

1. INTRODUCTION

1.1 PROJECT DEFINITION

The project was initiated by the South Australian Department for Environment and Heritage. As part of a program of assessing the natural attributes of the Arkaroola area, the Department sought to have an assessment undertaken of its landscape amenity.

A key principle of landscape quality assessment is to survey as wide an area as practical because confining the survey to a particular site or features (e.g. a mountain) is likely to produce deficient results which lack context. The results of a wider assessment are much more robust and defensible. The Department agreed that the project should not be confined solely to the Arkaroola area but rather be analysed within the context of the northern Flinders Ranges. Without prejudging the anticipated results, a regional approach would be more capable of establishing and quantifying the regional significance of Arkaroola. A regional survey would also have obvious benefits for tourism and environmental management of the region.

The project's objective was to conduct an assessment of the scenic quality of the northern Flinders Ranges and to report on its findings.

The study area was defined as covering the Northern Flinders Ranges north of Hawker and concentrating on the highland regions including Elders – Wilpena – Heysen Range, Patawarta Hill – Mt Hack – Mt Uro, and the Gammons – Arkaroola – Freeling Heights to provide a landscape context for the Arkaroola area thus enabling its scenic significance to be assessed.

The Flinders Ranges Landscape Quality Assessment Project commenced in October 2008 and was completed in February 2009.

1.2 PROJECT METHODOLOGY

The methodology has been developed and refined over a succession of seven studies and is robust, reliable and effective (see Figure 1.1¹).

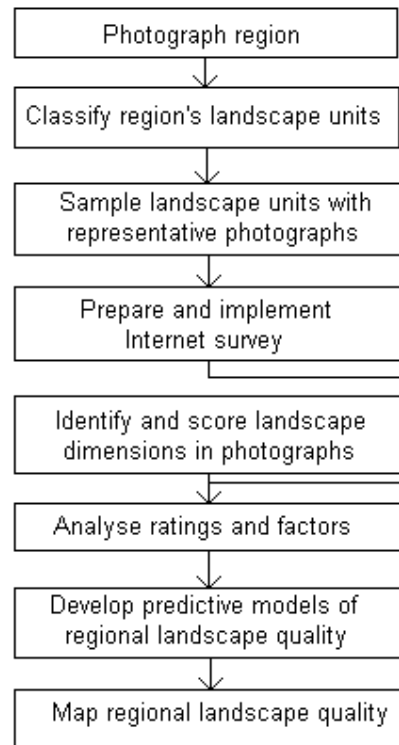


Figure 1.1 Landscape quality assessment methodology

It involves photographing the region and classifying it into landscape units on the basis of which the region is sampled by photographs. An Internet survey instrument is prepared and placed on a website and potential participants invited to participate. At the same time landscape factors which are characteristics of the landscape likely to contribute to its scenic quality are scored independently by a small group. Following completion of the Internet survey, the results are analysed in depth, including the development of predictive models using linear multiple regression analysis, to gain a full understanding of the landscape quality present in the region and its distribution. Mapping of its landscape quality is then

¹. Earlier studies may be viewed on the consultant's website: www.scenicsolutions.com.au

undertaken, working closely with GIS specialists.

1.3 PROJECT REPORT

Chapter 2 of this report examines human appreciation of mountainous landscapes, a relatively recent phenomenon. The chapter also examines the influence of culture and individual differences on landscape preferences. It also reviews the use of photographs in landscape surveys.

Chapter 3 reviews the significance of the Flinders Ranges landscape to the indigenous Adnyamathanha people, the early explorers, pastoralists and artists. It summarises recent assessment of the Flinders Ranges landscape and its significance for tourism.

Chapter 4 describes how the acquisition of data for the landscape survey. It covers the classification of the Flinders Ranges landscape and classifies its landscape units. The selection of photographs is described, covering the criteria for their selection, photographing the Flinders Ranges, and the choice of photographs. The design of the Internet survey is described and its implementation on the Internet. Finally the identification and scoring of landscape factors is described.

Chapter 5 covers the analysis of scenic quality survey data from the Internet survey and the landscape factor scores. It describes the characteristics of participants, their familiarity with the Flinders Ranges and their comments on the survey and on the Flinders Ranges more generally. The landscape factors and their relationship to the ratings are analysed. Regression models which combine the ratings with the scores of landscape factors are developed. The ratings of the various areas of the Flinders Ranges are then described. It then describes the mapping of the Flinders Ranges landscape ratings.

Chapter 6 discusses a range of issues arising from the project relating to threshold levels, comparison of the results with earlier assessments, policy and planning issues, and relating the findings to landscape theory.

2. SCENIC QUALITY OF ARID MOUNTAINOUS LANDSCAPES

2.1 INTRODUCTION

Arid mountainous landscapes such as the Flinders Ranges pose particular challenges in regard to understanding and explaining community preferences. This is because of two main factors:

Firstly, mountain landscapes *per se* have only become to be appreciated over relatively recent human history; up to a few hundred years ago they were regarded as rubbish and the haunts of devils and were to be avoided. The shift towards appreciating them has been one of the significant changes in human perception towards the environment.

Secondly, landscape theory derives mainly from an evolutionary perspective, that what humans like in scenic landscapes enhances their survivability as a species. Such a premise is easy to understand in well watered temperate landscapes, for example, the Mount Lofty Ranges or the coast, but is challenged by arid landscapes, and a mountainous one at that.

This chapter examines these two issues and also examines the influence of culture and individual differences on preferences examined. Finally, the use of photographs in landscape surveys is reviewed.

2.2 HISTORICAL ATTITUDES TO MOUNTAINS

In 1657, mountains were described with epithets such as "Warts, Wens, Blisters, Tumours, Imposthumes"² (Nicolson, 1959) yet a century later, in 1769, Thomas Gray wrote of the Scottish highlands: "the mountains are ecstatic". These were not isolated descriptions, they epitomised a sea change in attitudes towards mountain landscapes that occurred in as little as fifty years during the early 18th century. In her book, *Mountain Gloom and Mountain Glory: The Development of the Aesthetics of the Infinite* (1959), Marjorie Hope Nicolson traced

². Wens are an Old English term for a lump, protuberance or wart. Imposthumes or impostumes is a Middle English term for a purulent swelling, a cyst, an abscess. Clearly neither terms were used as endearments.

the reasons for this shift, focusing on the literature and poetry of the period. She considered that the change was the result of "one of the most profound revolutions in thought that has ever occurred."

Up to the mid 17th century mountains did not occur in paintings, literature or poetry except along classical lines. The standard mountains were Greek – Mounts Olympus, Pelion, Parnassus, and Ossa, and these were described as they were imagined, not as they were seen or experienced because few writers had actually seen mountains. English mountain poetry rarely mentioned local mountains in the British Isles. Travellers' accounts mentioned the dangers and difficulties of travelling in mountainous areas but virtually never described them as beautiful.

The Roman writer, Lucretius seemed to admire mountains, and even climbed them although as a philosopher he described them as waste places occupying areas better occupied by green meadows – a typical attitude of the time. Christians generally regarded mountains negatively, as blemishes on creation due to human depravity. Many believed that mountains resulted from the sin of Adam and Eve and associated mountains with the idea of the earth growing old. From this, the parallel with man was apparent: the blemishes, deteriorations and excrescences which pockmark a human face and body occur also on the earth in the form of mountains - hence the expressions of the 17th century of mountains as warts, wens and blisters.

In 1335, Petrarch (1304-1374) climbed Mount Ventoux and was delighted by its grandeur and majesty until he read in his copy of Augustine's *Confessions*: "And men go forth, and admire lofty mountains and broad seas ... and forget their own selves while doing so" (Shepard, 1967). He was angry with himself for admiring a mountain more than the human soul and dignity of man and scurried down guiltily.

In 1401, Adam of Usk had himself blindfolded and carried across the St Gothard Pass. In 1480, Felix Fabri, a monk from Ulm, journeyed through the Alps and wrote of the dreadful peaks, "rigid from the cold of the

snow or the heat of the sun" but of the pleasantness of the valleys (Biese, 1905). In 1621, Joshua Poole described his journeying over the Alps and Pyrenees:

"I am now got over the Alps ...; I had crossed ... the Pyreneans to Spain before; they are not so high and hideous as the Alps; but for our mountains in Wales ... they are but Molehills in comparison to these; they are but Pigmies compar'd to Giants, but Blisters to Imposthumes, or Pimples to Warts." (Nicolson, 1959)

Similarly, Dr Johnson described the Pyrenees as "uncouth, huge, monstrous excrescences of Nature, being nothing but craggy stones." Recoiling from the Scottish mountains he penned: "An eye accustomed to flowery pastures and waving harvest is astonished and repelled by this wide extent of hopeless sterility." (Shepard, 1967).

Shakespeare, who probably never saw a mountain, described them in classical terms; for example Hamlet's description of his father is based on Virgil's description of Mercury on Mount Atlas:

"Hyperion's curls, the front of Jove himself,
An eye like Mars, to threaten or command,
A station like the herald Mercury
New-lighted on a heaven-kissing hill"

To writers like Bunyan, mountains were allegories of life - he spoke of hills as symbols of the ups and downs of life, mountains were 'proud' and valleys 'humble' (Nicolson, 1959).

In 1644, John Evelyn partly climbed Mount Pientio and spoke conventionally of the "heapes of Rocks so strangely congested and broaken ... as would affright one with their horror and menacing postures." (Nicolson, 1959). Evelyn regarded the Alps as an unpleasant barrier between the "sweet and delicious" gardens of France and Italy (Rees, 1975). As the translator of Lucretius who described mountains as waste places, when Evelyn reached Lake Maggiore at the foot of the Alps he exceeded Lucretius in his description of the Alps:

"which now rise as it were suddainly ... as if nature had here swept up the rubbish of the Earth in the Alps, to forme and cleare the Plaines of Lombardy." (Nicolson, 1959)

Although there were a few exceptions, these extracts articulated the attitudes towards mountains up to the end of the 17th century.

In 1681, Thomas Burnet (1635-1715), royal chaplain to King William III, published *Telluris Theoria Sacra, or The Sacred Theory of the Earth*. He viewed the present world as inferior to the original - "its gross irregularities and lack of symmetry offended his sense of proportion" (Nicolson, 1959). Burnet saw that the "first Model ... was drawn in Measure and Proportion by the Line and by the Plummet..." whereas the modern world "... 'tis a broken and confus'd Heap of Bodies, plac'd in no Order to one another..." Mountains were one of the major "irregularities" which offended Burnet's sense of decorum: "Upon the ... Globe stand great Heaps of Earth or Stone, which we call Mountains".

While preparing his book during a visit to the Alps in 1671, he found that viewing the mountains shattered his long cherished notions of proportion, symmetry and order. From a distance the Alps appeared to meet classical expectations but when among them and climbing them he found the "incredible Confusion" appalling:

"These Mountains are plac'd in no Order one with another, that can either respect Use or Beauty;... There is nothing in Nature more shapeless and ill-figur'd than an old Rock or Mountain ... if you look upon an Heap of them together, or a mountainous Country, they are the greatest Examples of Confusion that we know in Nature." (Nicolson, 1959)

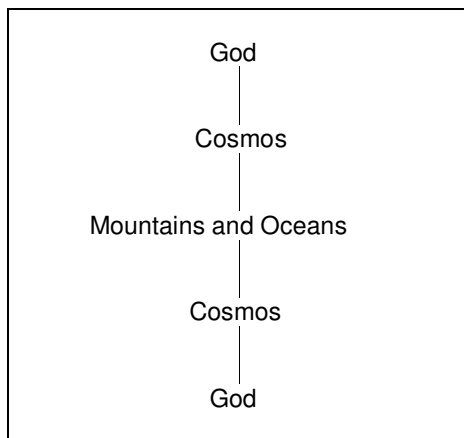
Burnet stubbornly refused to accept that the Alps were created by God but they were a "secondary Work, and the best that could be made of broken Materials." Grouping mountains with clouds and stars, Burnet considered that none of them displayed order or proportion. He often wrote that it would have "cost no more" to put these things in "better Order"!

Yet despite his horror at what he saw in the mountains, he also experienced awe and attraction of their vastness, the beginnings of a love/hate response. Together with the cosmos and the oceans, he cited mountains as objects that gave him pleasure because of their sheer immensity: "The greatest Objects of Nature are, methinks, the most pleasing to behold". He acknowledged their majesty that drew one's mind to the infinite:

"...as all Things have that are too big for our Comprehension, they fill and overbear the Mind with their Excess, and cast it into a pleasing kind of Stupor and Admiration." (Nicolson, 1959)

Burnet sought to rationalise his feelings by distinguishing responses to beauty from responses to vastness, the former to be based on order, symmetry, decorum, reason and restraint; the latter based on grandeur, leading to contemplation of God and infinity. Vastness however carried with it a certain repulsion: "*Vastness* signifies an excessive Greatness".

Describing this as the "Aesthetics of the Infinite", Nicolson postulated the model:



From thoughts of God, humans think of the infinitude of the cosmos and then transfer such thoughts to mountains and oceans of the earth. In reverse the mountains and oceans raise one's thoughts to the cosmos and thence to God. Nicolson believed the 17th century discovered what she termed, the "Aesthetics of the Infinite": "Awe, compounded by mingled terror and exultation, once reserved for God, passed over in the seventeenth century first to an expanded cosmos, then from the macrocosm to the greatest objects in the geocosm - mountains, ocean, desert." (Nicolson, 1959). Shepard (1967) noted a similar transfer of awe from sky spirits to stars and planets and then to earth.

In his *Sacred Theory*, Burnet was the first to distinguish between the emotional effects of the beautiful and of the sublime in nature. In his lifetime, mountains did not become beautiful but they did become sublime. The book raised the proverbial hornet's nest with

protagonists and supporters attacking and defending it, respectively. He was regarded as one of the most important thinkers of his generation and many books and pamphlets were written supporting, opposing or amplifying Burnet. He made his generation "mountain conscious" (Nicolson, 1959) and led to a new interest in geology. English hills were described as "Burnet mountains"- poets dwelt on the theme of Burnet's mountains as heaps of ruins:

"Hills pil'd on hills, and rocks together hurl'd;
Sure, Burnet, these the ruins of thy world."
(*The Prospect*, quoted by Nicolson, 1959)

Burnet's book led to a new aesthetic - the sublime. Nicolson wrote of "an era that went mad over sublimity." Regularity vs. irregularity became a major area of debate with the former being regarded as classical, the latter English. It led to questions of absolute and relative standards of beauty and whether beauty was inherent in the object or in the mind of the viewer.

The trickle that Burnet launched in the late 17th century turned into a flood during the following century as more and more travellers to the Alps experienced the dilemma Burnet faced when attempting to reconcile their cultural upbringing in the classics, the Bible and the Church Fathers with their experiences on the ground. Many books were written on the sublime distinguishing it from beauty; sublimity was based on an emotional response whereas beauty was based on reason, according with classical ideas of proportion, order, regularity and symmetry.

However based on a visit to the Alps in 1686, the Earl of Shaftesbury, a prominent philosopher, wrote that the sublime derived from God and, in Nicolson's words, "in the manifestations of Deity in the superabundance and diversity of His cosmic and terrestrial works." Shaftesbury regarded the sublime as the higher, more majestic beauty; it was a power:

"which naturally captivates the heart, and raises the imagination to an opinion or conceit of something majestic and divine... We cannot help being transported with the thought of it. It inspires us with something more than ordinary, and raises us above ourselves."

While beauty drew admiration, the sublime evoked a deeper emotion, drawing one closer to God. In those religious times, this was a theme which drew strong accord.

Interest in the Alps and the sublime experience helped to launch the Grand Tour enjoyed by the English wealthy visiting the continent. Joseph Addison took his tour of the Alps in 1699 and described the mountains as "vast heaps of mountains ... thrown together with such irregularity and confusion." On arrival in Geneva he wrote to a friend:

"My head is still Giddy with mountains and precipices, and you can't Imagine how much I am pleas'd with the sight of a Plain ..." (quoted by Nicolson, 1959)

While the vastness of the mountains did not affect Addison too much, he nevertheless felt "an agreeable kind of horror".

The sublime was seen as deriving from vast objects in nature - mountains and oceans, stars and the cosmos - reflecting the glory of Deity. Three distinctive characteristics of the sublime had been defined: firstly the distinction between the sublime and beautiful, secondly that the sublime was a higher beauty, and thirdly an emphasis on the vastness of objects that God or man had made. On these concepts were based future developments of the sublime.

About 1699, William Nicholls proposed that, though travelling in mountainous areas was dangerous, it could offer aesthetic satisfaction

"Those Spectacles which you suppose give *Horror*, strike us rather with an *awful* Reverence; appear, methinks, like *stately Monuments* of the *Magnificence and Grandour* [sic] of their *Author*, and the *weary Traveller* himself at once *pants* and *admires*." (Aubin, 1936)

Mountains were no longer the 'warts and wens' and monstrosities of the previous century, but were emerging as significant aesthetic objects and essential parts of a diverse world. This was not fully achieved in the early part of the 18th century and reversals to the old classical position continued. But a major shift in Western attitudes towards mountains had begun and there was no turning back. Poets writing of the Alps recorded their impressions, not in the "shock/horror" phrases of the 17th century writers, but rather in a more objective fashion.

Bishop Berkeley's descriptions of Italy in 1714 illustrated the love of that land by the English and a more moderate attitude towards mountains: "wonderful variety of hills, vales, ragged rocks, fruitful plains, and barren mountains, all thrown together in a most romantic confusion..." (Manwaring, 1925)

In 1739 the youthful Horace Walpole and Thomas Gray struck out on their Grand Tour, Gray later to be recognised as England's best classical scholar. Visiting Grand Chartreuse, in a passage that many regard as a hallmark of the Romantic Movement, Gray described its psychological effect on him:

"I do not remember to have gone ten paces without an exclamation that there was no restraining: not a precipice, not a torrent, not a cliff, but is pregnant with religion and poetry. There are certain scenes that would awe an atheist into belief ...You have death perpetually before your eyes, only so far removed, as to compose the mind without frightening it. One need not have a fantastic imagination to see spirits here at noonday." (Hussey, 1927)

Walpole said of Italy "our memory sees more than our eyes in this country", reflecting his classical education (Ogden & Ogden, 1955) and the influence of their 'memories' was also apparent in their journey through the Alps. A thorough grounding in the classics was usual among the educated in England at the time. The influence of the sublime, of the picturesque, Italian landscape painting, and of the admiration of the vast, the grand and the wild, were all prominent. The experience of the Alps was to remain with Gray throughout his life. He found the mountains "astonished me beyond expression" and the vast, wild, and irregular enthralled him. The influence was apparent in his description of a visit to Scotland more than 25 years later in 1765:

"I am returned from Scotland, charmed with my expedition; it is of the Highlands, I speak; the Lowlands are worth seeing once, but the mountains are ecstatic, and ought to be visited in pilgrimage once a year. None but those monstrous creatures of God know how to join so much beauty with so much horror." (Ogden & Ogden, 1955).

The horror and abhorrence formerly associated with mountains had disappeared, giving way gradually to a delight and love of

mountains. Travel burgeoned during the 18th century, not only to the Continent on Grand Tours but also throughout Britain.

Enthusiasm for the picturesque led to a growing appreciation of the Lake District in England in the later quarter of the 18th century by painters, poets and tourists. "There is a *Rage for the Lakes*, we travel to them, we row upon them, we write about them, and about them" wrote Hester Piozzi in 1789 (Andrews, 1989). "Picturesque travel" was aided by guidebooks, such as Thomas West's *Guide to the Lakes* in 1778, and the identification in these books of stations from which to view picturesque scenes.

Thomas Gray's descriptions of the Lakes helped make it a fashionable place to visit:

"...the most delicious view, that my eyes ever beheld. Behind you are the magnificent heights of *Walla-crag*; opposite lie the thick hanging woods of *Ld* [sic] *Egremont*, and *Newland Valley*, with green & smiling fields embosom'd in the dark cliffs ... to the left the turbulent chaos of mountain behind mountain roll'd in confusion; beneath you ... the shining purity of the *Lake*, just ruffled by the breeze enough to shew it alive, reflecting rocks, woods, fields, & inverted tops of mountains ..." (Manwaring, 1925)

Gray also visited the Wye Valley and parts of the West Country, the Peak District and the Scottish highlands, the principal regions of Britain most visited by enthusiasts of the picturesque. His descriptions had a powerful effect in shaping aesthetic taste and ensuring the popularity of most of these areas.

Johann Wolfgang von Goethe made his first visit to the Swiss Alps in 1775 but did not come to appreciate them until a later visit in 1779, when he was "the first German poet to fall under the spell of the mountains" (Biese, 1905). He wrote "These sublime, incomparable scenes will remain for ever in my mind" and described the mountains across Lake Geneva: "The view was so great, man's eyes could not grasp it". He described the effect the mountains had on him:

"The passage through this defile roused in me a grand but calm emotion. The sublime produces a beautiful calmness in the soul, which, entirely possessed by it, feels as great as it ever can feel. How glorious is such a pure feeling, when it rises to the

very highest without overflowing. When we see such objects as these for the first time, the unaccustomed soul has to expand itself, and this gives rise to a sort of painful joy, an overflowing of emotion which agitates the mind and draws from us the most delicious tears ..." (Biese, 1905)

Increasingly during the 18th century, travelers experienced the European Alps with attitudes "diametrically opposed to those of Burnet and Dennis" (Nicolson, 1959). By the 1760s, Rousseau had "the ear of Europe and (spoke) of the beauties and subtleties of Alpine scenery" (Monk, 1935). Armed with guidebooks travelers sought the experiences of sublimity.

Mountain aesthetics illustrate the influence of cultural norms and expectations in shaping individual perceptions. Throughout history, up to the time of Burnett and with very few exceptions, the ruling cultural paradigm that had been derived from classicism and Scripture defined the individual's view of mountains. The cultural paradigm created a womb-like enclosure, cutting off the individual from other influences and ensuring conformity of the individual to this paradigm. The individual's view of mountains is thus based, not on objective fact, but on the image provided by one's cultural blinkers. It takes a courageous individual to break out of this mould, to re-define what this paradigm should be.

The ruling cultural paradigm today, at least in the West, is that mountains are spectacular, beautiful, awesome places. This is taken for granted. The abundance of picture books, magazines, calendars, DVDs, paintings and articles and stories of them and the many tourists, walkers and climbers who visit them attests to this. It would be almost incomprehensible for someone to describe such areas in the terms used 350 years ago. The cultural paradigm shapes the individual perceptions and can provide either a negative or a positive context for individual perceptions.

In viewing a mountainous area such as the Flinders Ranges therefore, we need to be mindful that the pleasure we derive, the attraction that it has for countless thousands of people, the stimulation that it has given artists and photographers, is a relatively recent phenomenon. Had Australia been settled some centuries ago, the Flinders Ranges may have been regarded, *as if nature*

*had here swept up the rubbish of the Earth ..., to forme and cleare the Plaines of Lake Torrens, or as uncouth, huge, monstrous excrescences of Nature, being nothing but craggy stones!*³

2.3 ARID MOUNTAIN LANDSCAPES – A THEORETICAL PERSPECTIVE

Surveys such as that described in this report answer the question of *what* we like about the Flinders Ranges landscape but do not attempt to answer the more difficult question of *why* we like it. The theory of landscape aesthetics may assist our understanding why we like the Flinders Ranges landscape.

Landscape research has been characterized as being “rampantly empirical” (Porteous, 1982), lacking a sound theoretical basis to guide it. This may be because practitioners “were not going to fiddle with theory while the landscape burned” (Dearden & Sadler, 1989).

Theories of landscape quality all derive from an evolutionary perspective. These theories argue essentially that landscape preferences are survival enhancing. Human preferences are moulded by what enhances our capacity to survive as a species. These theories are summarised briefly below.

Jay Appleton (1975) proposed the *prospect-refuge theory* in which landscapes are preferred which enable one to see without being seen; they provided places (prospects) where one could spy out game, the enemy or other objects, while also providing places (refuges) in which to hide. However when these ideas were tested empirically, the proof has not been compelling (Clamp & Powell, 1982, Nasar *et al*, 1983). While prospects tend to correspond with the appeal of mountains and trees, refuges (e.g. caves) tend to be regarded negatively.

Roger Ulrich proposed the *affective theory* in which natural settings and landscapes produce in their viewers’ emotional states of well-being. Measured on a like-dislike dichotomy, they correlated closely with scales such as beautiful – ugly or scenic quality scales. A disciple of Zajonc’s (1980) view that preferences are pre-cognitive rather than cognitive, Ulrich provided supporting evidence from preference studies. He proposed that:

“immediate, unconsciously triggered and initiated emotional responses - not ‘controlled’ cognitive responses - play a central role in the initial level of responding to nature, and have major influences on attention, subsequent conscious processing, physiological responding and behavior” (Ulrich, *et al*, 1991)

Using various physiological measures of brain activity and of feelings, Ulrich has found that urban scenes without trees or natural objects produced negative feelings while scenes of nature provided positive feelings, and that these produced physiological benefits. In a study of hospital patients, for example, he found that those patients with a view of trees recovered more quickly and required fewer analgesics than those without this view (Ulrich, 1984).

G.H. Orians, an evolutionary biologist, proposed the *habitat theory* with the biological imperative for humans to “explore and settle in environments likely to afford the necessities of life ...” (Orians & Heerwagen, 1992). He focused on the scattered acacia trees amongst extensive grassland of the African savanna which is believed to be the environment in which humans evolved. Orians argued that there would be a strong preference for this type of environment and he found strong preferences for the characteristic shape of the acacia trees.

The delight of most people with the pastoral landscape of large trees and grass is replicated in our public parks comprising extensive lawns and isolated trees. Our gardens and backyards often reflect this form which reinforces Orians’ case.

The overarching theory of environmental perception is information processing theory which has been applied in the field of landscape aesthetics by Stephen and Rachel Kaplan. They suggested that in extracting information from the environment, humans sought to *make sense* of the environment and to *be involved* in it. They have identified four predictor variables: *coherence* and *legibility* help one understand the environment, while *complexity* and *mystery* encourage its exploration (Figure 2.1).

Coherence and complexity involve minimal analysis and are registered immediately while legibility and mystery require more time and

³. For a fuller description of historical attitudes to mountains, see pp 98 – 111 in Lothian, 2000.

thought. Research of these has found that coherence is the strongest predictor and mystery, the most consistent.

	<u>Understanding</u> Making sense	<u>Exploration</u> Being involved
<u>Immediate</u> The visual array	Coherence Making sense now Orderly, "hangs together" Repeated elements, regions	Complexity Being involved immediately Richness, diversity, intricate Many different elements
<u>Inferred</u> Future, promised Three-dimensional space	Legibility Expectation of making sense in future Finding one's way there & back Predictability, distinctiveness	Mystery Expectation of future involvement Promise of new but related information Anticipation of new

Source: Kaplan, Kaplan and Brown, 1989; Kaplan, S. 1979

Figure 2.1 Kaplans' predictor variables

Studies of the Kaplans' information processing model that have been conducted provide support for its elements. There would appear however to be a considerable degree of interpretation required in the application of these four predictor variables in the landscapes studied. The nebulousness of the concepts involved suggests that they are still developing.

Stephen Kaplan describes the theory as an evolutionary view based on habitat theory, with human preferences deriving from the adaptive value offered by particular settings (Kaplan, 1987). He regarded preferences as:

An intuitive guide to behavior, an inclination to make choices that would lead the individual away from inappropriate environments and towards desirable ones

An evolutionary perspective, in which preference aids the survival of the individual, led Stephen Kaplan to conclude:

Aesthetic reactions reflect neither a casual nor a trivial aspect of the human makeup. Aesthetics is not the reflection of a whim that people exercise when they are not otherwise occupied. Rather, such reactions appear to constitute a guide to human behavior that has far-reaching consequences (Kaplan, S., 1987).

Clearly a robust theory of landscape which provides an all encompassing framework with which to understand and to predict landscape preferences does not currently exist. At present there are a range of theories which offer explanations of aspects of landscape preferences but which fall well short of a definitive explanation.

In understanding human delight in arid mountainous landscapes, these theories offer few insights into why such areas attract high preferences. It appears counter-intuitive to the evolutionary thrust of these theories that such hostile landscapes could engender any appeal.

2.4 INFLUENCE OF CULTURE AND INDIVIDUALITY ON LANDSCAPE PREFERENCES

It is commonly believed that as "beauty lies in the eye of the beholder", that landscape preferences vary widely across cultures and individuals. However research actually indicates surprising similarity across both cultures and individuals.

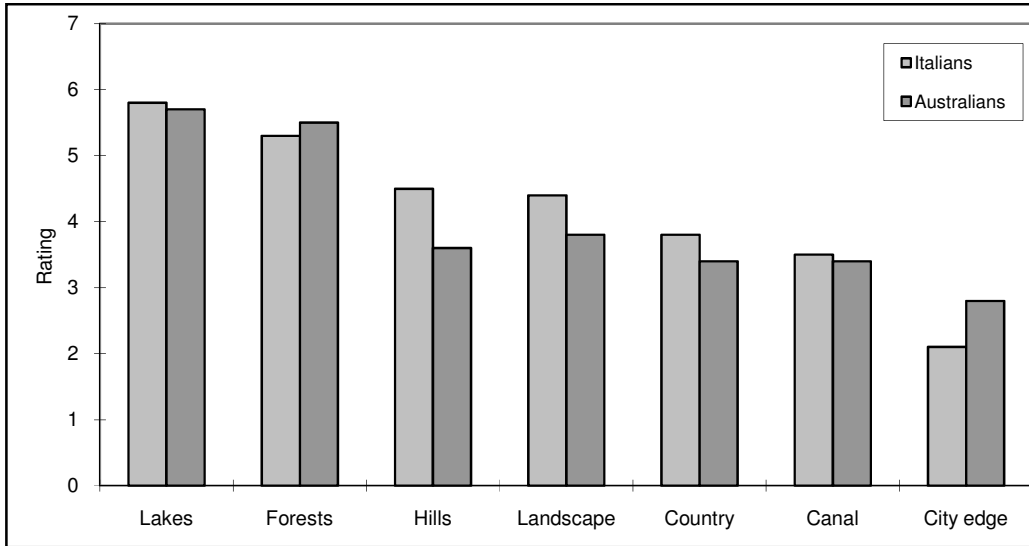
Cultural influences on landscape preferences

Cross-cultural studies of landscape have indicated that landscapes were rated similarly regardless of the cultural origins of the participants. Studies of the influence of culture on landscape preferences include the following.

Hull and Revell, 1989 found the level of agreement regarding the scenic beauty of Bali among the Western tourists was significantly higher (correlation of 0.86) than among the Balinese (0.79) which was surprising given that they came from many countries. They considered that the Balinese who had been exposed to Western culture for decades might have adopted western values. Overall they concluded that despite the "enormous differences which exist between the Balinese and western culture" that "the results suggest that there was perhaps more similarity than difference between the two

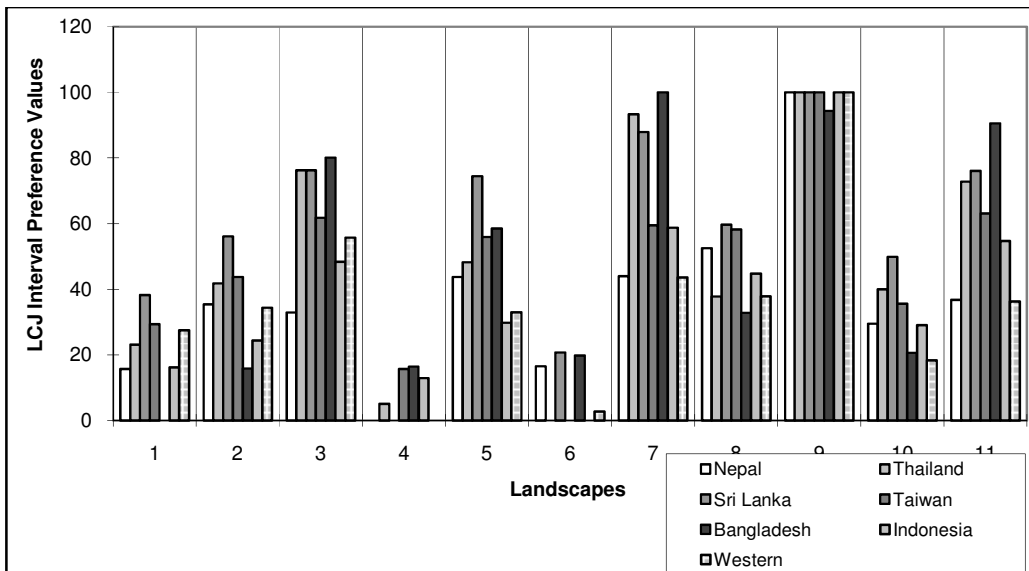
groups in their scenic evaluations” of the Balinese landscape.

Purcell *et al*, 1994 compared the responses by Italian and Australian students to



Source: Purcell *et al*, 1994.

Figure 2.2 Comparison of Italian and Australian landscape preferences



Source: Tips & Savasdisara, 1986

Figure 2.3 Preference values for eleven landscapes

photographs of landscapes from both countries. Preferences by the Italian participants were generally higher than by the Australian participants but the differences were only slight (Figure 2.2). Figure 2.3 indicates the preference values obtained by Tips & Savasdisara, 1986 from people from a range of national backgrounds. They found, with some exceptions, a reasonable degree of similarity across different nationalities.

These and similar studies suggest that human preferences for landscape are deep seated,

deriving from past human development. While culture has some influence, the core of our aesthetic preferences is innate.

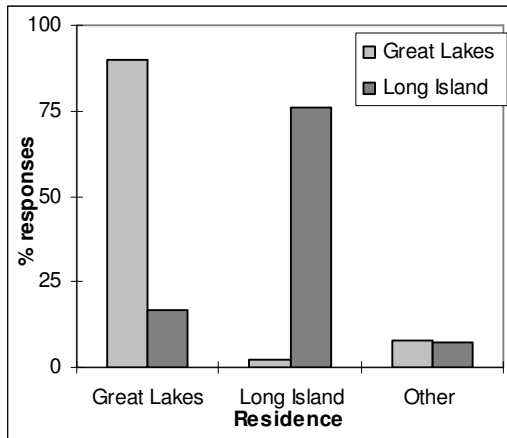
Individual differences in landscape preferences

Many studies have examined the influence of respondent characteristics such as age and gender on landscape preferences and have generally found there to be little difference.

Among the findings:

- Age generally had little effect, the exception being young children whose preferences differed markedly from adults
- There were slight differences between genders in the types of landscapes preferred
- Education, employment and socio-economic status appeared to have nil or negligible influence on preferences

Studies that the author has undertaken (Lothian, 2000; 2003; 2004, 2005a and 2000b, 2007) support these conclusions; overall the similarities in preferences across respondents were greater than the differences. This is illustrated by Figure 2.4 which indicates the similarity of average preferences across the differing age, gender, education and birthplace (i.e. born inside or outside of Australia).



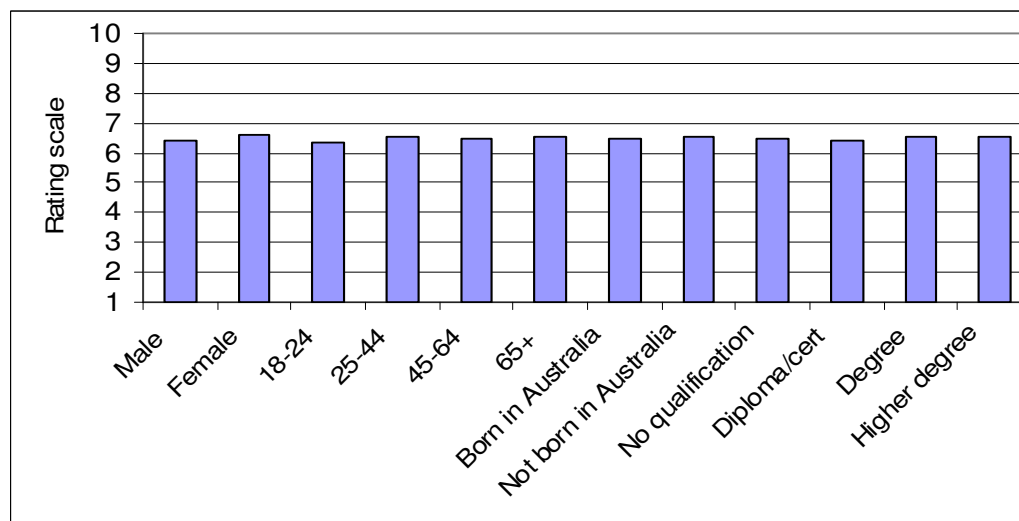
Source: Neiman, 1980

Figure 2.5 Preferences vs familiarity

Familiarity is one component of observer characteristics which does appear to influence preferences. Some studies have found a direct correlation between familiarity and preferences (e.g. Hammitt, 1979). Nieman, 1980 examined the landscape preferences of residents near the Long Island coast and the Great Lakes shore and found they strongly preferred the environment with which they were most familiar (Figure 2.5). Similar results were found when respondents were asked which coastal area they would most prefer to live - in both cases, 82% preferred to live where they were rather than in the other location.

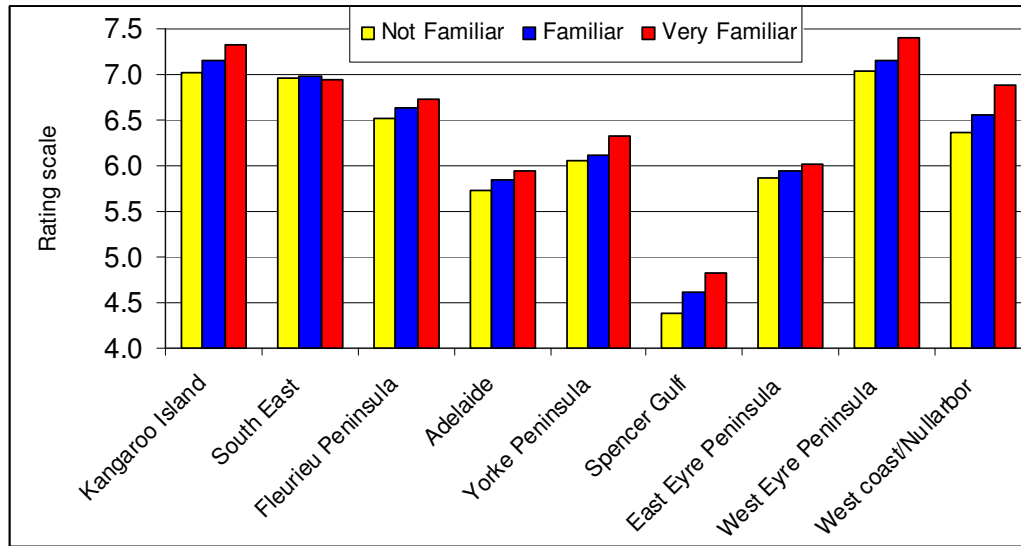
In the study of South Australian coastal landscape quality (Lothian, 2005a), the author found that being *familiar* with the region increased ratings by, on average, nearly 2% and being *very familiar* increased ratings by 4.4% (Figure 2.6).

Generally if respondents do not normally respond positively to a scene, familiarity will not alter this, however where a scene elicits a positive response, this will be reinforced and even increased by familiarity.



Source: Lothian, 2005a

Figure 2.4 Mean average ratings by participant characteristics



Source: Lothian, 2005a

Figure 2.6 Influence of familiarity on coastal regional ratings

2.5 USE OF PHOTOGRAPHS IN LANDSCAPE SURVEYS

Photographs of scenes are generally used in ascertaining the preferences of participants. These have obvious advantages over transporting large numbers of people into the field to visit widely dispersed locations. It would be clearly impractical to take 300+ people throughout the Flinders Ranges for the purposes of rating scenic quality. However the issue is whether photographs can be relied upon as substitutes for field assessments.

There have been many studies of this issue and their overall finding is that providing the photographs meet certain criteria then the ratings gained from them will not differ significantly from ratings gained in a field situation. Some of these studies are summarized below.

Zube, *et al*, 1975 reported on a series of studies including the responses from field vs surrogate assessments. Using a range of techniques (semantic scales, rank order and Q-sort) and groups of field and non-field populations, they found high correlations between field and non-field assessments. Comparing the field and non-field evaluations for eight views, the average R^2 was 0.92.

Daniel and Boster, 1976 used their Scenic Beauty Estimation (SBE) method to compare results produced by on-site vs slide judgements of forest landscapes. The SBEs derived from on-site judgements were generally slightly lower (i.e. based on the scale used, the scenes were judged to be of higher quality) than those derived from slide judgements. The correlation coefficients were highly significant statistically.

Kellomaki and Savolainen, 1984 used a variation of the semantic differential method to assess the scenic values of selected tree stands in Finland. Three groups of participants evaluated the scenic values:

- A Basic Group of forestry students assessed the scenic values in the field and laboratory
- A Comparison Group, also students, assessed the values only in the laboratory
- Two groups of City Dwellers only assessed the values in the laboratory

Table 2.1 Comparison of field and laboratory assessments

Group	Mean value	Mean deviation	Range variation
Basic group - field	56.9	6.8	44 - 63
- laboratory	56.1	7.8	42 - 65
Comparison group - lab	55.1	8.2	43 - 63
City dwellers – lab	55.9	10.2	40 - 66
City dwellers – lab	54.0	9.4	40 - 65

Source: Kellomaki and Savolainen, 1984

The results indicated very close assessments between the three groups ($p < .01$) (Table 2.1). While only one group rated the scenes in the field, the mean value of their assessment was only marginally higher than the laboratory assessments but their range of variation was slightly less.

A definitive study on the use of photographs as a surrogate for field observations was undertaken by Shuttleworth, 1980. Being concerned that many of the studies that had examined this issue used different populations to assess the sites and the photographs, Shuttleworth used the same group in both situations.

His study used landscapes in rural areas and on the urban fringe (East Anglia, England). Colour and black and white prints were used as surrogates. Semantic differential (SD) and bipolar scaling techniques were used. The sample population of students ($n = 93$) was divided into two groups all of whom visited all the field sites and half viewed the colour and half the b/w photographs. Various techniques were used to ensure

randomness (e.g. changing the sequence of field vs photograph assessments) and to enable within-group and between-group analysis.

Shuttleworth found no differences between groups in responses to landscapes in the field and found little difference in responses to the photographs. However he did detect distinctly more differences between responses to b/w photographs and field views than between colour photographs and field views. He found that with b/w photographs, participants tended to “make much more definite and differential responses by reinforcing likes and dislikes; responses to them thus tended far more to extremes of opinion than did responses to colour photographs”.

Shuttleworth concluded that the results “indicated that there were very few differences of significance between the reactions to and perceptions of the landscapes either when viewed in the field or as photographs” with any differences being explainable by content. He proposed that photographs can be used providing they are in colour and that they are wide-angled to provide a lateral and foreground context.

In conclusion, with few exceptions, surveys have established that photographs can provide a viable surrogate for landscape, however there are slight differences in responses and certain rules should guide their use. Photographs tend to provide more objective, more dispassionate responses, while site assessments can yield a more subjective response influenced by a range of site factors unrelated to landscape quality. Black and white photographs can reinforce likes and dislikes and produce more extreme responses than colour photographs. Generally, photographs should be in colour and provide a wide view to provide sufficient context.