

Chapter 2

The Concept of Scenic Beauty in a Landscape

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'A thing of beauty is a joy for ever/its loveliness increases.'

(Keats 1918)

Abstract The concept of beauty has for many centuries been considered and debated by philosophers, e.g. Kant, Wittgenstein, Hume and Locke. It is an ephemeral word that conjures up different meanings in people's minds alongside its counterpart ugliness. When the term is applied to coastal scenery the spectrum of measuring beautiful scenery has been a task that has occupied geographers, planners, etc. for at least a century. Beautiful scenery is a prime criterion for areas, such as, National Parks, Heritage Coasts, Areas of Outstanding Natural Beauty, but how is it assessed? Quality in a landscape is intrinsic in the physical quality of the area and is also a product of the mind of the observer, *i.e.* the scene looked at by an observer interacts with his/her perception of it to make a value judgment. If this is high, then the scene has beauty. Any landscape consists of historical, social and aesthetic aspects and this chapter concerns itself with these parameters, especially the visual aspect of the latter.

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2.1 Introduction

The love of nature is the same passion as the love of the magnificent, the sublime, and the beautiful. Sir Humphrey Davy (1840, 307–308)

Beautiful scenery is a very important component for coastal tourism and is a major driver of the economy of many coastal countries where these areas are frequently under pressure, mainly from anthropogenic development and utilisation (Ergin et al. 2006). Beautiful coastal scenery is but one of five main parameters that beach users desire, the others being: safety, facilities, water quality and no litter (Williams and Micallef 2009). Scenery is just part of a coastal landscape inventory available for different coastal zone disciplines and its evaluation is not only an important instrument simply for tourists, but also for those of coastal preservation, protection and development, as evaluation outcomes provide a scientific basis for any envisaged management plan. A basic difficulty in assessing scenic – relating to, ‘*scenery, having beautiful or remarkable scenery*,’ (Chambers 2000) quality is that of definition, as it is an abstract concept that is greatly confused by semantic difficulties, misunderstandings and controversies. Hull and Revell (1989) classified a scene as a landscape subset viewed from one location (vantage point) looking in one direction.

Some definitions of scenery are:

- ‘*the appearance of land*’ (CC 1987, section 3.2).
- ‘*the aggregate of picturesque features in a landscape*’ (Oxford dictionaries 2016).
- ‘*views presented by natural features, especially when picturesque*’ (Cassell dictionary 1997).
- ‘*views of beautiful, picturesque or impressive country*’ (Chambers dictionary 2000).
- ‘*the appearance of an area*’ (CoE 2000, 4).

Kaye and Alder (1999, 302–303) argued that scenery, ‘*is a resource, partly because of the economic value and partly because it is an accepted component of resource assessment programmes*’ and is therefore a variable that should be considered in land use decisions (Dearden 1985). If scenery is a resource, measurement of this resource, which is strongly rooted in the man-environment tradition, has taxed the brains of many eminent scientists. It is a veritable palimpsest and managers need to attempt evaluation of scenic resources in an objective and quantitative manner. Scenery is a major component not only of coastal, but of any landscape, as Sauer’s (1938) benchmark paper pointed out and it served as a key concept for the Berkley school of American cultural geography.

Amir and Gidalizon (1990) argued that the above focuses upon an environment’s visual properties/characteristics including natural and anthropogenic elements plus physical and biological resources. Non-visual biological functions, cultural/historical values, wildlife and endangered species, wilderness value, opportunities for recreation activities and a large array of tastes, smells and feelings were not included.

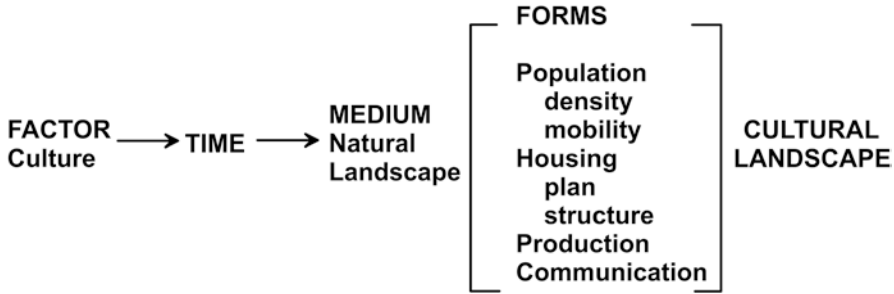


Fig. 2.1 Man's activities on the landscape (Sauer 1938, 318)

Olwig (2003) has given an excellent account of the above. Environmental anthropogenic and physical parameters are exemplified in Katsushika Hokusai's iconic 'Great Wave off Kanagawa' a 39 cm × 26 cm woodblock print made between 1830 and 1833, which seemingly symbolised nature's irresistible force, the weakness of human beings and the unpredictability of life.

The definition followed in this chapter is that of Sauer (1938 319), who defined landscape as, '*an area made up of a distinct association of forms, both physical and cultural.... The content of landscape is found... in the physical qualities of the area that are significant to man and in the form of his use of the area, in facts of physical background and facts of human culture,*' i.e. a cultural landscape is fashioned from the natural physical one by the activities of the cultural group (Fig. 2.1).

Sauer (1938) inferred that landscape was concerned with phenomenological shape/form and the way in which it shaped the world, a concept that Hartshorne (1939) disputed, who argued that landscape studies were of little value and had no fixed defined meaning. Lowenthal (1972), in a seminal paper on perceptual geography, challenged and changed this viewpoint by expanding Sauer's (1938) approach showing that landscape was the fulcrum of environmental concern and heritage and was a just phenomenon for epistemological inquiry. Lowenthal (1972) was fascinated by the many ways whereby people, societies (farmers, fisherman, poets, painters, business executives, etc.) knew and viewed landscapes and how they shaped the environment, i.e. from the pictures in one's head and the shape/appearance of the natural landscape. Cosgrove and Daniels (1988, 8) built on this viewpoint of landscape as '*a cultural image, a pictorial way of representing or symbolising surroundings,*' which made the world outside a minor component of landscape. This viewpoint has been criticised by Ingold (2000), who rejected the concept of inner and outer worlds, i.e. mind and matter. He was influenced by Heidegger's philosophy in that the material landscape is where man exists as a living being and who shapes the environment.

The term Landscape originally derived from Dutch (landscap) introduced into England in the sixteenth century by art dealers and art critics who translated it as meaning '*.... a picture of (Dutch) inland scenery*', (Penning-Rowsell and Lowenthal 1986, 5). From the mid eighteenth century it became a popular talking point and an

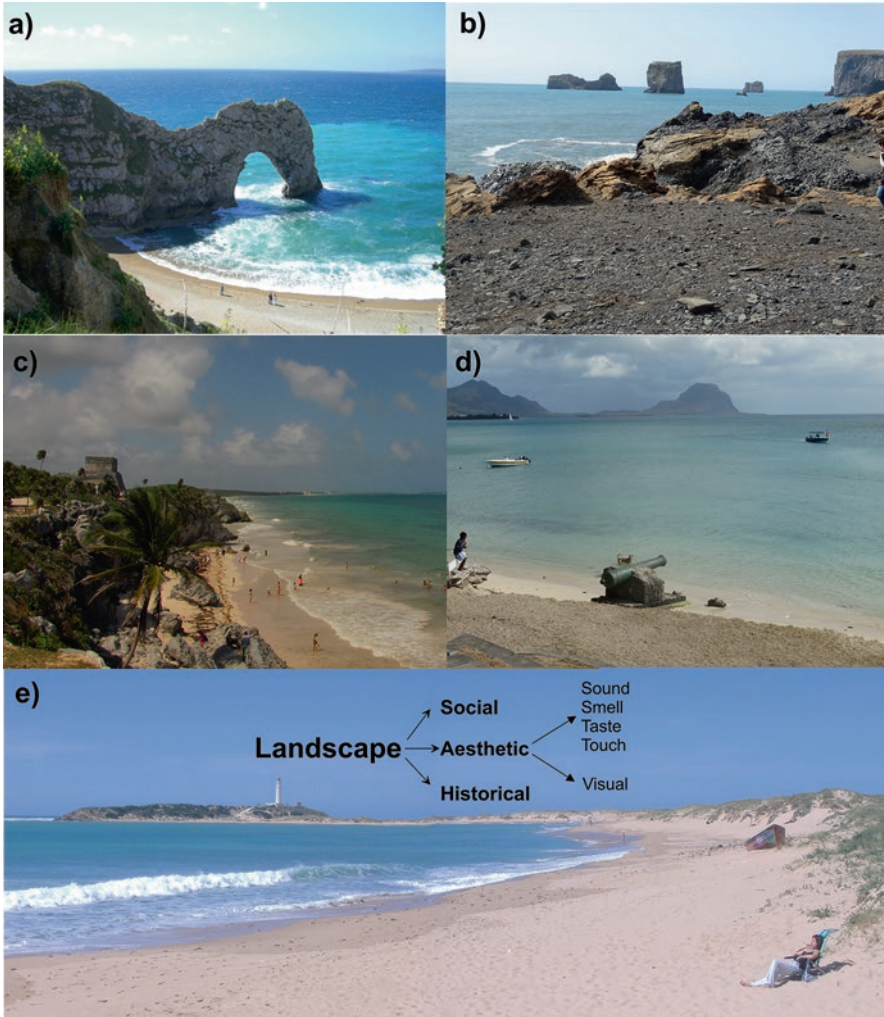


Fig. 2.2 Examples of landscape and their key elements. (a) coastal arch at the Dorset coast, UK, (b) rock stacks at Reynisdranger coast at Iceland, (c) Maya ruins at Tulum coast, Mexico, (d) Canon at La Preneuse beach, Mauritius, (e) Trafalgar lighthouse, Barbate, Spain

enthusiasm for mountain scenery became fashionable amongst a public who could afford to travel (Cox 1988).

Any landscape comprises three elements: Social, Aesthetic, Historical (Fig. 2.2). The aesthetic is mainly the visual parameter the one mainly concerned with scenic grandeur exemplified by Jovaisa's (2015, 213) comment regarding scenery in eastern Cuba as *'the most beautiful landscape human eyes had ever seen.'* Even the great artist Courbet argued that beauty was only to be found in nature, as *'beauty provided by nature is superior to all artists' compositions'* (Barnes 2015, 64), but how does one determine this?

This differed from Hogarth's (1753) viewpoint of the S shaped sensuous line of beauty of visual art *ie.* the form of the object – his 'line of beauty' and 'line of grace.' Hogarth (1753) developed a universal set of aesthetic principles, *i.e.* fitness, variety, regularity, simplicity, intricacy and quantity (greatness, which had an aesthetic effect on the beholder) – the 'wow' factor of number, weight and measure according to mathematical precision. Therefore it contains the visual (extent, scale, continuity, colour, diversity, views, etc.); the landscape elements of geology, relief, soil, vegetation, ecology, archaeology, etc. as well as the other senses, such as, smell, taste, together with the feelings evoked in the observer, e.g. joy, comfort, awe.

Aspects of the above concepts have frequently appeared in many scientific papers/books referring to classical definitions of beauty, e.g. harmony, simplicity, proportion (Eco 2016), but even within western philosophy these meanings have changed during historic periods, *i.e.* 'Renaissance man saw the proportions of cathedrals as barbarous' (Eco 2011, 10). But can beauty only exist in harmony? Jackson Pollack paintings can evoke a feeling of the beauty that is perceived and this is in paintings that exhibit discord and dissonance. On the other hand, Constable's paintings epitomise harmony with nature. Perhaps the beauty of a messy complexity is of a higher order than that of harmony, an argument put forward by Weinberg (1993) in discussing 17 varieties of scientific beauty, which generally were subordinate to scientific usefulness and truth.

Eckbo (1975, 31) suggested four major dimensions to the landscape term. '*The physical landscape.... A 4d sequential pattern of earth, rock, water, plants man-made structures, air, weather, light and energy.... The social landscape expresses the local, regional, national and world wide relations among the people with whom we live. The economic landscape determines how well we live. The cultural landscape embodies the creative contribution of our times to world history.*' Tudor (2014) summed this up extremely neatly (Fig. 2.3).

Following Sauer (1938), Fairbrother (1970), suggested that the nature of landscape could be summed up in a conceptual Eq. (2.1):

$$\text{LANDSCAPE} + \text{HABITAT} = \text{MAN} \quad (2.1)$$

If either man or the habitat changes so would the resulting landscape and this equation can never be stable due to the fact that man is constantly changing the habitat.

Landscape quality assessment is based on two contrasting paradigms, one regards quality as intrinsically inherent in the physical landscape, assessed by applying certain criteria subjectively presented as objectivity; the other regards quality as a product of the mind and the eye of the beholder and assessed by psychological methods with an objective evaluation of subjectivity *i.e.* it is a human construct. Respectively, these can be termed the objectivist (physical) paradigm as advocated by, for example, Plato (Waterfield 1993), Leopold (1969), Linton (1968, 1982), and the subjectivist (psychological) paradigm, as followed by Locke (1816), Hume (1757), Kant (1790), Buhyoff and Arndt (1981), Buhyoff et al. (1986), Kaplan and Kaplan (1989a, b), Purcell (1992), Purcell and Lamb, (1998). Both can-

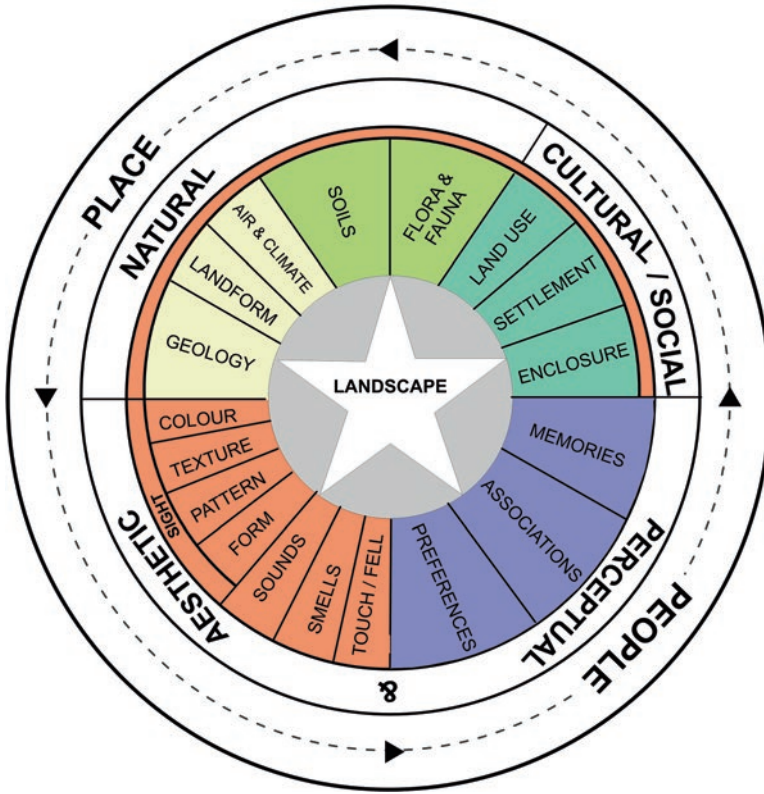


Fig. 2.3 Landscape elements in depth (Tudor 2014)

not be correct due to their contrasting underlying premises. ‘*The paradox is that in common usage, the landscape is taken to be beautiful but in actuality this beauty is literally a figment of the imagination, a product of the viewer’s own cultural, social and psychological constitution*’ (Lothian 1999, 180). Therefore do we see beauty or are intellectual as well as sensual factors involved? Culture plays a major part, as it has given mankind an aptitude for seeing a certain kind of beauty, but it still remains elusive, fugitive and evanescent.

2.2 Scenic Beauty

I look for the lover of nature in the artist and for the artist in the scientist. We belong together. Willstätter (1965, 395)

‘*Beauty has never been absolute and immutable but has taken on different aspects depending on the historical period and the country*’ (Eco 2016, 14) and one definition is, ‘*the quality that gives pleasure to the sight or aesthetic pleasure generally*’

(Chambers dictionary 2000); or, *'that quality or assemblage of qualities which gives the eye or the other senses intense pleasure'* (Cassell dictionary 1997). It is a hard task to try to quantify/semi-quantify visual beauty (Fig. 2.2), but as Walt Disney stated, *'It's kind of fun to do the impossible,'* quoted in Skylar (1967). Porteous (1985) showed that up to 90% of our perceptual intake is visual and much of the rest is auditory and tactile. The smell of new mown hay, watching a murmuration of starlings swoop though the sky, listening to the music emanating from a blackbird's throat, all are primary sensations and have meaning, i.e. one does not have to see in order to touch.

It is impossible to quantify the non-visual aesthetic aspects, as they are spasmodic, temporary phenomena. With respect to sound, Porteous and Maskin (1985) showed that natural sounds were the most appreciated e.g. sound of the surf; smell, Eisner (1999, 451) joked that, *'I'm essentially a nose with a human being attached'* (Levi and Regge 1989, 62) wrote that, *'I'm very glad that I educated my nose'*. The viewpoint that humans have a poor smell sense is a myth dating from the nineteenth century (McGann 2017). The human olfactory bulb across 24 mammalian species is comparatively similar but proportionately smaller containing fewer functional olfactory receptor genes than rodents, but the neuron numbers are comparable. As *Homo sapiens* evolved the olfactory bulb did not become smaller, the rest of the brain became larger. Over appropriate odour ranges humans can outperform laboratory rodents and dogs in detecting some odours, but are less sensitive to others (Stern 2017; www.science.sciencemag). Taste seemingly has little influence on scenic beauty, although a salt laden spray can invoke feelings, but one cannot 'touch' scenery. One may touch the ground or a tree, but not the whole grandiose sweep of a scene. Movement can affect the impression of beauty: waves are beautiful not only for their shape, but also because of their propagation. Tree fronds and high grass moving under a strong wind are much more 'beautiful' than in a static shape. All however play just a small part in adding/detracting from the appreciation of scenic beauty (Morisawa 1971) and they are also unmeasurable.

As regards the historical (Fig. 2.2), any landscape evolves through time – from verdant fields to the dark satanic mills of William Blake – back to fields/towns (Ingold 1993). The effect of *milieu* on man came during the UK Romantic period (late eighteenth century to mid nineteenth century) which *'opened people's eyes to the sublime beauty of landscape, and, in due course, to the grim symbolism of cityscapes in the Industrial Age.'* (Lodge 1992, 58).

As for the cultural landscape (Fig. 2.2), the Aborigine viewpoint best expresses this concept, even though, as Winton (2016, 13) commented, *'Australia is still a place where there is more landscape than culture.... Everything we do it still overborne and underwritten by the seething tumult of nature'*; where a great deal of *'Aboriginal culture is arcane and dizzyingly complex to the outsider'* (Winton 2016, 189). Mowaljarlai (1995) in a radio broadcast expressed this most succinctly: *'We cry for you because you haven't got any meaning of culture in this country.... It's the culture of blood of this country, of Aboriginal groups, of the ecology of the land itself.'* (Wright 2005, 68) corroborates these views, writing ... *'So I came to Uluru six years ago. I sat down with my grandparents and told them about my piece of*

paper, and they said 'that can't find you water, food. Now you have to come with us to get your cultural papers from the landscape.' This correlates with Duncan and Duncan's (1992) findings of the semiologist Roland Barthes, who postulated the importance of signs in the cultural landscape, as did Appleton (1996). Cosgrove and Daniels (1988) have given a sound account of the iconography involved.

If one of the main tenets of coastal tourism is the desire for '*scenic beauty*', what is the etymology of the words, remembering that, '*one cannot speak of beauty, one has to experience it*,' (Böhme 2010, 23) The word beauty is an abstract quality, as it is not a scientific concept, e.g. mass, time, (Langer 1953, 5). Interestingly it was once believed, '*that there was enough beauty for everyone, so there was no need to conserve it*' (Bufford 1973, 1438). Beauty is popularly considered to be the central dimension of one's aesthetic relationship with the environment representing the highest common factor of quality derived from one's focused acts of environmental appreciation. From a theological-metaphysical viewpoint, the universe is beautiful, as it was the work of the divine. Newton (1966, 24) wrote: '*except within the vaguest limits, beauty cannot be described: therefore it cannot be defined. It cannot be measured either in quantity or quality; therefore it cannot be made into the basis of a science. It has always proved impregnable to the frontal attacks of the aestheticians*'. Much progress has been made since this remark was made, as is evidenced in this book.

Schopenhauer thought that the feeling of the sublime was identical with the feeling of the beautiful, the sublime feeling being one of delight and not pleasure, this being negative pleasure (Burke 1757/2008) *i.e.* removal of pain/danger (Vandenabeele 2003). Tatarkiewicz (1972) gave a superb erudite exposition on this matter, tracing the concept throughout history. Defining beauty is difficult and virtually synonymous with aesthetics, the name given for the philosophical study of art and natural beauty (Guyer 2004), first introduced into the literature by Baumgarten's (1735), but in essence it is the branch of philosophy dealing with the basic concepts of thinking about objects of beauty (Shuttleworth 1983). However, the contemporary use of the term 'aesthetics' originated in the '*Critique of Judgment*' by Kant (1790). Foster (1991) reinterpreted Kant and Schopenhauer's views by examining the contribution of art and science to environmental aesthetics, suggesting an aesthetic framework based upon a philosophical fundament for the natural environment. Aesthetic appreciation and judgement was '*neither bound to art or science*', but to '*perceptual features, aesthetic properties and descriptive qualities*' (Foster 1991, 222), rejecting the cognitive influence on landscape preference views of, e.g. Penning-Rowsell and Lowenthal's (1986), arguing for the importance of the sensuous experience of nature (Foster 1991, 94). The case for a multi-sensuous aesthetic appreciation of nature, especially ecology, was made, which makes for '*a unique sense of place*' (Foster 1991 182).

Baumgarten's (1735) viewpoint designated the concept of beauty as gathered through sensation resulting in perfection, *i.e.* the quality present in a thing/person that gives intense pleasure or deep satisfaction to the mind, whether arising from sensory manifestations, e.g. shape, colour, sound or other matters. Baumgarten (1735) took the object of beauty beyond the limitation of art, defining it as the sci-

ence of perception, as prior to this the whole emphasis on beauty revolved around religion. For example, Bishop Grosseteste (c.1168–1253) argued that there was no beauty in the world apart from God (McEvoy 2000); and the concept of harmony, e.g. St. Augustine, who coined the venerable formulation for beauty: measure, shape and order, *‘only beauty pleases; and in beauty, shapes; in shapes, proportions; and in proportions, numbers’* (St. Augustine (in); Tatarkiewicz 1972, 168). Tatarkiewicz (1972, 167) wrote that Aristotle adhered to the same view and asserted that *‘beauty consists in magnitude and ordered arrangement and that the main forms of beauty are order, proportion, and definiteness.’* This is encapsulated in the ecclesiastical realm, where edifices range from the gothic Notre Dame cathedral, Paris, through the majesty of the much later Sacre Coeur church, Paris, to simpler churches, such as, the Church of the Holy Trinity, Stratford-upon-Avon, UK, where Shakespeare is buried, to an even simpler church at Oare, Exmoor, UK, immortalised in the book, Lorna Doone (Blackmore 1993).

It is important to note that beauty especially, natural beauty evokes aesthetic responses, which form an important part in any hierarchy of values and represents a source of self-actualisation for which man strives once basic biological/psychological needs are satisfied (Maslow 1968). It is best understood as an experiential product of the interaction of man and his surroundings (Zube and Sell 1986). Boulton (1958, 112), quoting Burke, argued that *‘beauty is, for the greater part, some quality in bodies, acting mechanically upon the human mind by the intervention of the senses.’* Landforms and land use patterns are important information sources, as together with the individual’s landscape range of experiences, they shape individual perceptions (Fig. 2.4 and Chap. 3).

However, no two individuals see the world in the same light, each brain is unique and experience influences perception and no two people can ever have exactly the same life experiences. In Lowenthal’s (1972) seminal paper the two key terms on which perception depends relate to ‘experience’ and ‘imagination.’ Not everyone can agree as to what is beautiful, but most seem able to recognise the worst aspects of ugliness, the assumption being that the two are not reversible ‘bi-polar opposites’ (Kates 1966, 25). Therefore beauty is elusive, personal, subjective and often related to emotion and, as Dewey (1929) maintained, beauty can be discovered in the relationship between the individual and his environment, what he termed ‘experience’, i.e. it is a two way contact.

In 1781 the age old arguments concerning religion and science came to a head with the publication in English of Immanuel Kant’s (1790, in German it was 1781) book *‘The Critique of Pure Reason’* written in response to David Hume’s (1757) philosophical scepticism. The point of disagreement was related to the idea that the mind itself gave structure to perceptions, providing concepts of time, space and causality, without which any experience would be chaotic and unintelligible. Kant (1790) indicated that scientific logic was relevant only to things people could experience through the senses and were able to prove/disprove by experiment. It failed to deal with value problems like beauty, i.e. reason could prove contradictory propositions and knowledge itself, as stated, was shaped by the senses and reason alone. Senses experience matter in space and time, which are subjective modes of sense

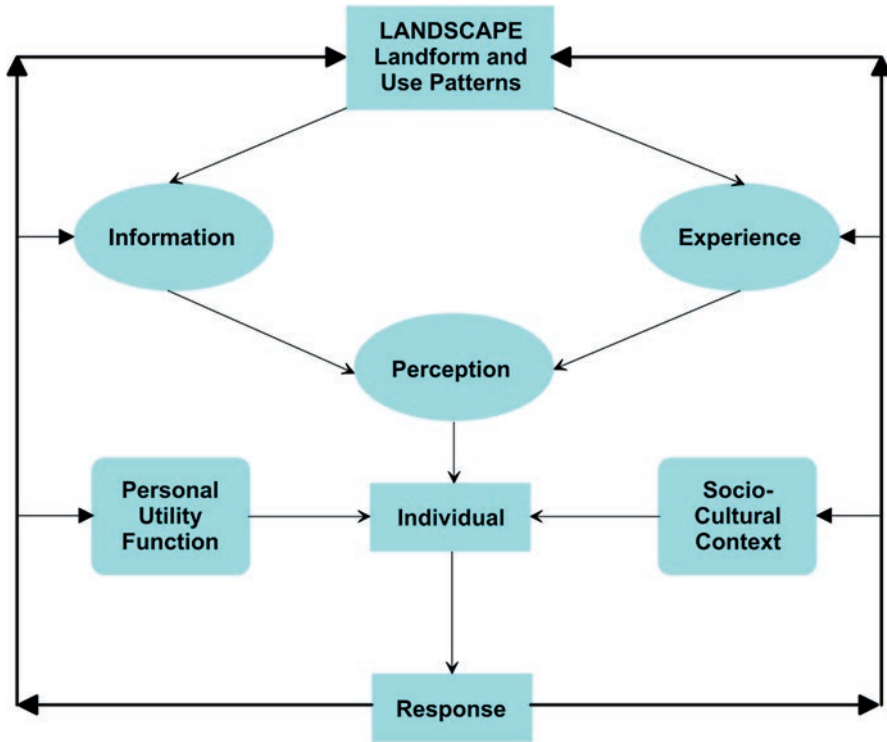


Fig. 2.4 Analysis of individual perceptions. (Based on Zube and Sell 1986)

perception and have no reality outside of the mind, as they are modes of perception and not attributes of the physical world. Reason also operates through logical structures, which also do not exist outside of the mind. This was a revolution in thinking, as fundamental as the revolution wrought by Copernicus in astronomy, *i.e.* it put nature and limitations of the mind at the centre of human knowledge. Wittgenstein (1922) in his *Tractus Logico Philosophicus*, carried Kant's (1790) work further by demonstrating the inadequacy of language itself to express the most important truths, arguing that language makes reasoning impossible on the fundamental issues, because the structure of syntax and imprecision of words cannot produce meaningful propositions about reality. Language does play a part, as words describing the trappings of landscape have to combine with those of feelings/emotion that are aroused in the beholder so terms, such as, *topophilia* came into usage (Tuan 1977).

Hume (1757) claimed that it was only force of habit that made us see a causal link behind all natural processes; man could not experience the law of causality. He attempted to '*reconcile the subjectivity of taste judgement and the experience of an effect with some objective features of the thing deemed beautiful*' (Eco 2016, 277). Kant (1790) turned this into an attribute of human reason *i.e.* the law is external and absolute simply because human reason perceives everything that happens as a matter of cause and effect. Both Kant and Hume agreed that one cannot know with

certainly what the world is like *'in itself'* – you only know what it is like *'for me'*. Hume (1757) argued that man has two different types of perceptions, namely impressions and ideas. The former relates to immediate sensations of an external reality; the latter – the recollection of such impressions. External reality smacks of phenomenology, a German philosophy propounded by Edmund Husserl and Martin Heidegger (1987) focusing on the world as it appeared rather than questioning the interpretations of reality – a philosophy that went straight to life and was the basis of the post WWII existentialism movement, as espoused for example, by Sartre, Camus and de Beauvoir.

George Berkeley, a sixteenth century Irish bishop, conforming to the ideas prevalent at the time, felt that science (and philosophy) were a threat to Christian life (Atherton 1995). He questioned *via* the logic of empiricism, the viewpoint of people like Descartes, Hume and Spinoza, who had argued that the material world is a reality. Berkeley stated that the only things that exist are those that we perceive and one does not perceive *'material'* or *'matter'*; *i.e.* one can hit a table; it is hard, but you do not feel the *'matter'*. He also questioned whether *'time'* and *'space'* had an absolute or independent existence – they could be figments of the mind. However the key figure was Descartes, a rationalist convinced that reason was the only path to knowledge. He was concerned with what we know, knowledge and the relationship between body and mind. One could not accept anything as being true unless one could clearly and distinctly perceive it. Every thought should be weighted and measured. Man was a dual creature, the mind was thought, and baser passions/feelings *e.g.* desire, hate, beauty were considered extended reality. Remember Socrates' dictum, which related to one thing only – that he knew nothing.

Gray (1996) indicated that Isaiah Berlin (1909–1997) disagreed with the above statements, as Berlin argued that concepts and categories by which one orders the world do vary in time and space. Human conduct can only be explained by getting inside a culture and its particular beliefs and values. Social science, searching for general, abstract laws, was bound to miss what was peculiar and specific. Berlin argued that everyone is faced by choices, between incompatible and incomprehensible values and there is no single right answer to moral and political questions. If you pursue community you sacrifice autonomy, indulge in mercy and justice goes, so if one aspires to knowledge, one should be prepared to give up freedom.

In essence, with the publication of Kant's (1790) book, the viewpoint shifted to *'the subject and the psychological state of the appreciator'*, (Kant 1790, 7). Kant (1790) defined delineated beauty into two categories: dependent beauty (*anhednische Schönheit*), which presupposes some concept of what the object should be, and free beauty (*freie Schönheit*), which did not. When a person contemplates an object and finds it beautiful, a harmony exists between his imagination and understanding, of which he is aware from the delight taken in the object. It is not cognitive because it rests on feelings not on argument. Imagination grasps the object and is not restricted to any definite concept, as it springs from the free play of cognitive faculties. This was exemplified as, *'Beauty signifies nothing more than the relation of our judgment to an object'* (Descartes, in, Tatarkiewicz 1972, 172). The idea of beauty without functionality involves the non-cognitive perception of aesthetics,

functionality being entrenched in our evolutionary past, later developed in the ideas of, e.g. Kaplan and Kaplan (1989a, b). It should be noted that aesthetic is time/culture dependant; the Greeks had their own aesthetic canons; the Romans a slightly different viewpoint; and in the Renaissance it differed again. Santayana (1896) rejected Kant's disinterested aesthetics, maintaining that the essence of aesthetics was 'pleasure objectified', experienced through the perception of an object, *i.e.* a value that only existed in perception.

But what in essence is 'Perception?' Oxford Dictionaries (2016) defines it, '*as the ability to see, hear, or become aware of something through the senses. In other words, it is the way in which something is regarded, understood, or interpreted, or the act or faculty of apprehending by means of the senses or of the mind. Another way to describe perception is as immediate or intuitive recognition or appreciation, as of moral, psychological, or aesthetic qualities; insight; intuition; cognition; understanding; realization, thoughtfulness.*' It is the act or faculty for perceiving, referring of sensation to the external stimuli.

Therefore perception is not only a psychological process but, also a cultural one. One sees *via* a personal and cultural lens, according to lifetime habits which are shaped by a particular culture. Vision is the sense that both operates at a distance and close up unlike touch and taste and it can be focused and directed unlike hearing and smell. One can pay attention/ignore certain noises, smells, but one cannot blink ears or aim the nose; the eye is far more active and under far more control. Seeing is by far the best perceptual tool and the foremost way to engage with the world. It is an act of mind and not simply the eye, as information and instructions are travelling along nerves from the eye to the brain and *vice versa*. The fusion between object and observer, thought and emotion and action and reflection has been called synaesthesia (Lemley 1999; Girod et al. 2002) *i.e.* the blending of science and arts to increase awareness and perception and several pedagogies have highlighted the role of perception (Sullivan 2000).

It is salutary to remember the quote of Voltaire regarding individual perception of absolute beauty, the '*to kalon*', '*Ask a toad what beauty is...He will answer that it is female, with two large round eyes sticking out of her little head and flat snout, a yellow belly, a brown back. Question the devil: he will tell you that the beautiful is a pair of horns, four claws, and a tail. Finally, consult the philosophers: their answer will be...grandiloquent nonsense; they ask for something conforming to the archetype of the beautiful, in essence, to the to kalon.*' (Voltaire 1824). Beauty and ugliness can therefore depend upon one's viewpoint and man posits himself as the norm of perfection (Nietzsche 2008), so beauty is defined with reference to a specific model.

Over the last two centuries the term perception has been utilised more and more in the literature. The term perception has been available since the 1800s, but post World War II an increase in its use may be linked to an increase presence of the term in web based media; it is likely related to journals/books with respect to scenery (Fig. 2.5; Ingold 2000). It is perception (positive or negative) that influences an individual or communities behavior irrespective of the scientific fact(s), which enables him/her to make a decision, *i.e.* what matters is what is believed, not what

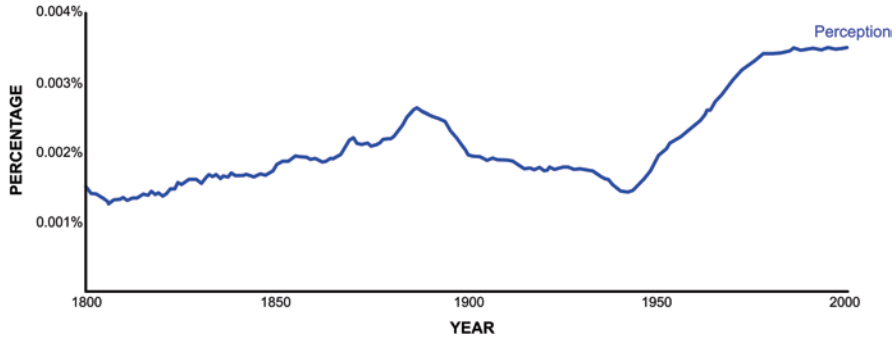


Fig. 2.5 Use of the term “perception” since 1800 (Google 2013)

is necessarily true, exemplified in the 2017 political world of the ‘post truth/alternative’ facts’ era where emotion has seemingly become more important than knowledge.

All that the above stresses is that it is the visual perception of a scene that is important and it is this that provides an impression of beauty, *i.e.* beauty has a special relationship with sight, a phrase associated with Descartes (Cottingham et al. 1991). Da Vinci (1891) argued that ‘*all our knowledge has its origins in our perceptions*’; Berger (1972, 7) reasoned that... ‘*the relationship between what we see and what we know is never settled*’ adding ‘*that the ‘way we see things is affected by what we know and what we believe*’ (Berger 1972, 9) and a large part of seeing depends upon habit and convention. This infers that part of what we perceive comes through our senses from the object before us, another part comes out of our own head confirming Kant’s (1790) affirmation that all judgments about beauty are individual judgments and rely on imagination. Is this ‘*the only faculty we have for apprehending beauty*’ (Faulks 1999, 235) The perception of beauty is influenced by experience. This is a key principle of the views of the seminal papers of Lowenthal (1961) and Appleton (1975), the latter adding an interdisciplinary approach not being deterred by seeking elementary information.

Kant (1790) saw in aesthetics an answer to a fundamental schism between pure and practical reason. So is it true that ‘*beauty properly denotes the perception of some mind*’ (Stolnitz 1961, 201) and Margaret Wolfe Hungerford’s – nee Hamilton (1889, 132) famed comment that ‘*Beauty is in the eye of the beholder?*’ This has been an idea that has been expressed by many eminent people over a long time period:

- ‘*Beauty is bought by judgement of the eye/Not utter’d by base sale of chapmen’s tongues*’ (Shakespeare 1588).
- ‘*Beauty is no quality in things themselves: It exists merely in the mind which contemplates them; and each mind perceives a different beauty. One person may even perceive deformity, where another is sensible of beauty*’ (Hume 1757, I. XX111.8).

- ‘Beauty has been very often and very differently defined – and as often declared to be indefinable. If, however, we look for the characteristic defining relations, we find that the definitions hitherto suggested reduce conveniently to sixteen.’ (Ogden 2013, 216).
- ‘Beauty signifies nothing more than the relation of our judgment to an object.’ (Descartes 1630).
- ‘...whether things are beautiful because they please, or please because they are beautiful. And here I shall doubtless receive the reply that they please because they are beautiful.’ (St. Augustine).
- ‘Beauty pertains rather to the sight than to the hearing.’ (Ficino 1561, quoted in Tatarkiewicz 1972).
- ‘Everything has beauty, but not everyone sees it.’ (Confucius, www.brainyquote.com).
- ‘I believe there is such a thing as a search for beauty – a delight in the nice things in world.’ (Leiter 2014).
- ‘The most beautiful experience we can ever have is the mysterious. It is the fundamental emotion which stands at the cradle of true art and true science. Whoever does not know it can no longer marvel, is as good as dead, and his eyes are dimmed’. (Einstein 1973, 12).
- ‘Nec spe nec mytv’, (Plato 27, in Taylor 1929).
- ‘Beauty in the landscape is a quality that appeals to the universal in man.’ (Younghusband 1920, 341).

So can beauty be quantified bearing in mind that the perception of beauty is subjective? ‘Beauty is not an easy thing to measure. It does not show up in the gross national product, in the weekly pay check.... but these things are not ends in themselves. They are a road trip to satisfaction and pleasure and the good life. Beauty makes its own contribution to these final ends. Therefore it is one of the most important components of our true national income, not to be left out simply because statisticians cannot measure its worth’ (Johnson 1965, 10).

Does the word ‘beauty’ have a scientific definition and if so can it be measured and will its results/meaning that can allegedly be sensed, remain the same for the scientist as it would for other people? Understanding aesthetics in science requires consideration of sensual and emotional responses to nature similar, if not identical, to those involved in considerations of aesthetics in the arts (McAllister 1996), so to what extent is something beautiful or aesthetically pleasing? For Poincaré (1946) nature was beautiful, but was this nature in its entirety or minus the summation of anthropogenic effects? It appears contrary to common opinion that some of nature is beautiful and some is not. Can the use of the word ‘beauty’ to describe everything ultimately render the term meaningless (Kane 1997).

Plato (Taylor 1929) thought that mathematical beauty was the highest form of beauty, but on this score how many would find the following Eq. (2.2) beautiful.

$$(i\partial - m)\psi = 0 \quad (2.2)$$

Yet this equation – The DIRAC equation – is aesthetic, elegant, simple and utterly beautiful to any mathematician, bringing together the two fulcrums of mod-

ern physics, quantum mechanics and relativity (ψ is the amplitude of the (four component) particle wave function; m is the (rest) mass of the particle; i is the square root of -1 ; the Feynman notation ∂ is the covariant derivative). What physicists/mathematicians love about the latter is its great mathematical beauty, which they have no difficulty in appreciating. What is important is the ability to identify simplicity in complexity, patterns in chaos, structure. Dirac commented that, *‘what makes the theory of relativity so acceptable to physicists in spite of its going against the principle of simplicity is its great mathematical beauty. This is a quality which cannot be defined, any more than beauty in art can be defined, but which people who study mathematics usually have no difficulty in appreciating’* (BBC 2014). He argued that a physical law *must* possess mathematical beauty, *‘It is more important to have beauty in one’s equations than to have them fit the experiment;’* (Dirac 1963, 47). On that score he deemed the quantum electrodynamic (QED) theories of eminent scientists, such as, Heisenberg, Pauli, Feynman, Freeman Dyson (all Nobel Laureates) as ‘ugly’ and not worth doing anything with according to the Poincaré viewpoint.

Similarly the EULER Eq. (2.3) boasts five of the most important mathematical constants – zero (additive identity), 1 (multiplicative identity), e and π (two of the most common transcendental numbers) and i (fundamental imaginary number), plus addition, multiplication and exponentiation; e , i , and π are extremely complicated and seemingly unrelated numbers, yet in this equation are inexorably linked together.

$$e^{i\pi} + 1 = 0 \quad 2.3$$

Greenbie (1975) suggested that neural patterns of emotion have a characteristic shape within the brain which can be recognised in similar shapes in the landscape and produce similar emotional responses. Some 30 years later Kawabata and Zeki (2004) used the technique of functional Magnetic Resonance Imaging (fMRI) to address the question of whether certain brain areas are specifically engaged when subjects view paintings classed as beautiful, neutral and ugly. fMRI exploits changes in bloodflow and oxygenation in order to identify regions of brain activity and represents a second generation in diagnostic medicine. They found that differential engagement existed for *‘the medial orbito-frontal cortex, anterior cingulate, and the parietal cortex,’* so that *‘the perception of stimuli as beautiful or ugly mobilized the motor cortex’* (Kawabata and Zeki 2004, 1700). Ten years later, Zeki et al. (2014) employed fMRI to show the activity of brain scans of 16 postgraduate or postdoctoral level mathematicians, as they looked at 60 formulae that previously had been judged as beautiful, half-way, or ugly. Results indicated that beautiful formulae stimulated activity in same brain field as experienced in the Arts.

In the Arts, ‘beauty’ can be accounted for, at least in part, by well-understood harmonies, distributions of colours or other factors. Blood et al. (1999) and Ishizu and Zeki (2011), showed that the same responses occur in music, Tsukiura and Cabeza (2011) for aesthetic and moral judgements, so these aspects of beauty all correlate with activity in a specific part of the emotional brain. This again was field

A1 of the medial orbito-frontal cortex (mOFC), which is the home of the experience of all beauty, *i.e.* a complex string of numbers/letters in mathematical formulae can provide the same sense of beauty as any art masterpiece or great music. There seems to be an abstract quality to beauty that is independent of culture and learning. Incidentally, Riemann's 'functional equation' was rated as the ugliest of the formulae tested! All aesthetic scientific responses seem in part to come from identifying simplicity in complexity, pattern in chaos, structure in stasis.

These objectively observable events turn into a first-hand feeling of a private subjective perspective experience and how this occurs is still unknown. Dearden (1985) rejected the '*objectivist*' and '*subjectivist*' philosophical poles preferring a '*relational*' one focused on the degree of societal consensus on landscape aesthetics concluding that familiarity was a significant factor in determining landscape preference. This tension between the objective and subjective has seemed insoluble since Descartes first wrote about it in the C17th when he segregated a conscious mind from a biological brain (Descartes in, Tatarkiewicz 1972). Perception is about what is seen or experienced. A brain can be reduced to neurons sparking/pulsating with chemicals but somehow this seething neurobiological mass relates to consciousness that is experienced, e.g. in a coastal scene, with the sound of waves breaking on a shore, the sight of a soaring vertical coastal cliff – a conceptual impasse indeed (Greenfield 2016).

In 1970, Colvin (1970, xxii) wrote that '*the study of landscape design must now bridge the chasm between art and science, it is even more necessary for science and art to come to terms.*' It appears that describing something as beautiful – a certain landscape, painting, formula or music perhaps – tends to promote the same pleasure in an observer's brain, so the chasm of Colvin (1970) appears to have been bridged.

One must remember that any landscape view '*is composed not only of what lies before our eyes but what lies within our heads*' (Meinig 1979, 58) and different people e.g. a geologist, ecologist, archaeologist, will see landscapes in different ways *via* nature, habitat, wealth, artefact, history, etc. This is geared to intuition and experimental thinking guided, as stated, by emotional and affective processes in the brain, which is an emotional entity, a vast array of neurons that work together to generate our experience of the world. Associations of networks, bundles of thoughts, feelings, images and ideas become connected over time. Therefore the brain, '*is the bridge between the **internal** and **external** universes,*' (Martin and Gordon 2001, 393) covering three scales: MACROSCOPIC- Cosmic; MESOSCALE- Global; MICROSCOPIC- Local.

External (Fig. 2.6)

- (a) Intensity and Size. The brighter a light, the more likely one is to see it.
- (b) Contrast and novelty. New Stimuli will often gain one's attention, as can the appearance or disappearance of stimuli.
- (c) Repetition. Repeated stimuli can cause one to pay attention, e.g. the blue flashing light of an ambulance or police car.

Internal (Fig. 2.6)

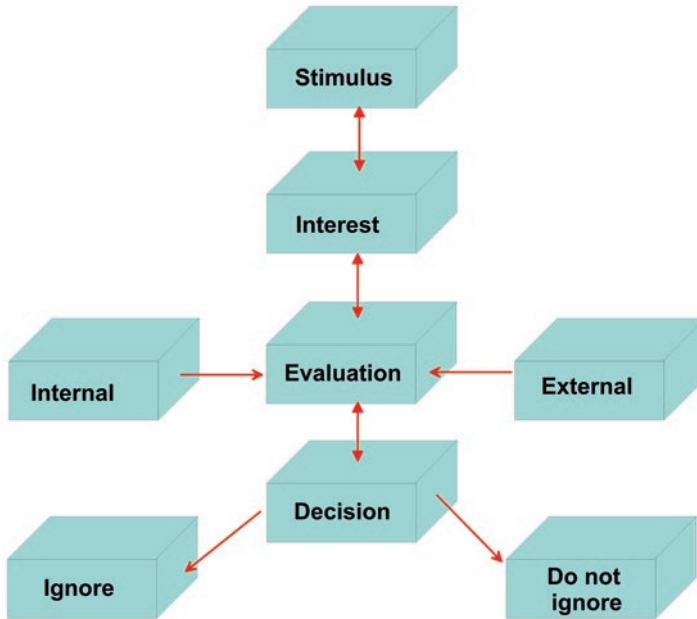


Fig. 2.6 The perception process

- (a) Notices and needs e.g. hunger, thirst.
- (b) Preparatory set. A person can awake on an early morning call if it is expected
- (c) Interest. Attention is paid to football scores, whilst effectively ignoring the rest of a radio/tv programme.

Zube et al. (1982) reviewed 160 journal papers from UK and North America, with reference to contributions to pragmatic landscape planning and management issues and to the evolution of a general theory of landscape perception and identified four general paradigms of landscape perception.

- Expert evaluation by skilled observers, e.g. Taggart et al. (1980), Shuttleworth (1980a, b).
- Psychological, assessment *via* testing the public with respect to aesthetic landscape qualities, e.g. Carls (1974).
- Cognitive pairing involving the search for a human meaning associated with landscape properties, e.g. Wohill and Harris (1980).
- Experiential which considered landscape values to be based on experience of the human-landscape interaction where both were shaping and being shaped in the interactive process, e.g. Kobayashi (1980).

Zube et al. (1982) proposed a theoretical framework to guide future research to looking at how human-landscape-outcome actions interrelate, concluding that the justification for worrying about landscape perception and making landscape beautiful is that landscape is important for human quality of life and is as significant as

economic and social factors in influencing the human condition. They suggested that because there is no underlying theoretical structure for landscape perception, there is a lack of a rational basis for diagnosis, prescription and prognosis. They even posed the question as to whether researchers were measuring the same aesthetic.

From 1965–80, Zube et al. (1982) compared the ratio of the paradigms for the 1965–’73 periods with the 1974–’80, (respectively they were: 3:1; 8:1; 4:1; 5:1) and results suggested that the dominant paradigm was the psychological and the expert approach was popular. This reflected an emphasis on problem solving research and Landscape journals have primarily focused on expert and psychological paradigms. These research areas involve both applied and theoretical issues.

2.2.1 The Legal Situation

This varies from country to country and the situation for the UK is presented simply as an example. The first formal UK legislation Act where the term ‘natural beauty’ was the 1906–7 Act to establish the National Trust, a charitable organisation for places of historic interest and natural beauty, whose philosophy was based upon the ideas of Robert Hunter and Octavia Hill. Since then many committees and landmark Acts have been formulated, e.g. Government Reviews e.g. Select Committee Public Works, 1833; Addison Committee, 1929; Scott Committee, 1941, Dower Report, 1945 (Williams 1987). Terms such as ‘characteristic landscape beauty is strictly preserved,’ ‘landscape value and rural areas of remarkable landscape beauty;’ ‘landscape character and landscape pattern;’ ‘high landscape quality;’ ‘high scenic value,’ were bandied about in these reports with respect to natural beauty, all leading to the UK ‘Town and Country Planning Act, 1947’. This was followed by the Hobhouse Report, 1947, and the major ‘National Parks and Access to the Countryside Act,’ 1949, a fundament for UK legislation whose implications can be seen in the IUCN (1994) ‘protected areas ‘of the Category V protected landscapes/seascapes that are seemingly more anthropogenic than natural.

In 1949, the ‘Town and Country Planning Act’, received Royal Assent and Section 5(1) stated that the National Parks’ purpose included, ‘the preservation of the natural beauty of an area’, qualified in Section 114(2) by, ‘references in this act to the preservation of the natural beauty of an area shall be construed as including references to the preservation of the characteristic natural features, flora and fauna thereof,’ amended in 1968 to ‘its flora, fauna and geological and physiographical features’ in which ‘preservation’ was replaced by ‘conservation’. Interpretation of Section 114(2) is that it is a limited definition of ‘natural beauty’ and does not flesh out the meaning but the phrase cropped up in many later Acts, notably the ‘Countryside Act’ 1968, ‘Environment Act’ 1995, ‘Wildlife and Countryside Act’ 1981, 1985, ‘Countryside and Rights of Way Act’ 2000, together with accompanying EC regulation relating to Environmentally Sensitive Areas.

The meaning has inevitably been assumed to be self-evident i.e. beauty that is natural and not man made, but within the past century its legal definition has been challenged and despite widespread legislation usage it has not been formally defined. The crux of the matter has been in deciding at what point does a landscape cease to be 'natural' because of 'human settlement and land use'. In a report concerning an inquiry into the North Pennines Areas of Outstanding Natural Beauty, Berthon (1986) argued that, 'the quality of the landscape of the area is both natural and man-made', i.e. quality in place of natural beauty and man-made made an appearance. A second review of National Parks (Edwards 1991) recommended that the first purpose of National Parks, of 'preserving and enhancing the natural beauty of the areas' should be re-defined as 'to protect, maintain and enhance the scenic beauty, natural systems and landforms, and the wildlife and cultural heritage of the area.' So culture now becomes very important. 'Natural beauty' was qualified by Section 114(2) indicating that in all references in the Act to the preservation/conservation of the 'natural beauty' of an area, 'natural beauty' would include, but was not confined to, flora and fauna and geological and physiographical features.

'Landscape' and 'character' now commenced to be seen as being related but having different terms, and the problem of the application of worldwide aesthetic rules became evident. Beauty related to quality whilst character was concerned with individual landscape qualities and consequent values. In an appeal decision in a case relating to The New Forest boundary, the High Court (2005) suggested that legislation was needed to clarify the meaning and use of natural beauty in designating landscapes for protection. It stated that 'views as to which tracts of countryside have the quality of 'natural beauty' may (or may not) have changed over the last 50 years, but the 'natural beauty' criterion in subsection 5(2)(a) of the Act has not been changed to embrace wider considerations such as 'cultural heritage'. If the 'natural beauty' criterion in subsection 5(2)(a) is to be changed to reflect twenty-first century approaches to countryside and leisure planning, then the change must be effected by Parliament, and not by administrative action on the part of the Agency in adopting a wider range of factors for the purposes of designation.' Recently the words 'natural beauty' in a superb paper by Selman and Swanwick (2010, 4) referred to a 'dynamic and malleable concept potentially posing problems for consistency of interpretation and yet apparently retaining a continuing relevance.' This is currently the UK situation.

2.3 Conclusions

The phrase that is guaranteed to wake up an audience...And in Conclusion, (Anon)

Many branches of the arts/sciences have debated the term 'beauty', e.g. philosophers, artists, scientists, whilst geographers have attempted to apply it to landscapes. The concept of beauty is difficult to resolve as it relates to an individual's perception of a scene, which encompasses the individual components of a scene that interacts



Fig. 2.7 (a) A 'beautiful' scene, Anakena beach, Easter Island, Chile; (b) An 'ugly' scene, Valparaíso, Chile

with the brain of the person by relating it to past experiences. This is the reason why field testing of the views of many beach users was used in this book – see Chap. 4. An agreement of opinion from this cohort – all geared to their personal perception of coastal scenery allowed a consensus as to what constitutes a beautiful coastal scene and its converse an ugly scene. Most people if presented with Fig. 2.7 intuitively would rate as a scene exhibiting 'beauty', whereas Fig. 2.7b would be described as 'ugly.'

Any coastal landscape will encompass physical, historical and cultural parameters and many of these parameters are ephemeral, e.g. the smell of salt air, the slow

passage over water of a white sailed yacht – these are impossible to quantify, but the visual impact of a coastal landscape remains the most dominant of the senses.

However, it is prudent to remember the words penned by Maugham (1963, 96–97) ... *‘the ideal has many names and beauty is but one of them...I cannot contemplate beauty long....when the thing of beauty has given me the magic of its sensation my mind quickly wanders.... Beauty is an ecstasy; it is as simple as hunger.... Beauty is perfect, and perfection (such is nature) holds our attention but for a little while, beauty is that which satisfies the aesthetic instinct beauty is a bit of a bore.’* Perhaps the meaning of the word is not to be found in some abstract definition but in its usage in everyday language, something akin to Wittgenstein’s (1922) viewpoint, remembering that everyday speech has embedded biases., but then, ... *que sais-je?* (de Montaigne 2016).

Addendum

This chapter really only refers to western ideas of beauty. Ideas from e.g. the eastern world, are unfortunately not encompassed in this discussion mainly due to the author’s inability for language.

Appreciation of, for example, an Asian/Polynesian/ Maori/Aborigine concept of beauty is especially true with international tourism expected to reach 1.8 bn. by 2030 (UNWTO 2017), with an expected huge influx from Asian countries.

References

- Amir S, Gidalizon E (1990) Expert based method for the evaluation of visual absorption capacity of the landscape. *J Environ Manag* 30:251–163
- Appleton J (1975) Landscape evaluation: the theoretical vacuum. *Trans Inst Br Geogr* 66:120–123
- Appleton J (1996) *The experience of landscape*. Wiley, London. 296pp
- Atherton M (1995) Berkeley without God. In: Muehlmann G (ed) *Berkeley’s metaphysics: structural, interpretive, and critical essays*. Pennsylvania State University Press, Philadelphia, pp 231–248
- Barnes J (2015) *Keeping an eye open*. Jonathon Cape, London. 288pp
- Baumgarten AG (1735) *Theory of aesthetics, philosophical study of art and natural beauty*. 1954 edition: (trans: Aschenbrenner K, Holther WB). University of California Press, Berkeley
- BBC (2014) *Mathematics: why the brain sees maths as beauty*. BBC, London
- Berger J (1972) *Ways of seeing*. Penguin, London. 176pp
- Berthon Sir S (1986) North Pennines AONB (Designation) Order 1978: report of Public Local Inquiry (Reference: DRA1/CW/39)
- Blackmore RD (1993) *Lorna Doone: a romance of Exmoor*. Wordsworth Classics, London. 247pp
- Blood AJ, Zatorre RJ, Bermudez P, Evans AC (1999) Emotional responses to pleasant and unpleasant music correlate with activity in paralimbic brain regions. *Nat Neurosci* 2:382–387
- Böhme G (2010) On beauty. *Nordic J Aesthet* 21(39):22–33
- Boulton JT (1958) *Edmund Burke: a philosophical enquiry into the origins of our ideas on the sublime and the beautiful*. Routledge and Kegan Paul, London. 197pp

- Bufford S (1973) Beyond the eye of the beholder: aesthetics and objectivity. *Mich Law Rev* 71:1438–1463
- Buhyoff GJ, Arndt LK (1981) Interval scaling of landscape preference by direct and indirect measurement methods. *Landsc Plan* 8:257–267
- Buhyoff GJ, Hull RB, Lien JN, Cordell HK (1986) Prediction of scenic quality for southern pine stands. *For Sci* 32(3):769–778
- Burke E (1757/2008) *A philosophical enquiry into the origin of our ideas of the sublime and beautiful*. Oxford University Press, Oxford
- Carls EG (1974) The effects of people and man-induced conditions on preferences for outdoor recreational landscapes. *J Leis Res* 6:113–124
- Cassells dictionary (1997) Orion, UK
- CC – Countryside Commission (1987) *Landscape assessment 2013 a countryside commission approach*. Countryside Commission, London
- Chambers dictionary (2000) Chambers, UK
- CoE – Council of Europe (2000) *European landscape convention*. Council of Europe, Florence
- Colvin B (1970) *Land and landscape*. John Murray, London. 266pp
- Cosgrove D, Daniels S (1988) Introduction: iconography and landscape. In: Cosgrove D, Daniels S (eds) *The iconography of landscape*. Cambridge University Press, Cambridge, pp 1–10
- Cottingham J, Stoothoff R, Murdoch D (1991) *The philosophical writings of Descartes*, vol 3. Cambridge University Press, Cambridge
- Cox G (1988) Reading nature: reflections on ideological persistence and the politics of the countryside. *Landsc Res* 13(3):24–34
- Da Vinci L (1891) *Codex Trivulzi*, Castello Sforzesco. Pub. Luca Beltrami, Milan
- Davy H (1840) Parallels between art and science. In: Davy J (ed) *The collected works of Sir Humphrey Davy*, vol 8. Smith and Cornhill, London, pp 306–308
- de Montaigne M (2016) *The complete essays by Michel de Montaigne*. Create Space Independent Publishing Platform, London
- Dearden P (1985) Public participation and scenic quality analysis. *Landsc Plan* 8:3–19
- Descartes letter by R. Descartes to M. Mersenne, in, Tatarkiewicz (1972)
- Descartes R (1630) *Letter to Mersenne*
- Dewey J (1929) *Experience with nature*. Allen and Unwin, London. 486pp
- Dirac PAM (1963) The evolution of the physicist's picture of nature. *Sci Am* 208(5):45–53
- Duncan JS, Duncan NG (1992) Ideology and bliss: Roland Barthes and the secret histories of landscape. In: Barnes TJ, Duncan JS (eds) *Writing world: discourse, text and metaphor in the representation of landscape*. Routledge, London, pp 250–266
- Eckbo G (1975) Qualitative values in the landscape. In: Zube EH, Brush RO, Fabos JG (eds) *Landscape assessment*. Dowden Hutchinson and Ross, Stroudsburg, pp 151–167
- Eco U (2011) *On ugliness*. Rizzoli, New York. 453pp
- Eco U (2016) *History of beauty*. Rizzoli, New York. 438pp
- Edwards RC (1991) *Fit for the future: report of the National Parks Review Panel*. Countryside Commission, Cheltenham
- Einstein A (1973) *Ideas and opinions*. Souvenir Press, London
- Eisner T (1999) Seventy-five reasons to become a scientist. *Am Sci* 76:451
- Ergin A, Williams AT, Micallef A (2006) Coastal scenery: appreciation and evaluation. *J Coast Res* 22(2):958–964
- Fairbrother N (1970) *New lives, new landscapes*. Architectural Press, London. 397pp
- Faulks S (1999) *Charlotte Grey*. Hutchinson, London. 393pp
- Ficino M (1561) quoted in Tatarkiewicz 1972
- Foster CA (1991) *Aesthetics and the natural environment*. Unpublished PhD. thesis, University of Edinburgh
- Girod M, Rau C, Schepige A (2002) Appreciating the beauty of scientific ideas: teaching for aesthetic understanding. *Sci Educ* 87:574–587
- Google (2013) <https://books.google.com/ngrams>. Accessed 16 May 2017

2 The Concept of Scenic Beauty in a Landscape

- Gray J (1996) Isaiah Berlin. Princeton University Press, Princeton. 183pp
- Greenbie BB (1975) Problems of scale and context in assessing a generalized landscape for particular persons. In: Zube EH, Brush RO, Fabos JG (eds) Landscape assessment. Dowden Hutchinson and Ross, Stroudsburg, pp 168–201
- Greenfield S (2016) A day in the life of a brain. Allen Lane, London. 288pp
- Guyer P (2004) The origins of modern aesthetics. In: Kivey P (ed) The Blackwell guide to aesthetics. Blackwell, London, pp 1711–1735
- Hartshorne R (1939) The nature of geography. Assoc Am Geogr Lanc USA 29(3):173–412
- High Court (2005) High Court judgment in Meyrick Estate Management & Others v. Secretary of State for Environment, Food and Rural Affairs [2005] EWHC 2618 (Admin), Paragraph 62
- Hogarth W (1753) The analysis of beauty. J. Reeve, London
- Socrates. <http://www.academiasocrates.com/socrates/biografia.php>
- Confucius. <http://www.brainyquote.com/quotes/authors/c/confucius>
- Hull RB, Revell GRB (1989) Issues in sampling landscapes for visual quality assessments. Landsc Urban Plan 17:323–330
- Hume D (1757) Of the standard of taste, reprinted in A. Neill, and A. Ridley (1995). The Philosophy of Art: Readings Ancient and Modern. McGraw Hill, Boston, 592pp
- Hungerford MW (1889) Molly Bawn (Dodo Press). Hurst and Blacket, London
- Husserl E, Heidegger M (1987) The phenomenology of internal time-consciousness. University Microfilms International, Ann Arbor
- Ingold T (1993) The temporality of the landscape. World Archaeol 25:152–174
- Ingold T (2000) The perception of the environment: essays of livelihood, dwelling and skill. Routledge, London. 460pp
- Ishizu T, Zeki S (2011) Toward a brain-based theory of beauty. PLoS ONE 6:e21852
- IUCN (1994) International Union for the Conservation of Nature and Natural Resources (IUCN). Guidelines for protected area management categories. IUCN, Gland
- Johnson LB (1965) Special message to the congress on conservation and restoration of natural beauty. February 8. <http://www.presidency.ucsb.edu/ws/?pid=27285>
- Jovaisa M (2015) Unseen Cuba. Unseenpictures, Berlin. 440pp
- Kane M (1997) Beauty and science. Philosophy Now 17:15–19
- Kant I (1790) Critique of Judgment (Kritik der Urteilskraft), 1st edn. L. Lagarde, Berlin, p 480
- Kaplan R, Kaplan S (1989a) The visual environment: public participation in design and planning. J Soc Issues 45(1):59–86
- Kaplan R, Kaplan S (1989b) The experience of nature: a psychological perspective. Cambridge University Press, Cambridge. 360pp
- Kates RW (1966) The pursuit of beauty in the environment. Landscape 16(2):21–25
- Kawabata H, Zeki S (2004) Neural correlates of beauty. J Neurophysiol 91(4):1699–1705
- Kaye R, Alder J (1999) Coastal planning and management. E & FN Spon, London. 375pp
- Keats J (1918) Endymion, London, Book I, lines 1 and 2
- Kobayashi A (1980) Landscape and the poetic act: the role of the haiku club for the Issei. Landscape 24:42–47
- Langer SK (1953) Feeling and form: a theory of art developed from philosophy in a new key. Routledge and Kegan Paul, London. 431pp
- Leiter S (2014) No Great Hurry. <http://watch.innogreathurry.com>
- Lemley B (1999) Do you see what they see? Discover 20(12):80–87
- Leopold LB (1969) Quantitative comparisons of some aesthetic factors among rivers. US Geological Survey, Washington, DC. 16pp
- Levi P, Regge T (1989) Dialogo (trans: Rosenthal R). Princeton University Press, Princeton
- Linton DL (1968) The assessment of scenery as a natural resource. Scott Geogr Mag 84:219–238
- Linton DL (1982) Visual assessments of natural landscapes. W Geog Ser 20:97–116
- Locke J (1816) An essay concerning human understanding. Thomas Tegg, London. 816pp
- Lodge D (1992) The art of fiction. Penguin, London. 239pp

- Lothian A (1999) Landscape and the philosophy of aesthetics: is landscape quality inherent in the landscape or in the eye of the beholder? *Landsc Urban Plan* 44:177–198
- Lowenthal D (1961) Geography, experience, and imagination: towards a geological epistemology. *Ann Assoc Am Geogr* 51:241–260
- Lowenthal D (1972) Geography, experience and imagination: towards a geographical epistemology. In: Ward English P, Mayfield RC (eds) *Man, space and environment*. Annals of the American Association of Geographers, Washington, DC, pp 219–244
- Martin CC, Gordon R (2001) The evolution of perception. *Cybern Syst Anal* 32:393–409
- Maslow A (1968) *Towards a psychology of being*. Van Norstrand, New York
- Maugham S (1963) *Cakes and Ales*. Penguin, London
- McAllister JW (1996) *Beauty and revolution in science*. Cornell University Press, Ithaca. 231pp
- McEvoy J (2000) *Robert Grosseteste (Great Medieval Thinkers)*. Oxford University Press, New York
- McGann J (2017) Poor human olfaction is a 19th-century myth. *Science*. <http://science.sciencemag.org/>. Accessed 18 May 2017
- Meinig RW (1979) The beholding eye: ten versions of the same scene. In: Meinig DW (ed) *The interpretation of ordinary landscapes, geographical essays*. Oxford University Press, Oxford, pp 33–48
- Morisawa M (1971) *Quantitative geomorphology: some aspects and applications*. McGraw Hill, New York
- Mowaljarlai DB (1995) An address to the white people of Australia', ABC radio: the Law report, Melbourne
- Newton E (1966) *The meaning of beauty*. Whittlesly House, New York
- Nietzsche F (2008) *Twilight of the Idols*. Duncan Large (ed). Oxford World's Classics, 176pp
- Ogden CK (2013) *Bentham's theory of fiction*. Routledge, New York
- Olwig K (2003) The landscape legacy. *Ann Assoc Am Geogr* 91(4):871–877
- Oxford Dictionaries (2016) <http://www.oxforddictionaries.com/definition/english-thesaurus/perception>. Downloaded: March 2016. Oxford University Press
- Penning-Rowsell EC, Lowenthal D (1986) *Landscape meanings and values*. Harper Collins Publishers, London
- Poincaré H (1946) *The Foundations of Science* (trans: Halsted G). Science Press, Lancaster, PA
- Porteous JD (1985) Smellscape. *Prog Hum Geogr* 9(3):356–378
- Porteous JD, Mastin JF (1985) Soundscape. *J Archit Plann Res* 2(3):169–182
- Purcell AT (1992) Abstract and specific physical attributes and the experience of landscape. *J Environ Manag* 34:159–177
- Purcell AT, Lamb RJ (1998) Preferences and naturalness: ecological approach. *Landsc Urban Plan* 42(1):57–66
- Santayana G (1896/1955) *The sense of beauty. Being the outlines of aesthetic theory*. Dover Publications, New York
- Sauer C (1938) *The morphology of landscape*. University California Press, Berkeley
- Selman P, Swanwick C (2010) On the meaning of natural beauty in landscape legislation. *Landsc Res* 35(1):3–26
- Shakespeare WS (1588) *Love's Labour's Lost*, Act 11, scene 1
- Shuttleworth S (1980a) The evaluation of landscape quality. *Landsc Res* 5:14–20
- Shuttleworth S (1980b) The use of photographs as an environmental presentation medium in landscape studies. *J Environ Manag* 11:61–76
- Shuttleworth S (1983) Upland landscapes and the landscape image. *Landsc Res* 8(3):7–14
- Skylar M (1967) *Walt Disney World: Background and Philosophy*. Harrison "Buzz" Price Papers. Paper 160. <http://stars.library.ucf.edu/buzzprice/160>
- Stern P (2017) Humans have a good sense of smell. *Science* 356:594–596
- Stolnitz J (1961) 'Beauty': some stages in the history of an idea. *J Hist Ideas* 22(2):185–204
- Sullivan AM (2000) Notes from a marine biologist's daughter: on the art and science of attention. *Voices insides schools, Havard. Educ Rev* 70(2):211–227

2 The Concept of Scenic Beauty in a Landscape

- Taggart C, Tetherow T, Bottomley B (1980) Visual values: Colorado lakes stock. *Landsc Archit* 70:396–400
- Tatarkiewicz W (1972) The great theory of beauty and its decline. *J Aesthet Art Critic* 31(2):165–180
- Taylor AE (trans) (1929) Plato, Timaeus and Critias, 30b, London
- Tsukiura T, Cabeza R (2011) Shared brain activity for aesthetic and moral judgments: implications for the Beauty is Good stereotype. *Soc Cogn Affect Neurosci* 6:138–148
- Tuan YF (1977) *Space and place: the perspectives of experience*. University of Minnesota Press, Minneapolis
- Tudor C (2014) *An approach to landscape character and assessment*. Natural England, London
- UNWTO (2017) (United Nations World Tourism Organization). *Tourism highlights edition*, 16 pp
- Vandenabeele B (2003) Schopenhauer, Nietzsche, and the aesthetically sublime. *J Aesthet Educ* 37(1):90–106
- Voltaire F (1824) *Philosophical dictionary, beau, beauté; beauty, beautiful* Vol 2. John and Henry Hunt, London
- Waterfield R (trans) (1993) *Plato Republic – translated with notes and an introduction*. Oxford University Press, Oxford
- Weinberg S (1993) *Dreams of a final theory: the search for the fundamental laws of nature: search for the ultimate laws of nature*. Vintage Press, London. 272pp
- Williams AT (1987) Coastal conservation policy development in England and Wales with special mention of the heritage coast concept. *J Coast Res* 31(1):99–106
- Williams AT, Micallef A (2009) *Beach management: principles and practices*. Earthscan, London
- Willstaetter R (1965) *From My Life. The Memoirs of Richard Willstaetter* (trans: Hornig S, Benjamin WA) New York (originally published in German, Verlag Chemie, 1949)
- Winton T (2016) *Island home*. Penguin Books, Melbourne
- Wittgenstein L (1922) *Tractatus Logico-Philosophicus*. Kegan Paul, Trench, Trubner, New York
- Wohill JF, Harris G (1980) Response to congruity or contrast for made –made features in natural recreation settings. *Leis Sci* 3:349–365
- Wright S (2005) Reflections on the rock. *Aust Geogr* 80:61–86
- Younghusband F (1920) Natural beauty and geographical science. *Prog Hum Geogr* 2(2):338–348
- Zeki S, Romaya JP, Dionigi M, Benincasa MT, Atiya MF (2014) The experience of mathematical beauty and its neural correlates. *Front Hum Neurosci* B 68:1–12
- Zube EH, Sell JL (1986) Human dimensions of environmental change. *J Plan Lit* 1(2):162–117
- Zube EH, Sell JL, Taylor JG (1982) *Landscape perception: research, applications and theory*. *Landscape Plann* 9:1–33

Web Pages:

www.bbc.co.uk/news/science-environment-26151062. Accessed 30 July 2017

www.official-documents.gov.uk/. Accessed 30 April 2016

www.science.sciencemag.org/content/356/6338/eaam7263. Accessed 17 May 2017