man-made are recognised by the viewer through learned processes that allow an immediate discrimination between the different forms making up the two categories.[13] Others such as Ulrich endorse the belief that one's adeptness to differentiate so readily between man-made and natural visual stimuli is part of an *unlearned* capacity stemming from evolutionary mechanisms.[14] Interestingly and more closely affiliated with Wohlwill's statements, are the numerous test results proving adults exhibit different aesthetic preferences for natural environments to children.[15] These results tend to support the conviction that an affinity to landscape scenes over urban is weighted through learned behaviour. This would then also lead one to believe that particular *types* of landscapes preferred would be culturally or experientially conditioned. How then can Ulrich make such far-reaching statements indicating the kinds of landscape scenes that will provide the viewer with the most appropriate stress reductive qualities? To answer this question, a brief annotation of the psycho-evolutionary theories used to assess Ulrich's evidence-based research is presented below.

Study into evolutionary mechanisms affecting cognition and behaviour has found its way into all areas of human developmental research, the arts included.[16] Upon this platform and after reviewing "scores of empirical studies on affective reactions to nature", Ulrich makes the assumption that preference for one nature scene over another is, in a sense, a form of

[13] Wohlwill, J.F., "The Concept of Nature: A Psychologist's View", *Human Behaviour and Environment,* Vol. 6, No 6, 1983, pp. 5-37.
[14] Ulrich, R. S., 1986, p. 36, Ulrich, R. S., 1991, pp. 207-209, Parsons, Russ, et al., 1998, pp. 134-135
[15] Zube, E.H. Pitt, D.G. and Evans, G.W., "A Lifespan Developmental Study of Landscape Assessment", *Journal of Environmental Psychology*, Vol. 3, 1983, pp. 115-128
[16] Dissanayake, Ellen, "Art as a human behaviour: Toward an Ethological View of Art", *The Journal of Aesthetics and Art Criticism*, Vol. 38, No. 4., Summer 1980, pp. 397-406

natural selection.[17] Self-preservation drives one to prefer a landscape scenario that would ultimately be of the most benefit to the viewer in terms of survival. For example, in Ulrich's *Human Responses to Vegetation and Landscapes* (1986) study, he explains the photographic image of a savannah or park-like scene [Plate 1] is consistently more highly rated than a scene such as a thick wall of trees [Plate 2] as it has a stronger focal area, a moderately high level of depth and the ground is even and uniform.[18] These natural attributes allow the viewer to more easily assess the environment in terms of survival and adaptive significance such as safety (from predators or natural dangers such as cliffs or chasms), sustenance (ie. the possibility of locating or hunting for food), while also providing options for rest and shelter. Instinct then becomes the key to eliciting like-dislike feelings "which motivate approach-avoidance behaviours appropriate to the observer's sense of on-going well-being."[19]

This tool for survival is dictated largely by awareness of pain and fear with stress and anxiety a manifestation of both.[20] Although psycho-neurological research has established that emotions and physiological responses are interconnected through highly complex cognitive and physical processes, it has largely been found that fear is the most *instinctive* of emotions and precedes thought.[21] With this knowledge, the logical conclusion would lead one to believe that a predisposition for particular landscapes or environments conducive to survival would be necessitated, most notably during times of stress, due to the body's commitment to maintaining homeostasis or a *healthy equilibrium*.[22]

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[17] See the plethora of research journal articles listed in Ulrich's 1993 study spanning such diverse fields as environmental psychology, landscape architecture, and human geography.

[18] Quality reproductions of images used for Ulrich's 1986 study unfortunately could not be procured for this paper; however, plates 1 and 2 represent good examples of the types of nature scenes used in the study.

[19] Ulrich, 1986, p. 32

[20] Lazarus R. S., *Stress and Emotion: A New Synthesis*, 1999, pp. 129-164. Understanding how physiological impairments are often a product of stress or anxiety provides the backbone for Ulrich's research into the healing benefits of nature. Stress and anxiety are a consequence of physical or psychological trauma, which inhibits the effectiveness of the body's healing mechanisms. When stress and anxiety is reduced eg. through exposure to nature, the healing processes become more efficient.

[21] Debiec, Jacek, & Ledoux, Joseph, "Fear and the Brain", *Social Research*, Vol. 71, No 4., 2004, p. 814

[22] Ottosson, Johan, & Patrik Grahn, "Measures of Restoration in Geriatric Care Residences The Influence of Nature on Elderly People's Power of Concentration, Blood Pressure and Pulse Rate", *Journal of Housing for the Elderly*, Volume: 19 Issue: ¾, 2006, pp. 229-258

Psycho-evolutionary theories would suggest that although the meaning placed upon imagery may influence one's emotional response to it, fear antecedes this *modus operandi*, explaining why the second photograph [Plate 2] would be less preferred. The high visual complexity is difficult to assimilate due to lack of structure and depth, which debilitates any definite focal point. These rough and uneven 'textures' restrict views therefore presenting one with a difficult terrain to assess while entertaining the possibility for dangerous features or elements. Ulrich's conclusions rest on the notion that the mind, governed by survival instincts and fear intuitively dislikes and avoids the second image as it provides very little with regards to survival and longevity to what the first landscape has to offer. However, this limited approach to interpreting the results tends to neglect that one's conscious and unconscious awareness of the natural environment and the physiological affects produced by it has evolved not only in response to biological needs but also through social, religious, and artistic intervention.[23]

To elaborate on the above observation and more fully illustrate the conflicts raised by Ulrich's research, one must be directed towards the now infamous question posed by E.H. Gombrich in his book, *Art and Illusion*. While looking at Alain's New Yorker Magazine cartoon [Plate 3] of an Egyptian 'life-drawing' class, Gombrich inquired, "Why is it that different ages and different nations have represented the visible world in such different ways?" Gombrich concluded that the Egyptians might have actually perceived nature differently than we do.[24] Post-modern academia continues to validate Gombrich's observations, often with such fervour that today it's generally professionally hara-kiri to promulgate some concrete universal declaration, particularly in the field of the arts, as Ulrich

[23] Watkins, Alan ed., *Mind-Body Medicine*: *a Clinician's Guide to Psychoneuroimmunology*, New York; Edinburgh, 1997, p. 1. Scientific research under the name of Psychoneuroimmunology (PNI) is just beginning to make headway into the complex connection between perception and the healing process as it investigates the psycho-physiological relationship with the immune system. Recent studies are providing evidence that "the autonomic, endocrine and immune systems are not autonomous, but engage in an interactive dialogue with each other and with higher perceptual centres and limbic emotional centres to maintain health and fight disease."

[24] Gombrich, E. H., *Art and Illusion*: *a study in the psychology of pictorial representation*, 4th ed., London, 1972, p.3

is attempting. Nevertheless, his research is finding firm support from many sectors.[25] A more thorough investigation into the differences between *looking* and *seeing* must commence, however, if one desires greater insight into the questions and debates surrounding these studies.

An awareness of the complexity involved in the act of looking and attributing meaning can be traced at least as far back as the 1st century AD with Pliny's statement that, "The mind is the real instrument of sight and observation, the eyes act as a sort of vessel receiving and transmitting the visible portion of the consciousness.'[26] These long confirmed assertions are important as, undeniably, fear is frequently the psychological response to visual stimuli. Therefore, although laboratory studies prove that fear does precede thought, paradoxically it still must often be regarded as conditioned and therefore, subjective. One person's interpretation of a particular environment may elicit a fear response while for someone else it does not.[27] In the context of this discussion, this is where a science such as ethology struggles if attempting to establish sweeping apodictic claims to the components of human behaviour.[28]

So how does the difference between 'looking' and 'seeing' affect a viewer's response to an image such as those incorporating Ulrich's studies? Perhaps first it's best to begin… at the beginning, by exploring the concept of the image to decipher *how* a subject in a photograph or painting is being represented. Therefore, instead of approaching Ulrich's research results with the question, "How does one's experiential and subjective response affect interpretation?" one should begin by coming from a slightly different angle to ask, "How has the object or image in question been created ultimately affecting one's interpretation?"

For example, a photograph, which many naively describe as an appropriate representation of the prototype, will have been manipulated in various ways to serve its master, the

[25] Lists of British and American projects influenced by the research of Ulrich and evidence-based design can be found on the websites www.hdmagazine.co.uk and www.healthdesign.org.
[26] Gombrich, E. H., *Art and Illusion*, London, 1972, p. 12
[27] Beck, Aaron T, and Emery, Gary, *Anxiety Disorders and Phobias: A Cognitive Perspective*, New York, c1985, pp. 18-22
[28] Ethology is the study of biology as behaviour and is firmly rooted in evolutionary assumptions.

photographer.[29] The photographer can quite easily engineer a photograph through choice of lens, shutter speed, F-stop, developing techniques etc. to alter the final image. Cropping, blurring, contrasting, enlarging, choice of printed format (matt, gloss, canvas, coffee mug…) or the infinite number of other effects computer software such as Adobe Photoshop can now perform can all be used to manipulate the *reality* of the final product. This is not to say that the photographic imagery used in Ulrich's studies was manipulated intentionally to elicit particular responses but that inevitably, all forms of reproductions undergo various metamorphoses that will alter one's interpretation of it.

Take the two photographs of plates 1 and 2 again. Being printed replicas they are not made up of the same light one would see when viewing the actual landscape. The printing process involves a series of transformations using the primary colours of cyan, magenta, yellow, plus black, the minimum amount of colours necessary to create an adequate 'duplicate'. If this representation is then reproduced into slide format and projected on to a surface it again uses another entirely different system to recreate the colours and the image. Each subsequent transformation will inevitably take on different connotations subtly affecting one's psychological response to it. That is, each alteration is significant as "neurological studies show there is a large distinction between the sensation of colour and its identification demonstrating colour is intimately bound up with language, a system of arbitrary signs, and must also then be a function of culture."[30] [31]

Ulrich's studies, attempting to work within the confines of scientific systematisation, force their subjects into a completely false environment, undoubtedly skewing responses. In addition, an infinite amount of environmental conditions and variables; the size of the images,

[29] Gombrich, E. H., *Art and Illusion*, London, 1972, pp. 30-33
[30] Gage, John, *Colour and Meaning: Art, Science and Symbolism*, London, 1995, p. 21
[31] For an interesting theory on the biased contribution of colour film processing to culture see Mark Simpson's 'The Colour of Whiteness' from The Independent on Sunday, 14 Sept. 2003. Simpson argues that the colour balance of 1950s colour photography is pink-biased due to the dominant Kodachrome film being optimised for Caucasian skin, and that Fuji film reflected the same imperative, but for Asian skin colour.
Source: Simpson, Mark, http://findarticles.com/p/articles/mi_qn4159/is_20030914/ai_n12745293

how they were presented and for how long, the nationality or religious beliefs of the candidates selected for the surveys, or how the study questions were formulated, are only some of the considerations supporting reservations for this type of evidence-based research and an indicator that the published results are not so cut-and-dry as many may choose to believe. [32] [33]

A study such as *Sensation Seeking and Reaction to Nature Paintings* will struggle to find complete acceptance in both the spheres of science and of art because of its inherently inefficient testing procedures, its sweeping generalisations and the undeniable connection between culture, perception and meaning. This linguistic quality or precondition of colour mentioned above emphasises that any photographed or painted image will be imbued with cultural intimation on the most fundamental of levels. Studies of relationships between cultural differences and landscapes have found overwhelming evidence that people of a similar culture will, when looking at the same landscape, have similar cognitive responses.[34] Furthermore, preferences for a particular type of environment i.e. the geological features, indigenous vegetation, particular colour schemes, etc. which contribute to its appearance, have been found to increase depending on familiarity. [35] Therefore, a painting of a landscape obviously impregnated with cultural references would, by and large, appeal to those whose culture the painting originated from regardless of its perceived benefit for survival.

To return to Gombrich's question above and to further demonstrate this intrinsic function of language and culture in connection with painting, I've included an observation of Winston

[32] The subjects of Ulrich's 1993 study consisted of American university graduates participating in an environmental aesthetics seminar and upper-level Behavioural Geography students.
[33] In May 2007, Dr. Bernard Ewigman, Chairman and Professor of Family Medicine at the University of Chicago, explained his reservations concerning this new path of scientific investigation into the health benefits of fine art. He believes the term itself, 'evidence-based' in this context can first of all be misleading possibly to be used as a marketing ploy, and secondly, inadequate as a scientific model to evaluate particular aspects of fine art. Source: Domke, Henry, (7 May, 2007) *Evidence Based Design: How Good is the Evidence*? Retrieved 15 November 2007, from http://www.healthcarefineart.com/2007/05/ evidence_based_.html, 15.11.07
[34] Kaplan, R., and Herbert, E.J., "Cultural and Sub-cultural Comparisons in Preferences for Natural Settings", *Landscape and Urban Planning*, Vol. 12, 1985, pp. 281-293
[35] Hull, R.B., and Revell, G.B., "Cross-cultural Comparisons of Landscape Scenic Beauty Evaluations: A Case Study in Bali", *Journal of Environmental Psychology*, Vol. 9, 1989, pp.177-191

Churchill's, who happened to be an amateur watercolourist. Describing the complexities of the cognitive process that took place while he worked, he considered:

> It would be interesting if some real authority investigated carefully the part which memory plays in painting. The canvas receives a message dispatched… from the natural object. (But) it has been transmitted in code. It has been turned from light into paint. It reaches the canvas a cryptogram. Not until it has been placed in its correct relation to everything else that is on the canvas can it be deciphered, is its meaning apparent, is it translated once again from mere pigment into light. And the light this time in not of Nature but of Art.[36]

Churchill recognised some of the dilemmas a painter must accept when deciphering or decoding what is before him or her. The painter works within the restrictions of his or her medium and skills, physical limitations (eg. the eye can only see so far) and imagination, in a subjective manner, which knowingly or not, conforms to a cultural interpretation of his or her subject. [37] From the nuance of the questions Churchill had asked himself and through cultural reverberations and his own experiences, the subject of his painting would be transformed into an amalgamation of signs and symbols of Western origin. To present an analogy, this text being read now is an ordered group of marks, or lines and dots that, when interpreted within the system and structures placed upon them by the English language, they develop significance and form meaning. Similar to this linguistic mechanism is the visual workings of one's interpretation of objects or events from the physical world. One's 'visual language' is a learned system, therefore undeniably culturally conditioned, which is employed when

[36] Gombrich, E. H., 1972, p. 34

[37] For more information on the limitations of the eye and its relationship with the brain see chapter 3 of: Zaidel, Dahlia W., *Neuropsychology of Art: Neurological, Cognitive and Evolutionary Perspectives*, New York, 2005, pp. 49-74

looking, to reassemble the perceived objects through the action of the brain's nerve cells into symbols that form meaning and relevance.[38] So while Churchill's semantic enquiry highlights that the signs and symbols of a painting continually shift to form meaning, they must still conform to the provisions imposed by the individual through factors such as culture, education, or age.[39]

Ulrich's study focuses primarily on the measured psycho-physiological responses of its subjects to form an evidence-base rather than a comprehensive explanation for the results; however, by avoiding any cultural premise for the test responses he drastically devalues the work. What could almost be regarded as something of an afterthought, Ulrich instead issues a rather incomplete and deficient theory to evaluate the interpretation and attribution of meaning to the landscape images.[40] As explained above, this interpretation of signs is ultimately responsible for the emotional, hence many physiological affects, and therefore it is essential for one to enlist a superior system of subject analysis and questioning to reach more explicit and useful postulates.

In conclusion, the contrast of Ulrich's psycho-evolutionary theory with that of a more semantic approach exploring how one perceives and applies meaning to one's environment has perhaps provoked more questions than it has answered. Moreover, an explanation of how the creation, manipulation and method of presenting an image can impinge upon one's cognition only draws attention to the fact that meaning is fluid and therefore, by nature, meaning will always be in a state of flux. Although one must then question the validity of applying an uncompromising evolutionary theory to the psycho-physiological responses to landscape images, particularly those such as paintings, which have been further inoculated with cultural triggers, how could a more solid approach to opening up the mysteries of

[38] Ramachandran, Vilayanur, *The Emerging Mind: The Reith Lectures*, Oxford, 2003, p. 28
[39] Albertazzi, Liliana ed., *Meaning and Cognition: A Multidisciplinary Approach*, Amsterdam, 2000
[40] One theory behind Ulrich's use of the psycho-evolutionary model employed to rationalise test results is that the words *scientific* and *evidence-based* attached to such research may place the work in higher regard in the medical circles it associates itself with leading to more credibility and therefore more likelihood of funding opportunities.

individual affective responses to landscape images be formulated? To offer an alternative proposal for assessing the research results, an historical investigation of paintings from Ulrich's 1993 study will ensue.[41] This investigation will aim to prove that one's preference for a landscape painting is not only influenced by its cultural infusions but also that the notion of *how* a society perceives its land and engages with it has in fact been partially shaped by the creation and dissemination of its iconic landscape images.

[41] As mentioned in the introduction, only four paintings have been chosen as representatives from Ulrich's 1993 study. They were chosen on the basis that they stood out for scoring very high for overall preference regardless of the respondents' personality traits (high or low sensation seekers) as well as for their inherent landscape characteristics contradicting psycho-evolutionary models for landscape preferences.

## II The Landscape as Icon: Informing a New Religion

Humanity's transcendent connection to the land has been illustrated at least as far back as ancient Greece in Homer's *Iliad* and the *Odyssey;* however, it was more than two millennia later that the notion of the sublime truly blossomed with the literature, art and imagination of Britain and Northern Europe. [42] Originally, the sublime was used to describe a highly evolved and lofty use of language or thought that provoked feelings of reverence and awe but while its demarcation of meaning has shifted with time, its essence has endured. Immanuel Kant's (1724-1804) late eighteenth-century definition does however still provide a consistent contemporary interpretation. Kant expressed the sublime as "a sort of delightful horror, a sort of tranquillity tinged with terror" and although his description didn't focus entirely upon natural phenomena, rapid social change had been occurring throughout Europe, which was increasingly impacting society's understanding of, and attraction to the sublimity of the natural environment.[43] This chapter will explore how some of these changes influenced landscape painters and their approach to their subject matter *and* how their works in turn forged a new interpretation of nature.

Enlisting the help of two paintings from Ulrich's study (1993), an historical journey will embark to unravel the transformation of the Western perception of and relationship with its uncharted and remote terrain. An account of important eighteenth-century Northern European and British social shifts will build an historical framework with which to more firmly place the components of the last chapter, the complexities of perception and understanding, while delving into the motivation behind the making of the paintings will push these ideas into the larger, social realm.

[42] Wilton, Andrew and Barringer, Tim, *American Sublime: Landscape Painting in the United States 1820-1880*, London, 2002, p.11
[43] *ibid*., p.13

By the late eighteenth century, economic and cultural growth on an exponential scale was sweeping across the Continent and Britain, riding the coattails of the Industrial Revolution. A dramatic metamorphoses was taking place in social and political arenas while over a century of scientific discoveries was contributing to the ordering of the world and what seemed to be everything in it, into convenient 'boxes and categories' awaiting further analysis. Worries were building that science was beginning to form its own aesthetics leading to a belief that "aesthetics might legitimately be put to the service of scientific enquiry."[44] How little was the full realisation of this sentiment?

In response to industrialisation, unstoppable expansion of the cities, literature and art's scientific rationalising of nature and the disillusionment with what seemed to be an obsolete and irrelevant mode of Christian orthodoxy, a wave of unease was sweeping across Northern Europe.[45] Although questions concerning the nature of God had plagued humanity since the beginning of time, with the ceaseless battering of the archaic canons of religious imagery by the Northern revolutionaries, they now needed to be readdressed. This abandoning of previous conditioned knowledge (religious canons) and an apprehension of the new knowledge (science) helped to form the movement known as Romanticism which went on to embrace the Northern countries unconditionally.

The Reform blurred and confused interpretations of spiritual and symbolic imagery while, perpetuated through Protestant iconoclast mentality, classically inspired pictorials of the Book of Genesis or Christian martyrs no longer captivated the minds or performed the functions this young religious movement desired.[46] To develop a relationship and stronger communion with the Creator, a visual and spiritual black hole needed to be filled leading to artists and writers assuming the role of 'myth maker.' New visual icons which focussed on

[44] Wilton, Andrew et al, 2002, p.12
[45] *ibid*., p.11-13
[46] Morgan, David, *Protestants & Pictures: Religion, Visual Culture and the Age of American Mass Production*, New York; Oxford, c1999, pp. 12-18

society's relationship with a wild and primordial land and very much inspired by the increased travel in vogue with the fashionable Grand Tour, were being developed by Northern painters like Caspar David Friedrich (1774-1840) and Philip James De Loutherbourg (1740-1812). This was in no way an attempt to deviate from Christian spirituality; it was in fact, the pursuit to strengthen one's relationship with God through a reunification with a more omnipresent and *conceivable* divinity. This can be substantiated by the writings of Friedrich Ernst Daniel Schleiermacher (1768-1834), A German theologian and philosopher who issued a "plea to preserve the spiritual core of Christianity by rejecting its outer rituals and by cultivating a private experience of piety."[47] And so the Roman Catholic concept of an omniscient Father Figure was being superseded by a more pantheistic vision entailing the mysteries of nature and containing what seemed to its proponents a truer and more accessible path to the divine.

Friedrich's *The Polar Sea* of 1823/24 [Plate 4] exemplifies this burgeoning of awe and respect for the natural world and can help illuminate the emotional intricacies he was attempting to conceptualise. Moreover, this image can be used to emphasise how the undercurrent of a society's mindset impacts the tones of its visual representations and fundamentally shapes its culture, dictating how it engages with its environment. In response to the Protestant movement, Friedrich and his contemporaries were developing new pictorial devices, often with the literature of the day as their inspiration in an attempt to charge their paintings with universal meaning and undoubtedly to reach a growing audience. For example, Edmund Burke (1729-1797) wrote of the sublime in his *Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful* (1757) in terms of its "privation, vastness, magnificence, obscurity and darkness", cognate to terror and evoking the strongest possible response one could experience.[48] In *The Polar Sea*, Friedrich employs many of these

[47] Rosenblum, Robert, *Modern Painting and the Northern Romantic Tradition*, London, 1978, p. 15
[48] Wilton, Andrew et al, 2002, p.13

attributes attempting to emulate that which is incomprehensible, both the subject matter being revered *and* the emotions consequently elicited by it. With the application of these new devices, landscape paintings began to take on new significance as intense emotion could be invoked through the emerging awareness of the spiritual aspects of the land.

*The Polar Sea* presents a sombre view of the last glimpse of a shipwreck, crushed and broken-up against the mighty Arctic icecaps in a powerful allegory alluding to the omnipotence of nature and humanity's ultimate destiny. In a foreign and "frozen world that has turned into a cemetery," devoid of flora and fauna, Friedrich still manages to allude to the mysteries of life.[49] The once colossal ship is reduced to a tiny and inconsequential speck in this alien terrain and even as the icy waters slowly swallow it, new icecaps shift and form effortlessly to take its place. With no trace of human existence save the last glimpse of the doomed ship as it makes final preparations for its watery grave, Friedrich beckons the viewer to acknowledge and, more importantly *feel* a divine presence through the mysterious and unrelenting forces of nature.

After completing this painting, critics accused Friedrich of inconsistencies in the picture; the ice was not the right colour and the ship was too small in contrast with the icecaps. But it was with irregularity, inconsistency and ambiguity, that new meaning could be formed.[50] Subjective interpretation and personal response, although regularly prevalent in the natural realms of life and relationships now began to infiltrate the world of art. Unlike the Roman Catholic didactic painting; aesthetically pleasing, imbued with the wisdom and doctrine of the Church and created to provide a lesson describing how *all* must live their lives, Protestant imagery became more ambiguous.

Although there's no denying that hidden meaning has always been a part of art and has played a prolific role in Catholicism as the concepts of God and religion are both predisposed

[49] Rosenblum, Robert, 1978, p. 34
[50] Åhlberg, Lars-Olaf, "Understanding and Appreciating Art: The Relevance of Experience", *Journal of Aesthetic Education*, Vol. 33, No. 1, Spring 1999, p. 22

to abstract forms of thought and communication; the relevance of experience, subjectivity and personal redemption began to take on new significance in the Romantic era. This ambiguity was being intentionally exploited by Friedrich to develop imagery via the mysteries of nature that could precipitate intense emotion and awe within the viewer. "The pure blue of the sky with the sun in the central axis is an allegory of transcendence and eternity, since the rhythm of the times of day is absent at the North Pole. In contrast, the wreckage of the ship, whose embedment in the ice floes recalls a grave, signifies the ephemeralness of man."[51] The imagination is a wonderful tool and the Northern Romantics were not only able to utilise theirs to succeed in "naturalising the supernatural and humanising the divine," but they created "a whole new world of esoteric religious iconography culled…with landscape imagery for a totally abstract pictorial language."[52]

Friedrich enticed his paintings, which encapsulated this alternative concept of divinity, to communicate to an increasingly self-aware population a message that could transcend that of previous religious iconography. *The Polar Sea* elicits a purity and clarity that was lost in the decadence of the Baroque period [Plate 5] and, in the eyes of the Protestant Reformers, traditional Christian pictures altogether. The sublimity of nature was able to elucidate the mysteries of life to an informed, scientific-minded society while paradoxically speaking to it through seemingly primordial means predating Christianity. This shift in preference for what was now being regarded as powerfully moving, spiritual painting was having an indelible impact on how the Northern European society cognitively engaged with the art of this ubiquitous movement just as their perception of the rugged and indomitable land was also being altered.

Of course *The Polar Sea* would not have been viewed by everyone, as 'high art' then as it still does today, lived mainly in the sphere of the educated and elite. However, this

[51] Tilghman, B.R., *Wittgenstein, Ethics and Aesthetics: The View from Eternity*, London, 1991, p. 120
[52] Rosenblum, Robert, 1978, p. 70, 196

intellectual and spiritual zeitgeist was spreading rapidly through a multitude of vehicles, all flavouring each other with the newfound spiritual significance of the land. The ever-pervasive motif of the sublime would have most obviously concealed its way into the eyes and minds of the masses through all forms of literature, prints or paintings.

An earlier example of one such work that even today continues to find new life with the numerous reproductions of it bought from the Internet (a simple Google search of its title will verify this) is Philip James De Loutherbourg *An Avalanche in the Alps* of 1803 [Plate 6]. Through its popularity, it undoubtedly increased the public's desire to embrace the terrible forces of nature. The Alps were well known already as traversing them was essential for the northern route of the Grand Tour; however, the beauty seen in their perilous and precarious temperament hadn't fully captured the imaginations of the British until the late eighteen hundreds. By the turn of the century, Romantic literature describing the Alps horrible majesty was finding its way into the homes and hearts of a mass audience as they quenched their thirst for this heroic landscape genre with writings by the likes of William Wordsworth (1770-1850) and George Gordon Byron (1788-1824). Just as importantly, the paintings celebrating the sublimity of these awe-inspiring mountains by artists such as Friedrich and De Loutherbourg were also playing a crucial role in this new affection while reciprocating inspiration for the writers. Lord Byron, himself making the mountainous journey published his poem *Manfred* in 1817, which recounts the strange and supernatural life of a Faustian noble living in the Bernese Alps. It's unknown whether Bryon had viewed De Loutherbourg's painting but his poem beautifully describes the essence of its sublime theme:

> Ye toppling crags of ice!
> Ye avalanches, whom a breath draws down
> In mountainous o'erwhelming, come and crush me!
> I hear ye momently above, beneath,

Crash with a frequent conflict; but ye pass,

And only fall on things that still would live.[53]

De Loutherbourg's painting captures three men overwhelmed by the thunderous onslaught of an unyielding avalanche. They throw their arms up in trepidation, their faces fixed with horror, too terrified to even run and hide behind the precipice as death comes crashing down. Thoughts of safety and goodwill for the others are instinctively abandoned as the true concept of mortality forms in each man's consciousness. An encounter with the full force and vehemence of the sublime could not be experienced indirectly as, by nature, it was only accessible as a solitary experience. William Wordsworth (1770-1850) communicated this when writing of his own travels. "Among the more awful scenes of the alps, I had no thought of man, or a single created being; my whole soul was turned to him who produced the terrible majesty before me."[54] De Loutherbourg responded to this bizarre human trait, the desire or need to reach out and touch indescribable fear, by creating a painting of such vast proportion (109.9 x 160 cm) that on close examination, a viewer could almost lose oneself in it, simultaneously becoming both spectator and 'victim'. The immense size of the canvas invoked a psychological participation crucial to the experience of the sublime, allowing one to become the fourth explorer attempting to flee as the horrific event unfolds.

Each person seeing the original painting, in 1803 or today would of course bring to it a different set of cognitive preconditions. For someone who had actually made the passage and breathed the thin air of the dizzying alpine heights, it could stimulate the memory, inciting sensations of smell or taste, as well as elicit long-forgotten emotions. For most however, their reservoir of experience would be made up of sensations of a more fictitious nature, with literature or of viewing similar pictures, or perhaps the imaginative embellishment of local

[53] Byron, George Gordon Byron, Baron, *Manfred: A Dramatic Poem*, London, 1817, p.23

[54] Bois, Catherine, (n.d.), *The Natural Sublime in Wordsworth's Poetry and Romantic Landscape Paintings*, Retrieved 10 December, 2007, from http://www.cercles.com/n1/bois.pdf

mountain hikes. This pool of experience can be regarded also however as something of a collective. The Romantic tradition was, in a sense, conditioning and enabling its society to engage with images such as De Loutherbourg's in a very particular way. This cultural conditioning would become an essential element of how society would view and interpret nature, both real and representational. Michael Baxandall described this process of visual cognition and the relationship between the individual and the society well. A brief synopsis of his text below methodically breaks down this peculiar act of looking while subsequently building it back up into both a subjective and a cultural reflection.

> An object reflects a pattern of light onto the eye. The light enters the eye through the pupil, is gathered by the lens, and thrown on the screen at the back of the eye, the retina. On the retina is a network of nerve fibres, which pass the light through a system of cells to several millions of receptors, the cones. The cones are sensitive both to light and to colour, and they respond by carrying information about light and colour to the brain. It is at this point that human equipment for visual perception ceases to be uniform, from one man to the next. The brain must interpret the raw data about light and colour that it receives from the cones and it does this with innate skills and those developed out of experience. It tries out relevant items from its stock of patterns, categories, habits of inference and analogy… But each of us has had different experience, and so each of us has slightly different knowledge and skills of interpretation.[55]

[55] Baxandall, M., *Painting and Experience in Fifteenth Century Italy*, Oxford, 1972, p. 29

Baxandall explains how one perceives and interprets with this stock or pool of patterns and categories that makes up one's 'visual database'. This database, although accumulated through a lifetime of individual experience also happens to be congenitally linked with the visual culture imprinted on one through geographic location.[56] For example, someone who comes from Stuttgart, Germany and happens to be Protestant should therefore inherently 'read' *An Avalanche in the Alps* differently, come to alternative conclusions and exhibit distinctive psycho-physiological responses to it than, for example, a Catholic farmer from Sardinia. Similar to the Byzantine monk who travelled to Rome and, upon viewing a great Italian Renaissance work could not 'see' the Virgin Mary but only a woman dressed to resemble her [Plates 7 & 8], Northern European Romantic landscape art developed its own individual language of abstract signs and symbols.[57] As this language developed over time, entwining into the fabric of its society, it was assimilated into the unconscious mode of communication and understanding. As explained in chapter one, a painting inevitably becomes an amalgamation of the signs and symbols of the culture it's derived from. In this case, the signs and symbols of *An Avalanche in the Alps* and *The Polar Sea* emerged from Northern European and British lineage. And although anyone could recognise their subject matter, just like anyone could recognise that both the Renaissance painting and the Byzantine icon Annunciations are images of women, one's ability to engage with these iconic landscapes on distinct levels i.e. to have them invoke the emotional response they were created for, would depend on one's fluency in the language they were created with.

To summarise, an historical investigation into the Romantic landscape tradition in Western art identifies and traces the emergence of new artistic devices developed through a shifting awareness of the environment. Inspired by a new pantheistic interpretation of God, natural characteristics of the primordial landscape were exploited and embellished by artists

[56] Yu, Kongjian, "Cultural variations in Landscape Preference: Comparisons Among Chinese Sub-Groups and Western Design Experts", *Landscape and Urban Planning*, 32, 1995, pp. 120-121
[57] Temple, Richard, *Icons: A Search for Inner Meaning*, London, 1982, p. 7

to portray humankind's insignificance in the face of nature. As this interest in the sublime began to infiltrate and affect paintings, leading to the rise of the genre and strengthened by the demand for the heroic landscape in literature, how the viewer engaged with an image, that is, one's cognitive interpretation of it was also changing. Consequently this change was being reflected in how society would actually perceive and respond to its natural surroundings. This symbiotic relationship between the landscape and the painting was integral not only to the moulding of a disparate Northern European and British mindset as they established alternate readings for both the land and the visual arts but also to the evolution of their cultural identity. To take this historical investigation to the next level and to push Ulrich's theories to the limits, a study must be deployed into the full affects of cultural identity on the perception of the land. For this, one must only cast one's gaze across the Atlantic to the young, up-and-coming country of nineteenth-century America.

## III The Landscape as Identity: Ecology and the State-of-Mind

The purpose of this essay is not an attempt to defame the notion that exposure to nature can provide therapeutic benefit to the injured body or wearied mind; however, it *is* questioning current assumptions concerning research into the fine art/health correlation and the explanations attempting to validate the assembled results. So, while this chapter will endeavour to dismantle the present psycho-evolutionary evaluations used to account for landscape painting preferences it will also aim to provide alternative theories for the most conspicuous contradictions of Ulrich's research.

Providing a rich archaeological site with which to address expositions of cultural significance, a study into the provenance of nineteenth-century American art will explore how landscape painting has contributed to the formation of the American identity while shaping the country's perception of its land.[58] Moreover, how this cultural conditioning still influences and motivates the people today by modifying the collective consciousness, driving ecological awareness, and fuelling environmental causes, which will all impact emotional responses to landscape scenes must and will be considered.

Recognising the lack of variation in landscape attributes in the *Human Responses to Vegetation and Landscapes* (1986) study while attempting to establish evidence clarifying which (two dimensional) art would be most appropriate for healthcare institutions, Ulrich composed the *Sensation Seeking and Reactions to Nature Paintings* (1993) study with thirty-four paintings of much more dramatic scene disparity.[59] Contrary to the results from Ulrich's 1986 paper and psycho-evolutionary predictions however, the most preferred images did not rest on a landscape's suitability for survival; in fact, the results presented a conclusion quite the opposite. Interestingly, the nineteenth-century American awe-inspiring and sublime

[58] Groseclose, Barbara S., *Nineteenth-Century American Art*, Oxford, 2000, p. 117
[59] See Appendix B

scenes of Frederic Edwin Church (1826-1900) and Albert Bierstadt (1830-1902) from Ulrich's Romantic category, which often expose the viewer to what could be construed as somewhat foreboding and even dangerous environments received the highest preferences overall [Plates 9, 10 & 11].[60] Why would the respondents deliver these types of reactions? Psycho-evolutionary logic proposes that the study's realistic low-tension landscapes of Friedrich, J.M.W. Turner (1775-1851), or John Constable (1776-1837) should have received the most positive responses [Plates 12, 13 & 14]. To answer this, one must delve into the origins of American landscape painting, exploring how and why it progressed as it did and how its evolution helped to shape the country's environmental consciousness.

Although early nineteenth-century America, still developing via the guiding hand of its intense but intrinsic relationship with Britain was also creating a stronger, more iconographical relationship with its natural terrain, there was distinctive reasoning behind it. Even in its infancy, America recognised its many differences from its founding fathers, in particular its land, with these disparities gradually being exploited to help form an incipient identity. The Romantic phenomenon sweeping across Northern Europe and Britain, fuelled by the exponential expansion of industry and transportation and causing the eradication of its countryside, although being mirrored to some degree by the young country, was not reproducing the same vehement emotions as it was on the other side of the Atlantic. In fact, many eighteenth-century Americans regarded the rugged wilderness as a burden to their existence. This untamed country was even being construed in early art and literature as an evil sent from the hands of the devil himself and imbued with the power to corrupt the most "pure and holy of God's children."[61] One Gaelic poet wrote of his dismay of making the journey across the ocean to the east coast of North America, "We've turned into Indians right

[60] Zuckerman, Marvin, et al., 1993, p. 570

[61] Johns, Joshua, (1996), *A Brief History of Nature and the American Consciousness*, Retrieved 14 November, 2007, from http://xroads.virginia.edu/~cap/NATURE/cap2.html

enough, in the gloom of the forest none of us will be left alive, with wolves and beasts howling in every cranny. We're ruined since we left King George."[62]

By the turn of the century however, those on both sides of the ocean were beginning to see this infinite expanse of untamed land, by Protestant definition - a vision of the divine, in a new light. [63] While Britain's population increased, its rent's soared, and its acreage reduced to make room for livestock, the young America was adopting the appellation of 'God's land.'[64] And just as the Grand Tour had inspired the arts and literature in Britain, more intense exploration and mapping of the countryside increased awareness of its own natural treasures.[65] With the marketing of the land's ineffable beauty, whether it be real or imagined (as the Gaelic poet discovered), migration skyrocketed, as did the bank accounts of many crafty ship-owners and businessmen involved with it.[66] Regardless, the immense wilderness was becoming the source of national pride, and similar to the transformation in image of the Scottish Highlands half a century earlier, it was developing into America's main protagonist through the country's own artistic resources. Building on its individuality and geographic diversity, artists began to abandon much of the classicism of European tradition and turned to indigenous natural phenomena to establish their own culture.[67] Artists and writers such as the poet R. E. Emerson (1803-1882), who likened the young country to the Promised Land, as it too "is as old as the Flood",[68] helped to forge this new identity as the rugged American landscape was beginning to be touted as the new Eden.

Frederic Church, a deeply religious man from Connecticut and arguably the most talented of the Hudson River School landscape painters, successfully conjoined with his work two

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[62] Calder, Jenni, *Scots in Canada*, Glasgow, 2006, p. 36

[63] The understanding that America, founded upon a Protestant-based infrastructure with Protestants still making up over half of the population today, therefore with the majority of the university students who made up the 1993 study also likely being Protestant, further develops the discussions from chapter 2 and will be instrumental in the arguments to follow. Statistic sited from: Wikipedia, (17 November, 2007) *Religion in the United States*, Retrieved 19 November 2007, from http://en.wikipedia.org/wiki/Religion_in_the_United_States

[64] Campey, Lucille, H., *The Scottish Pioneers of Upper Canada 1784-1855*, Toronto, 2005, p 5

[65] Groseclose, Barbara S., 2000, p. 150

[66] Campey, Lucille H., 2002, pp. 39-45

[67] Johns, Joshua, 1996, from http://xroads.virginia.edu/~cap/NATURE/cap2.html

[68] Novak, Barbara, *Nature and Culture: American Landscape and Painting 1825-1875*, London, 1980, p. 226

pervading preoccupations of the day, the natural sciences and the spiritual within nature, to contribute to the development of this new American iconography.[69] Church's *Niagara* of 1857 [Plate 15] epitomises the structures imposed on painting by the writings of John Ruskin (1819-1900) with its scientifically accurate observation as well as its reverence and glorification of nature. [70] Pre-Raphaelite-like detail to the exclusive qualities of the landscape, such as Niagara's ferocious waters was devoted to celebrating the terrifying beauty of 'God's Land' in all its glory.

Upon close examination, like *An Avalanche in the Alps*, the size of this canvas enveloped the viewer contributing to the notion of the sublime while simultaneously becoming a symbol for the almost incomprehensible proportions of the country itself.[71] Furthermore, America's magnificent and irrepressible forces of nature were now becoming recognised as symbols of power for the young but rapidly developing country and were being portrayed as such by artists. *Niagara* exemplified this growing confidence America was experiencing after its successful War of Independence less than a century earlier, becoming an emblematic display of America's military and industrial strength.[72] Not only did *Niagara* solidify Church's international reputation as a tour de force for the representation of the sublime but it also became a benchmark for American landscape painting as its fundamental role in the manufacturing of a national identity continued to evolve.

Angela Miller, however, in her excellent essay *Everywhere and Nowhere: The Making of the National Landscape*, questions the actual accuracy of the iconographical paintings emerging in nineteenth-century America. While commenting in particular on the meticulous detail to nature in Church's works, Miller also draws attention to the underlying structure of the images that relate more to a "mythic geography, (synthetically) moving seamlessly from

[69] Büttner, Nils, *Landscape Painting: A History*, New York, 2006, pp. 283–285.
[70] Wilton, Andrew et al, 2002, p.115
[71] Wilton, Andrew et al, 2002, p.15
[72] *ibid*., p.157

the particular to the general."[73] This desire to "embrace through panoramic sweep, to soar over rather than to delve into, to generalise rather than to localise," was, in essence, a ritual of visual process employed by the growing middleclass as an act of reaffirming one's national status and heritage.[74]

Importantly, it was Church's adeptness to shift from the particular to the universal that helped to develop this visual process and led to the accomplishment of two culture-building imperatives. Firstly, it lifted the more earthly attributes of the American landscape to that of transcendent or spiritual levels. A painting of a rugged wilderness scene with indomitable mountains, deep ravines or rushing, winding rivers became commonplace symbolising that which the American people where both physically and spiritually connected with and, as a Protestant affirmation, became something of an icon-like conduit for the direct communion with God. These paintings substantiated America's claim that its people were the direct descendents of Moses, and metaphorically or not, had finally returned to the Promised Land.[75] And secondly, on a more 'terrestrial' and nationalistic front, these distinctive but idealised landscapes were painted with intent to bridge the great American land expanse and unify the multitude of localities through a type of "cultural consolidation (based) around certain pivotal symbols."[76]

Kick starting this consolidation was the American Art-Union (1830-1851), formed in affiliation with the Apollo Gallery by the painter James Herring and a group of wealthy New Yorkers. It was a subscription-based organisation boasting almost twenty thousand members dispersed throughout the country that encouraged and established the position of American art. Disseminating information about select art and artists through copies of the minutes from its meetings while each year offering a free engraving and entry into a raffle for an original

[73] Miller, Angela, "Everywhere and Nowhere: The Making of the National Landscape", *American Literary History*, Vol. 4, No 2, Summer 1992, p. 214
[74] *ibid*., pp. 213-216
[75] *ibid*., 1992, p. 214
[76] *ibid*., 1992, p. 212

work, it played a principle role in the education and development of the artistic tastes of the American public.[77] Contention arises however as, although the organisation claimed to help promote the arts in general, the works actually chosen by the AA-U rested on their ability to represent an explicit national identity.[78] Stated in the AA-U's charter of 7 May1840, that its primary objective was of a "moral obligation" to develop the tastes of a burgeoning middle class, one begins to question the ethicality of this so called democratic venture.[79] Furthermore, this New York based organisation was inarguably built upon a substructure of works largely contributed to it by east coast artists and paintings of eastern landscapes, adding to the infeasibility of forming an authentic national identity. Frederic Edwin Church, Asher Brown Durand (1796-1886), John Frederick Kensett (1816-1872), and Jasper Francis Cropsey (1825-1900), were the most prolific landscape painting contributors to the AA-U, all originating from the east and all affiliated with the Hudson River School. Between them they sold over 160 paintings to the organisation.[80] However, considering the vastness and diversity of the country, it's unlikely a genuine national unity would ever have been conceivable;[81] nevertheless, the fact remains that a large portion of the American public's perception of its land developed through a very selective interpretation of it that evolved out of particular Protestant-based idealised landscape paintings.

The emphasis placed on the natural habitat by America through literature and the arts and the inauguration of the AA-U scarcely fifty years after the winning of its independence in 1776 underscores how the very essence of the country's nascent identity had been founded on its essential relationship with its countryside. Exemplifying this is the song *America the*

[77] Miller, Lillian B., *Patrons and Patriotism: the Encouragement of the Fine Arts in the United States 1790-1860*, Chicago, 1966pp. 160-172
[78] Miller, Angela, 1992, p.219
[79] *ibid*., pp. 168
[80] Nineteenth century Art World Wide and Joy Sperling, (2002-3), "*Art, Cheap and Good:" The Art Union in England and the United States, 1840–60*, Retrieved 18 December 2007, from http://19thc-artworldwide.org/spring_02/articles/sper.shtml
[81] Baigell, Matthew, *Artist and Identity in Twentieth-Century America*, Cambridge, 2001, p. 26

*Beautiful* (1893), continuing to gain in popularity over a century after it was written.[82] This is a testament to how Americans still visualise, or prefer to visualise their country today even with irrefutable evidence of the debasing of many of its natural treasures and is a glaring repercussion of the enduring influence of organisations like the AA-U.[83] This ideological state-of-mind reflecting the fundamental makeup of the United States; a conglomeration of diverse peoples, places and things, has undeniably been bound together in large part by the circulation of selective iconic landscape imagery. Ironically, the false, or at the very least, idealised pretences which were laid to create the foundations for how America views itself have now become a driving force behind how it responds to the environment today. The concern for the land and environmental awareness has been partially established on the above direct conditioning of 'appropriate' landscape scenes with a preference for these particular landscape images resulting in Ulrich's 1993 study, providing evidence to substantiate this claim.[84] Another of Church's paintings, *Twilight in the Wilderness* of 1860 [Plate 16], foreshadowed this American preoccupation with its environmental issues and can be used to shed further light on the path of this discussion.

In 1860 Church completed the large canvas, *Twilight in the Wilderness* depicting an ambrosial, mountainous sunset. Even more than *Niagara*, Church intended this painting to completely encapsulate what it meant to be American.[85] Ironically, it happens to be even more of an idealisation than the beautifully composed Niagara. Church developed this painting by combining parts of previously observed subject matter from Maine and New

[82] Wikipedia, (15 December 2007) America the Beautiful, Retrieved 22 December 2007, from http://en.wikipedia.org/wiki/America_the_Beautiful, sited 27/12/07. Proponents for *America the Beautiful* have over the last hundred years attempted to give the song legal status as a national anthem equal to or as a replacement for *The Star Spangled* Banner while the song's popularity has actually been on the increase, receiving a major boost in 2001 after the September 11th attacks.

[83] See Plates 17, 18 & 19 of the Niagara Falls. These images illustrate the issues surrounding image manipulation and perception brought up in chapter 1 clarifying how the chosen composition of a photo can positively or negatively influences one's response to it. They also demonstrate how easily one's mind can be psychologically saturated with an image until, without photographic prompting, the subject will be consistently visualised in the same manner.

[84] Refer back to chapter 1 and Wohlwill's argument that nature is a 'natural psychological category.'

[85] Wilton, Andrew et al, 2002, p.72

York to create a Raphael-like 'perfect' whole.[86] The indigenous colours of Church's native New England autumn sky reflect off a winding, valley river as the sun sets over distant mountains in Ruskinian glory. Usually employing some human element or trace to help the viewer gage the immensity of his divine subject, *Twilight in the Wilderness* resists any such devices, instead working completely with symbolic reference to the land. The extensiveness of the scene, the rugged terrain and the array of colours painting the sky, which were claimed, could only be witnessed in this particular part of the world, all come together to form Church's idyll America. An eagle perched solemnly on a treetop represents the strength, vitality, and freedom of the young country while a tree and intersecting branches in the foreground form a cross introducing a conspicuous Christian thread and symbolises the true source of America's magnificence.[87]

There is another interesting addition to this interpretation, however. This pristine and unadulterated land and sunset may be seen as a plea decrying the annihilation of the great American wilderness. By the mid nineteenth century, many East coast Americans were finally beginning to experience the same psychological effects caused by the Industrial Revolution a hundred and fifty years earlier across the Atlantic. To many, the aforementioned 'infinite' expanse of land forming the country was finally beginning to collapse in on itself. The population of New York had quadrupled to 500 000 between 1820 and 1850 instigating dramatic changes and fuelling a growing sense of alienation and tension.[88] The opening up of the West was also instilling anxiousness with *Twilight in the Wilderness* an articulation that Church "no longer believed that man in his fallen state (even the providentially blessed Americans) could inhabit this Garden of Eden without destroying it."[89] Church's painting is

[86] The Cleveland Museum of Art website, (2006), *Twilight in the Wilderness 1860*, Retrieved 2 January 2008, from http://www.clevelandart.org/exhibcef/highlights/html/3910085.html
[87] Wilton, Andrew et al, 2002, p.130
[88] Stansell, Christine and Wilentz, Sean, *Thomas Cole: Landscape into History*, London, 1994, p. 8
[89] Wilton, Andrew et al, 2002, p.129

presented as a resounding testimony to the importance he placed on the conservation of the American landscape.[90]

A great admirer of Ruskin, Church had been deeply moved by his writings, just as the Pre-Raphaelite Brotherhood had been in Britain. William Morris (1834-1896), a member of the English group ardently assimilated Ruskin's philosophies into his artistic, social and political views. He believed nature to be a vital component of psychological health and that, "the blind pursuit of wealth which characterised the Victorian era… had led to a deserted countryside and hideous, overcrowded and spiritually vacant cities."[91] Church was following down the path of a similar belief system, as American modernisation was now not only leading to the destruction of its land but transportation and expansion was beginning to eclipse the 'infiniteness' of its hinterlands. It was this crucial word *infinity* that embodied nineteenth-century American landscape art. It was the redeeming quality that could separate good art from bad and it was the word the unfathomably vast America could most easily identify itself with. While Ruskin found infinity in the skies, Church also found it in the great American wilderness.[92] Unfortunately Church recognised that this 'infinite' expanse, America's heritage, was deteriorating as it, just like the eighteenth-century British landscape before it, was succumbing to society's over-ambition and greed.

Alfred Kroeber states that although "a culture can be understood primarily only in terms of cultural factors…no culture is wholly intelligible without reference to the non-cultural or so-called environmental factors with which it is in relation and which condition it."[93] *Twilight in the Wilderness* and *Niagara* function in two ways: they add to the repository of

[90] Church helped drive the *Free Niagara* conservation movement which aimed to preserve the falls from industrial encroachment and to provide better access to visitors. Source: Wikipedia, (3 January, 2008), *Niagara Falls: Preservation Efforts*, Retrieved 5 January 2008, from http://en.wikipedia.org/wiki/Niagara_Falls
[91] Wiener, Martin J., "England is the Country: Modernization and the National Self-Image", *Albion: A Quarterly Journal Concerned with British Studies*, Vol.3, No 4, Winter 1971, pp. 198-211
[92] Angus, Douglas R., "The Relationship of Wordsworth's 'Ode on the Intimations of Immortality' to Ruskin's Theory of the Infinite in Art", *The Modern Language Review*, Vol. 36, No. 4, 1941, pp. 506-508
[93] Vayda, Andrew P., Ed., *Environment and Cultural Behaviour*, London, 1977, sited from the article entitled "Relations of Environmental and Cultural Factors" by Alfred L. Kroeber, p. 350

cultural factors or symbols mentioned by Kroeber, helping to internalise and reinforce the nation's perception of itself while they simultaneously refer to the 'non-cultural', or the environment and the source of inspiration for the American identity. The "amber waves of grain and purple mountain majesties" (*America the Beautiful*) have been indelibly inscribed on the minds and souls of the nation through an incalculable amount of cultivated imagery generated from this repository over the years. In direct response to this, intense moral struggle follows when the smoke and mirrors beautifying these iconographical landscapes are lifted. The un-cropped, un-filtered and un-adjusted photograph of Niagara Falls [Plate 17] could never live up to the idealised images [Plates 18 & 19] and instead presents the viewer with a 'vision' that couldn't be any further from expectations. Include the hundreds of hectares of concrete, steel and glass making up the fall's 'exoskeleton' today and the un-altered image will only receive vile gasps of revulsion, outrage and heartbreak.

When the 'reality' is brought to the attention of the public through green organisations, the media, or online image searches, a backlash of animosity arises as the previously visually misled now join together protesting the blasphemous destruction of God's immaculate and glorious land. "How can corporate America deny responsibility?" they exclaim; for it's not difficult to find historical evidence of this once beautiful open space while watching old Hollywood Western flicks or in reproductions of paintings, prints, and photographs of the heroic American landscapes; which, by the way, can still be acquired from any reputable online art warehouse, Wal-Mart calendar section, or high street fine-art print shop… and at a very reasonably price of course. It would be ludicrous to say that the erosion of the American landscape is not transpiring;[94] however, the emotions projected by the concerned are only amplified as 'photographic evidence' provides a world of contrast from those nineteenth-

[94] Navigating around the recently launched 'Google Earth' software shows in satellite image detail how the human species has spread to the four corners of the world with alarming efficiency.

century idealised images that inadvertently forged the country's environmental ethics two centuries ago.

The moral dilemma concerning the environment weighs heavy on the American heart, undoubtedly even more so than it did in Church's day. This constant conflict between progress and conservation, innovation and preservation, has and continues to play out in the media, art and literature of America, providing the moral and ethical platform with which all Americans must cross before engaging with their land. Henry Wadsworth Longfellow's celebrated poem *Excelsior* (1841), an inspiration for Americans past and present, perhaps had even more significance than was initially acknowledged. It recounts an alpine journey of a young man carrying a banner inscribed with the word "Excelsior" which translates from Latin to *ever higher* or *onward and upward*. He continues to climb the majestic mountain, higher and higher while disregarding all warnings. Eventually he succumbs to the elements and "lifeless, but beautiful" he's discovered buried in the snow, "still clasping in his hands of ice that banner with the strange device, *Excelsior*!"[95] As the reality of the American landscape slowly but surely reveals itself in diametric opposition to its idealised counterparts, many Americans today may now view their 'indomitable spirit', incessantly marching forward into the great unknown and consequently altering forever the prodigious landscape as an affliction to the once great "America the Beautiful". These utopian scenes, so ingrained into the American consciousness and reinforced through nostalgia and moral conscience unquestionably continue to affect their significance. And so while environmental issues carry on making front-page headlines, penetrating America to its core via its perception of its land, iconic paintings such as Church's and Bierstadt's will continue to impact American affective responses on the very deepest of psychological levels.

[95] Wikipedia, (21 November, 2007), *Excelsior (Longfellow)*, Retrieved 28 November 2007, from http://en.wikipedia.org/wiki/Excelsior_%28Longfellow%29

## Conclusion

By demonstrating how individual perception, image manipulation and cultural conditioning affects cognition, this essay has revaluated the current views accounting for psycho-physiological responses to landscape scenes and the value of this knowledge as it attempts to catalogue the art most appropriate for the healthcare environment. After appraising the academic position surrounding debates, further study into alternative explanations resting on historical research and cross-cultural examination was undertaken in an attempt to draw attention to the deficient scholarly methods presently employed. With this investigatory process, this essay has concluded that the current psycho-evolutionary approach is inadequate in its inflexibility and its methodology and will therefore continue to remain incapable of revealing the complexities and subtleties of emotional responses to landscapes paintings.

Delving into the differentiation between 'looking' and 'seeing' has delineated how a painting's signs and their symbols denote meaning on a very culturally reflected level. So although studies demonstrate contact with nature *does* produce positive psycho-physiological results, evolutionary models, which propound the importance of instinctive and innate reactions to one's environment, become confused when transferred to representational stimuli such as culturally significant paintings.

In an attempt to add rather than to dismantle the interesting and productive work taking place in the fine art/healthcare arena, this discussion has endeavored to pinpoint the weaknesses of Ulrich's assumptions while compose stronger theories for the positive responses to landscape paintings. Therefore, a more comprehensive investigation into how one actively engages with a landscape scene, through an historical illustrative, was enlisted. This method has proved that the quest for a more plausible theory for response variances to

landscape images relies on the developing of an applicable set of questions and the search for their answers with a multidisciplinary approach.

Having established that one culture views nature differently and attributes alternative forms of significance to it than another predicates that landscape art is, in many ways, a representation of how each individual society perceives the function of its land. Therefore, the expectation a society places upon the land informs the cognitive style of its paintings and subsequently shifts the way the images are actually being experienced within the culture. This perceived function is not to be confused with or construed as pertaining to the realms of evolutionary processes as one cannot dismiss the fact that perception of both the land and landscape painting has been intrinsically conditioned through a society's cultural and artistic values. This was described in chapter 2 which detailed the affective responses accrued through the reciprocity of painting with the significance of the land which in turn fundamentally altered the vision of both.

Discrepancies within the test results and their lack of explanation from Ulrich's studies opened a door for an alternative method of account. This semiotic and historical rather than ethological investigation into the importance that both the land and landscape painting has had on the formation of the American identity has helped to answer some of the more glaring inconsistencies of Ulrich's work. The interpretation of a painting's signs and symbols and an awareness of their significance, most notably in the case of cultural icons, have demonstrated that one's unique visual and cognitive engagement with a landscape image cannot easily be explained with biological and evolutionary paradigms alone, if at all. Acknowledgement of this last statement is essential if positive steps forward are to take place and the fine art and evidence-based design dialogue is to continue.

In addition, chapter 3 emphasised how one's response to a landscape scene reflects the society's views of the relevance and 'health' of its land in general. This view of the land has evolved in part through one's assimilation with the repository of images and literature that

forms the society's collective ecological and environmental awareness and beliefs. For many Western urbanites, with little legitimate personal relationship with the land, this contrived, yet very real mechanism inevitably shapes ecological comprehension. The playoff between truths and non-truths and the psychological state of America concerning its land, arising from the disparity between the landscape of today and the perception of the landscape of the past is therefore anyone's guess; however, the influence that photographic sources are having by dispelling the myths built up by idealised and iconographic landscape paintings is driving cognisance of the land and landscape images *and* the affective reactions to them into unknown territory.

For these reasons, determining which types of paintings would be most appropriate for hospitals or other healthcare institutions with a psycho-evolutionary approach would seem to hold little value. Defining 'generic' aesthetic preferences for natural settings, especially for paintings, which would both appeal to and provide positive physiological benefit for the infirm; bridging "individuals, groups and even different Western cultures" would be analogous to discovering the Holy Grail. From the findings of this essay, if selections were to be established based on the hypothesis that landscape paintings are the most beneficial for the health and well-being of recovering patients, scenes of local geography and in particular, images that have cultural relevance and hold symbolic significance within the community would most likely be the best place to begin new research.

**Bibliography:**


Ader, Robert, *Psychoneuroimmunology II*, 3rd ed., London, 2001

Albertazzi, Liliana ed., *Meaning and Cognition: a multidisciplinary Approach*, Amsterdam, 2000

Arnheim, Rudolf, *New Essays on the Psychology of Art*, Berkeley; London, c1986

Baigell, Matthew, *Artist and Identity in Twentieth-Century America*, Cambridge, 2001

Baxandall, M., *Painting and Experience in Fifteenth-Century Italy*, Oxford, 1972, p.29

Beck, Aaron T, and Emery, Gary, *Anxiety Disorders and Phobias: A Cognitive Perspective*, New York, c1985

Birren, Faber. *Color psychology and Color Therapy: a factual study of the influence of color on human life*, New York, 1992

Büttner, Nils, *Landscape Painting: A History*. New York, 2006

Byron, George Gordon Byron, Baron, *Manfred: A Dramatic Poem*, London, 1817, p.23

Calder, Jenni, *Scots in Canada*, Glasgow, 2006,

Campey, Lucille, H., *The Scottish Pioneers of Upper Canada 1784-1855*, Toronto, 2005

Cooper, Cary L., *Stress Research Issues for the Eighties*, Chichester: Wiley, 1983

Cooper, Cary L., *Handbook of Stress, Medicine, and Health*, London, c1996

Eagleton, Terry, *The Ideology of the Aesthetic*, Oxford, 1990

Foster, Mary Lecron and Brandes, Stanley H., editors, *Symbol as Sense: New Approaches to the Analysis of Meaning*, New York, 1980

Gage, John, *Colour and Meaning: Art, Science and Symbolism*, London, 1995

Gage, John, *Colour in Art*, London, 2006

Goethe, Johann, *Theory of Colours*, New York, 2006

Gombrich, E. H., *Art and Illusion*: *a study in the psychology of pictorial representation*, 4th ed., London, 1972

Groseclose, Barbara S., *Nineteenth-Century American Art*, Oxford, 2000

Heydebrand, Wolf, *Hospital Bureaucracy: A Comparative Study of Organizations*, New York, 1973

Jung, Carl. *Man and his Symbol*, London, 1964

Lazarus, Richard S., *Stress and Emotion: A New Synthesis*, London, 1999

Lochhead, Ian J., *The Spectator and the Landscape: Diderot*, Ann Arbor, 1982

Lovallo, William R., *Stress and Health: Biological and Psychological Interactions*, London, 1997

Miller, Lillian B., *Patrons and Patriotism: the Encouragement of the Fine Arts in the United States 1790-1860*, Chicago, 1966

Morgan, David, *Protestants & Pictures: Religion, Visual Culture and the Age of American Mass Production*, New York; Oxford, c1999

Novak, Barbara, *Nature and Culture: American Landscape and Painting 1825-1875*, London, 1980

Ramachandran, Vilayanur, *The Emerging Mind: The Reith Lectures*, Oxford, 2003

Risse, Geunter B., *Mending Bodies, Saving Souls: A History of Hospitals*, Oxford, 1999

Rosenblum, Robert, *Modern Painting and the Northern Romantic Tradition*, London, 1978

Stansell, Christine and Wilentz, Sean, *Thomas Cole: Landscape into History*, London, 1994

Temple, Richard, *Icons: A Search for Inner Meaning*, London, 1982, p.7

Tilghman, B.R., *Wittgenstein, Ethics and Aesthetics: The View from Eternity*, London, 1991

Vayda, Andrew P., Ed., *Environment and Cultural Behaviour*, London, 1977

Watkins, Alan ed., *Mind-Body Medicine*: *a Clinician's Guide to Psychoneuroimmunology*, New York; Edinburgh, 1997

Wilson-Barnett, Jenifer, *Stress in Hospitals: Patients' Psychological Reactions to Illness and Health Care*, Edinburgh, 1979

Wilton, Andrew and Barringer, Tim, *American Sublime: Landscape Painting in the United States 1820-1880*, London, 2002

Wright, Angela, *Colour Psychology*, London, 1995

Zaidel, Dahlia W., *Neuropsychology of Art: Neurological, Cognitive and Evolutionary Perspectives*, New York, 2005

**Journal Articles:**


Åhlberg, Lars-Olaf, "Understanding and Appreciating Art: The Relevance of Experience", *Journal of Aesthetic Education*, Vol. 33, No. 1, Spring 1999, pp. 11-23

Chang, C. Y., "Psychophysiological Responses to Different Landscape Settings and a Comparison of Cultural Differences", *Horticulture, Human Well-being and Life Quality*, 2004, pp. 57-62

Dissanayake, Ellen, "Art as a human behaviour: Toward an Ethological View of Art", *The Journal of Aesthetics and Art Criticism*, Vol. 38, No. 4., Summer 1980, pp. 397-406

Hull, R.B., and Revell, G.B., "Cross-cultural Comparisons of Landscape Scenic Beauty Evaluations: A Case Study in Bali", *Journal of Environmental Psychology*, Vol. 9, 1989, pp.177-191

Kaplan, R., and Herbert, E.J., "Cultural and Sub-cultural Comparisons in Preferences for Natural Settings", *Landscape and Urban Planning*, Vol. 12, 1985, pp. 281-293

Miller, Angela, "Everywhere and Nowhere: The Making of the National Landscape", *American Literary History*, Vol. 4, No 2, Summer 1992, pp. 207-229

Ottosson, Johan, & Patrik Grahn, "A Comparison of Leisure Time Spent in a Garden with Leisure Time Spent Indoors: On Measures of Restoration in Residents in Geriatric Care", *Landscape Research*, Vol. 30, No 1, 2005, pp. 23-55

Ottosson, Johan, & Patrik Grahn, "Measures of Restoration in Geriatric Care Residences The Influence of Nature on Elderly People's Power of Concentration, Blood Pressure and Pulse Rate", *Journal of Housing for the Elderly*, Volume: 19 Issue: ¾, 2006, pp. 229-258

Parsons, Russ, Tassinary, Louis G., Ulrich, Roger S., Hebl, Michelle R., & Grossman-Alexander, Michelle, "The View From the Road: Implications for Stress Recovery and Immunization", *Journal of Environmental Psychology*, 18, 1998, 113-139

Ulrich, Roger S., "Human Response to Vegetation and Landscape", *Landscape and Urban Planning*, Vol. 13, 1986, pp. 29-44

Ulrich, Roger S., Simons, Robert F., Losito, Barbara D., Evelyn, Fiorito, Miles, Mark A, & Zelson, Michael, "Stress Recovery During Exposure to Natural and Urban Environments", *Journal of Environmental Psychology*, Vol. 11, 1991, pp. 201-230

Ulrich, Roger. S., "A View Through a Window May Influence Recovery from Surgery", *Science*, 224, 1984, pp. 42-421

Ulrich, Roger S., "Visual Landscapes and Psychological Well-being", *Landscape Research*, 4 (1), 1979, 17-23

Wiener, Martin J., "England is the Country: Modernization and the National Self-Image", *Albion: A Quarterly Journal Concerned with British Studies*, Vol.3, No 4, Winter 1971, pp. 198-211

Wohlwill, J.F., "The Concept of Nature: A Psychologist's View", *Human Behaviour and Environment*, Vol. 6, No 6, 1983, pp. 5-37

Yu, Kongjian, "Cultural Variations in Landscape Preference: Comparisons Among Chinese Sub-Groups and Western Design Experts", *Landscape and Urban Planning*, 32, 1995, pp. 107-126

Zube, E.H. Pitt, D.G. and Evans, G.W., "A Lifespan Developmental Study of Landscape Assessment", *Journal of Environmental Psychology*, Vol. 3, 1983, pp. 115-128

Zuckerman Marvin, Ulrich, Roger S., & McLaughlin, John, "Sensation Seeking and Reactions to Nature Paintings", Person. *Individ. Diff.*, Vol. 15, No 5, 1993, pp. 563-576

**Website Sources:**

Artchive, The, (n.d.), *Church, Frederic Edwin, Twilight in the Wilderness*, Retrieved 15 December 2007, from http://www.artchive.com/artchive/C/church/twilight_wilderness.jpg.html

Bois, Catherine, (n.d.), *The Natural Sublime in Wordsworth's Poetry and Romantic Landscape Paintings*, Retrieved 10 December, 2007, from http://www.cercles.com/n1/bois.pdf

Centre for Health Care Design, The, (2006), *Definition of Evidence-Based Design*, Retrieved 23 October 2007, from http://www.healthdesign.org/aboutus/mission/EDB_definition.php

Cleveland Museum of Art, The, (2006), *Twilight in the Wilderness 1860*, Retrieved 2 January 2008, from http://www.clevelandart.org/exhibcef/highlights/html/3910085.html

Domke, Henry, (7 May, 2007) *Evidence Based Design: How Good is the Evidence*? Retrieved 15 November 2007, http://www.healthcarefineart.com/2007/05/evidence_based_.html, 15.11.07

Johns, Joshua, (1996), *A Brief History of Nature and the American Consciousness*, Retrieved 14 November 2007, from http://xroads.virginia.edu/~cap/NATURE/cap2.html

Nineteenth century Art World Wide and Joy Sperling, (2002-3), "*Art, Cheap and Good:" The Art Union in England and the United States, 1840–60*, Retrieved 18 December 2007, from http://19thc-artworldwide.org/spring_02/articles/sper.shtml

Simpson, Mark, (14 September, 2003), *The colour of whiteness*, from The Independent on Sunday, Retrieved 10 December 2007, from http://findarticles.com/p/articles/mi_qn4159/is_20030914/ai_n12745293

Wikipedia, (15 December 2007) America the Beautiful, Retrieved 22 December 2007, from http://en.wikipedia.org/wiki/America_the_Beautiful, sited 27/12/07

Wikipedia, (21 November, 2007), *Excelsior (Longfellow)*, Retrieved 28 November 2007, from http://en.wikipedia.org/wiki/Excelsior_%28Longfellow%29

Wikipedia, (3 January, 2008), *Niagara Falls: Preservation Efforts*, Retrieved 5 January 2008, from http://en.wikipedia.org/wiki/Niagara_Falls

Wikipedia, (17 November, 2007) *Religion in the United States*, Retrieved 19 November 2007, from http://en.wikipedia.org/wiki/Religion_in_the_United_States

Plate 1. Example of park-like scene similar to ones used in Ulrich's study
Huston Park Wilderness in the Sierra Madre, California

Plate 2. Example of less preferred nature scene
Cut River Beach, Lake Michigan


Plate 3. Daniel Alain *Egyptian Life Drawing* Class
The New Yorker Magazine, Inc., Issue: Oct. 1, 1955

Plate 4. Caspar David Friedrich, *The Polar Sea* 1823/24
Hamburger Kunsthalle, Hamburg, Germany

Plate 5. Peter Paul Rubens *The Adoration of the Magi* 1624
Koninklijk Museum voor Schone Kunsten, Antwerp, Belgium

Plate 6. Philip James De Loutherbourg *An Avalanche in the Alps* 1803
Tate Gallery, London

Plate 7. Sandro Botticelli *The Annunciation* c. 1489
Uffizi Gallery, Florence

Plate 8. Byzantine artist
*The Annunciation* early 14th century
Church of St Climent
in Ohrid, FYR – Macedonia

Plate 9. Frederic Edwin Church *Morning in the Tropics* 1877
National Gallery of Art, Washington, D.C.

Plate 10. Albert Bierstadt *Sunset in the Yosemite Valley* 1868
The Haggin Museum, Stockton, California

Plate 11. Frederic Edwin Church *Rainy Season in the Tropics* 1866
The Fine Arts Museum of San Francisco, California

Plate 12. Caspar David Friedrich *Bohemian Landscape with Mount Milleschauer* 1808
Gemäldegalerie, Dresden, Germany

Plate 13. J.M.W. Turner *View on Clapham Common* c.1800-05
Tate Britain, London

Plate 14. John Constable *Water-Meadows Near Salisbury* c.1820
Victoria and Albert Museum, London

Plate 15.
Frederic Edwin Church
*Niagara* 1857
The Corcoran Gallery of Art
Washington, D.C.

Plate 16. Frederic Edwin Church *Twilight in the Wilderness* 1860
The Cleveland Museum of Art, Ohio

**Plate 17: Photographer: Zwergelstern**
*Niagara Falls: Aerial view, overview*
2007

An ideal view?

Plate 18: Photographer unknown
*Blue Water Going Over Niagara Falls*, 2007

Plate 19: Photographer unknown
*USA Niagara Falls*, 2007

# Appendix A

Characteristics of landscape views most preferred:

1. Complexity, or the number of independently perceived elements in the scene, is moderate to high.
2. The complexity is structured to establish a focal point and other order or pattering is also present.
3. There is a moderate to high level of depth that is clearly defined.
4. The ground surface has even or uniform length textures that are relatively smooth, and the observer judges that the surface is favourable to movement.
5. A deflected or curving sightline is present, conveying a sense that new landscape information lies immediately beyond the observer's visual bounds.
6. Judged threat is negligible or absent.
7. Water features also strongly add to preference for the scene

Sited from Ulrich, Roger S., "Human Response to Vegetation and Landscape", *Landscape and Urban Planning*, Vol. 13, 1986, pp. 32

# Appendix B

| Artist | painting | Loading | Tension | Complexity |
|---|---|---|---|---|
| | Factor 1. Semi-abstract | | | |
| Turner | Rough Sea with Wreckage | .78 | 3.89 | 2.33 |
| Turner | Sun Setting Over Lake | .75 | 2.67 | 1.17 |
| Turner | Snow Storm, Avalanche, and Inundation | .68 | 4.28 | 5.00 |
| Constable | Seascape Study with Rainclouds | .66 | 4.33 | 2.92 |
| Turner | Waves Breaking Against the Wind | .65 | 3.39 | 1.75 |
| Turner | Landscape with a River and a Bay In the Distance | .64 | 1.89 | 1.42 |
| | Factor 2. Realistic high-tension | | | |
| De Loutherbourg | An Avalanche in the Alps | .67 | 4.89 | 8.08 |
| Freidrich | Das Eismere (The Polar Sea) | .62 | 4.00 | 7.00 |
| Freidrich | Felsenschluct | .58 | 4.28 | 7.92 |
| Huet | Brisants a la Pointe de Granville | .54 | 4.61 | 5.58 |
| Altdörfer | Ausschritt | .52 | 4.28 | 7.08 |
| Friedrich | Morgennebel im Gebrirge | .47 | 3.28 | 5.00 |
| Homer | Northeaster | .45 | 4.11 | 3.58 |
| Church | Niagara | .43 | 3.61 | 4.25 |
| | Factor 3. Romantic | | | |
| Bierstadt | Sunset in the Yosemite Valley | .67 | 3.00 | 7.42 |
| Church | Rainy Season in the Tropics | .57 | 2.06 | 7.33 |
| Friedrich | Kreidefelsen auf Rügen | .57 | 2.72 | 6.25 |
| Doughty | Fanciful Landscape | .57 | 2.17 | 7.08 |
| Bierstadt | Horse in the Wilderness | .54 | 3.06 | 5.58 |
| Church | Morning in the Tropics | .54 | 2.00 | 6.42 |
| Church | Twilight in the Wilderness | .47 | 2.83 | 7.00 |
| | Factor 4. Realistic low-tension | | | |
| Church | The Gorge Niagara | .66 | 3.94 | 5.08 |
| Friedrich | Böhmische Landschaft | .58 | 1.56 | 3.50 |
| Turner | Chevening Park | .55 | 1.78 | 5.58 |
| Turner | View on Clapham Commons | .49 | 2.28 | 4.92 |
| Friedrich | Fruschnee | .48 | 2.06 | 5.42 |
| Constable | Watermeadows Near Salisbury | .45 | 1.33 | 5.33 |
| Altdörfer | Donaulandschaft Bei Regensburg | .41 | 2.56 | 6.67 |
| Bierstadt | Autumn Woods | N/A | 1.33 | 5.50 |
| | Factor 5. Expressionist | | | |
| Van Gogh | Landscape with Olive Trees | .64 | 3.00 | 5.75 |
| Hodler | Niesen | .63 | 3.44 | 4.00 |
| Van Gogh | Wheat Field with Cypresses | .58 | 2.11 | 4.25 |
| Hodler | Eiger, Mönch, and Jungfrau in Moonlight | .56 | 2.83 | 2.92 |
| Nolde | Shore Landscape | .50 | 3.44 | 3.00 |

Sited from: Zuckerman Marvin, Ulrich, Roger S., & McLaughlin, John, "Sensation Seeking and Reactions to Nature Paintings", Person. *Individ. Diff.*, Vol. 15, No 5, 1993, pp. 567

Appendix C

Magazine News Articles

News
Analysis

# Can this man cure hospital design?

US design guru Roger Ulrich has been parachuted in to advise the NHS on its building programme. His 'extraordinarily simple idea' could transform Britain's hospitals, says Charlie Gates

Roger Ulrich may be one of the most prestigious healthcare design experts in the world, but the unassuming American describes himself as just "the guy from across the pond".

Ulrich, who is universally adored by Britain's leading healthcare architects, is just two months into a nine-month secondment from Texas A&M University to advise the NHS on its ambitious hospital building programme.

The charming and persuasive guru of healthcare design is quick to say he is at the foot of a "steep learning curve" – to get his head round the NHS building programme, which he describes as "the largest single co-ordinated healthcare construction project in the world".

He continues: "The stakes are very high, and I recognise that. I feel it is a timely moment to be here and it is a privilege to offer my views. I have a sense there ideas can be useful at this moment."

But his humble pitter is deceptive. Ulrich is admired by healthcare architects across the world because his research work over the argument for good design by proving it accelerates hospital recovery, reduces the need for drugs and, most importantly, saves money.

As the battle being waged by architects to keep good design in new PFI hospitals, Ulrich's arguments could be their trump card.

The breakthrough for Ulrich's approach to healthcare design, described by Mike Nightingale, leading architect in the field, as "an extraordinarily simple idea", came in 1984 with an experiment that fundamentally shifted understanding of how an environment affects recovery from illness.

Ulrich compared the pain-killer intake and recovery times of two sets of patients convalescing after the same operation. One set of patients had a view of a brick wall, while the other set of patients looked out onto a view of a landscape. The patients with the view recovered faster and took fewer painkillers than the patients without.

"He was the first person to prove this, and it had a fundamental effect on understanding the impact of the environment on recovery," says architect Richard Burton, who is working with Ulrich during his stay in the UK.

This was the birth of what became known as evidence-based design and since then Ulrich has proved that a whole range of other design features accelerate hospital recovery. And, to paraphrase novelist Victor Hugo, there is nothing as powerful as an idea whose time has come.

"I have a sense from my visits to the UK that evidence-based design has gone from a point of zero awareness to the point where architects everywhere are talking about it," Ulrich says. "And some PFI consortiums are using it and talking about it."

Ulrich describes his first two months at the NHS as a "total immersion" of hospital visits, meetings with hospital trust leaders and briefings on the complex funding procedures for new PFI healthcare buildings.

So what does he think of Britain's hospitals compared to those of mainland Europe and the US? And does he think he can change things during his stay?

"I am still learning about the NHS, and I am amazed how big it is," he says. "I am aware of its problems, but I have reached the conclusion that the problems are basic and stem from years of chronic underfunding.

"The building stock in the NHS is very aged by US and European standards, and that poses great challenges in delivering high-quality care. It will take time to get this fixed. I am aware of a this sense of urgency, as much is being built in tight time frames that there is an urgency to improve procurement to get the best possible buildings."

He is critical that diplomatic about what he has seen of PFI hospitals so far. One facility he has spent time in, a neurosurgery centre in south London, "has strengths and compromises worth noting". But more from the hotel.

"The compromises may feel they have an inefficient layout that requires them to walk a long way to get to places that should be adjacent to each other... I have the impression the problem in PFI is the briefs."

"It seems with the PFI process that at this early stage the buildings are getting better, but there is still a long way to go," he says.

But Ulrich is under no illusions about the scale of the challenge and the consequences if the hospitals that get built are poorly designed.

"It is the largest single co-ordinated healthcare construction project in the world. It is tremendously important to get this right not only because of the cost, but because these hospitals will be around for generations. It is very important to get this right or there will be negative effects that will hinder high-quality care," he says.

Despite the words of warning, Ulrich is an optimist at heart. He must be to have taken on the task of improving healthcare design in the UK. Ulrich will report to Jane Riley, director of policy and development at NHS Estates, and his nine-month secondment will end when NHS Estates is incorporated into the NHS in September. He hopes to meet health ministers during this time and plans to refer Cabe to report his findings and initiatives.

He is also championing a plan to build a hospital in the UK that incorporates the best-build design features resulting from his research.

"Because you have a central authority like the NHS, if it is deemed important to embark evidence-based ideas in new hospitals there is a chance that British healthcare projects could be the best in the world," he says.

"My personal goal is to do what I can to at least work in that direction. I am trying to persuade decision-makers so they can change the procurement process from an informed basis. I can't influence politics, but I can do my best to bring the good evidence forward."

**'The stakes are high ... it is tremendously important to get this right'**





© Building Design, *News Analysis: Can this man cure hospital design?* London: Nina Wright Publishing, 18 March 2005, p. 8

News

IN BRIEF

**Gateway gamble** Architect BDP is designing a £250 million super-casino development in the Thames Gateway. The scheme, for South African gambling giant Sun International, is for Rainham in Essex. It includes a cinema, ice rink, restaurants, bars and a live performance venue.

Health adviser Roger Ulrich says 'architecture is a big driver of choice'

# NHS reforms could boost hospital design

**Charlie Gates**

US design guru Roger Ulrich has claimed that controversial reforms of the NHS to give patients a choice of hospital will lead to better designed healthcare buildings.

Ulrich, who is widely respected by Britain's leading healthcare architects, spent a year advising the NHS on its ambitious building programme. He outlined his views on the UK health system this week in a speech to Architects for Health.

Ulrich believes that a combination of the recently introduced choice measure – which allow patients to choose between public and private facilities in their local area – and the payment of healthcare trusts by results will favour well designed hospitals.

A Mori poll commissioned by the Birmingham & Black Country Strategic Health Authority found that patients choose hospitals based on factors such as the availability of single rooms, "a nice environment" and reduced risk of catching the virus MRSA – all features Ulrich believes can be delivered by good design.

"My view is that architecture is a big driver of choice," Ulrich said before his speech, which was delivered as *BD* went to press. "It is becoming increasingly important for buildings to be better designed to enhance choice. It is clear the building environment plays a major role."

Ulrich also believes that architects working on major new hospitals need to consider the financial implications of their designs on the future of the trust.

"The implications of choice and performance-related reimbursements following the NHS policy changes mean that pounds follow patients," he said. "It is clear that, despite the fact that many are not aware of the choice policy, the minority is making choices that are influencing revenues for the trust. It's more important than ever when designing a building to consider long-term financial implications."

John Jenner, director of healthcare practice Greenhill Jenner, said the general public might not be explicitly aware of design issues, but the design of a hospital could still have a major impact on the quality of care people received.

"If you are trained or not the perception of design issues creeps in slowly but surely," he said. "Simple things like how a site is laid out also have an impact."

As an example, Jenner said he recently picked up his father after an eye operation at Moorfields Eye Hospital in east London. His father had impaired sight after the operation and was waiting at the entrance. But Jenner could not park his car so he could get out and guide his father from the hospital because of very strict parking restrictions.

"Simple, basic things like that can have an enormous impact on the choices we make. The care my father received was pretty good, but this simple experience will have a big impact on where my father decides to go for the operation on his other eye," said Jenner.

**Roger Ulrich**

Ulrich is famed for his pioneering work on what became known as "evidence based design."

The American, who is praised by leading UK architects such as Mike Nightingale and Richard Burton, made the simple discovery that recovering patients with a view over a landscape needed fewer painkillers and recovered faster than those with no view.

This simple but brilliant discovery underpins Ulrich's ideas about healthcare design.

Over the past year he has championed his approach to healthcare design on secondment to NHS Estates from Texas A&M University.

FIRST LOOK

In the

BRIEFING

# Ulrich places onus on designers

ARCHITECTS WERE PUT in the hot seat recently in a conference presentation by Professor Roger Ulrich of Texas A&M University on research indicating the health benefits of evidence-based design (EBD).

Evidence was presented to delegates at the Environment for Care Confereence 2004, organised by NHS Estates, to support the premise that factors such as noise contribute to patient, visitor and staff stress. This included recorded noise levels as high as 90 decibels, aggravated by sound-reflecting surfaces. Ulrich concluded that with so much evidence indicating the influence of design on the well-being of hospital users, architects have no excuse in neglecting to accommodate the findings of the new research in future hospital design.

"Architects should not be making these mistakes, there is enough evidence-based research around for them to do the job properly," said Ulrich, but industry opinion believes that could prove difficult with the ongoing situation of architects pressurised by the legal machinery and contractor-led nature of PFI schemes. Architects also said that Ulrich needs to find another target. Bill Foucher told HD: "I would like to suggest that Mr Ulrich focus his blame not on the architects, but on the leaders of the consortia (contractors) and the NHS and their consultants. They are the ones that establish the briefs, the (usually seriously underestimated) project budgets and the programmes that create a situation that 'puts the screws on' the architects."

Mike Nightingale, head of Nightingale Associates, said: "I back up what Ulrich said. I do not think, however, it 'puts pressure on architects' nearly as much as on those responsible for writing PFI briefs. He added: "Most architects would be delighted to design hospitals with 100% single rooms and the best possible acoustic and environmental standards if the money was made available to do it."

Foucher concluded: "I wonder if Ulrich would kindly share a bibliography of the most influential and interesting of the 650 articles cited so that we can use these in our advocacy for a better facility design."

Ulrich also referred to the challenge of changing cultures via design alterations: "When you change an environment, you are also changing a culture. Switching from mixed to single rooms for instance is a drastic culture change which nurses might not like at first. It is easier to change an architect than to change a culture." He also drew attention to over 650 scientific studies into how the design of the built environment of hospitals affects medical outcomes. Design was even observed to succeed over staff education in terms of its effect on hand washing. On the subject of single rooms, he said: "There is a very strong, clear cut pattern of evideoce to support the effectiveness of single room occupancy."

# Awards shortlist announced

THE SHORTLIST FOR this year's Building Better Healthcare Awards has just been announced, and it features a range of projects from across the country. The ceremony will be held at Lord's Cricket Ground on 25 November, and in the meantime each category's respective judging panels (who decided on the shortlists) are currently visiting projects and making their final decisions. The event is not to be missed; it is the only ceremony of its kind for the industry, and this year it features comedian Barry Cryer as the speaker. For more info on the event, telephone 0208 269 7858.

The shortlist is as follows:

**The Clean Hospital Award:** Devon Partnership NHS Trust, County Durham & Darlington Priority Services NHS Trust, East Sussex Hospitals NHS Trust.

**Outstanding Use of Art in Hospitals:** South Tees Hospital NHS Trust, Mater Hospital Belfast Health & Social Services Trust, Salisbury Health Care NHS Trust.

**Patient Environment Award:** Queens Medical Centre University Hospital NHS Trust, Shrewsbury & Telford Hospital NHS Trust, Vital Arts.

**Outstanding Estates Strategy:** South of Tyne & Wearside Mental Health NHS Trust, Portsmouth City Teaching Primary Care Trust, County Durham & Darlington Priority Services NHS Trust, Milton Keynes General NHS Trust.

**Outstanding Sustainability Project:** Whipps Hospital Catering Award: Portsmouth City Teaching Primary Care Trust, East Sussex Hospitals NHS Trust, Hinchingbrooke Hospitals NHS Trust.

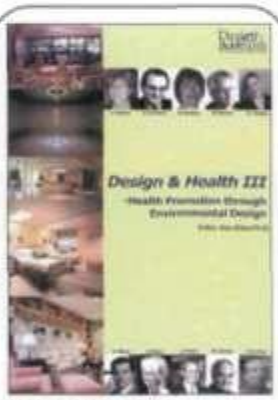
**Excellence in the Decontamination of Surgical Instruments:** Altnagelvin Health & Social Services Trust, County Durham & Darlington Priority Services NHS Trust, Doncaster and Bassetlaw Foundation Trust.

**Outstanding Contribution to the Healthcare Environment:** John Cole, Bill Murray, Professor Raymond Moss, Derek Stow, Ann Noble, John Wells-Thorpe, Sarah Waller & Hedley Finn, Paul Hyett (see facing page).

**Best Designed Primary Care Facility:** Southdene Primary Care Resource Centre, The Amwell practice, Church Road Practice, Pontardawe Primary Care Resource Centre.

**Best Designed Mental Health Project:** County Durham & Darlington Priority Services NHS Trust, Bro Morgannwg NHS Trust (Hensol Hospital), Adult Cornwall Partnership Trust, Bro Morgannwg NHS Trust (Caswell Clinic), Old Manor Hospital, Salisbury, Woodhaven, Southampton, Highcroft Hospital, Birmingham, South West Yorks Mental Health NHS Trust.

**Best Designed Hospital Award:** John Radcliffe Hospital Emergency Department, West Middlesex University Hospital, University College London Hospital, Sir Michael Sobell House Hospice, Treatment Centre, Kidderminster, Chichester Treatment Centre.




**WHAT THE PAPERS SAY:** The International Academy for Design and Health has published a selection of papers from its World Congress held in Montreal in 2003. The 325-page book includes papers on healthcare environments, covering theory and practice, and various research disciplines. Authors include Alan Dilani, Romano del Nord, John Zeisel, Mardelle Shepley and Ragnhild Aslaksen. For more information, email academy@designandhealth.com