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Influence of varying intensities of natural area on-site interpretation on attitudes and knowledge

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2 Natural Area Sites and Interpretation

Natural area management agencies have increasingly recognised nature based tourism as a significant aspect of their management responsibility (CALM, 1996a; ANZECC, 1999; Sharpley, 2000). The principal aim of natural area management agencies usually relates to the requirement that the area continue to exist without significant degradation of the ecological, economic or social components while maintaining a quality visitor experience (Hendee et al, 1990; Buhalis & Fletcher, 1995). Hendee et al (1990) stated that the general objectives of natural area management should centre on maintaining the natural setting as well as the visitor experience without diminishing the character of an area. Vorkinn (1998) reiterates this sentiment when commenting that natural area management objectives need to function in terms of promotion of sustainable recreational use by visitors, presumably rather than a sole focus on ecological conservation. Tian-Cole et al (2003) stated that a primary goal of natural area managers was to provide for visitor satisfaction through provision of appropriate opportunities in the form of services and facilities that may include on-site interpretation as well as other aspects. Ultimately, site management must find a balance between minimising visitor impact and maximising the quality of the recreational experience of the visitor through the use of a combination of management techniques including on-site interpretation (Hendee et al, 1990; Vorkinn, 1998).

Jubenville (1974) provided a broad view of the potential conflicts between natural area visitors and the need for minimisation of degradation of such areas. He considered the increasing numbers of visitors to natural areas to be adverse to the need for conservation of such areas. Jubenville (1974) highlighted issues such as the apparent paradox between the demand for 'authentic' natural area experiences and the requirement that such experiences include modern comforts (with associated heavy equipment) that increased visitor impact both in terms of ecological and social aspects. Usher et al (1974) argued that natural area visitation and conservation were compatible given appropriate management of the area. Their study examined the issue of large scale visitation to coastal areas of Yorkshire, England. The limited area of coastline was deemed important to both recreation, science and education and was threatened by increased popularity as a natural area destination. Usher et al (1974) suggested management regimes that balanced continued visitation with actions aimed at minimising impacts on the area. These actions largely involved control of visitor

movements by restricting access to sensitive areas while installing hardened pathways and built facilities (such as toilets) to minimise impacts.

More recently, Andersen (1993) emphasised the need for effective physical site design as a key feature to minimise human impacts in ecologically sensitive sites by containment of visitors to defined areas. That is, physical prevention of use of key areas within a natural site may be the most efficient method of ensuring minimisation of ecological degradation. McArthur & Hall (1993b) commented that while site hardening is commonly used, “[it] ...is a fairly drastic method of altering behaviour” owing to the cost of constructing built facilities and the diminished quality of the natural area visitor experience. While allowing unabated use of a natural area is not a feasible option due to sustainability issues, severe restrictions on freedoms of visitors are perhaps equally unacceptable owing to the resulting social impacts.

McArthur & Hall (1993b) cited the Gordon River Cruise scenario in Tasmania as a prime example of the costs and benefits of site hardening. The cruise consisted of large groups of 50 or more visitors (for economic reasons) who are constrained to key stops along the riverbank where boardwalks have been constructed through the surrounding rainforest. While the large tour groups have had a minimal impact on the rainforest ecology, this has come at the expense of the visitor experience. Visitors are pressed for time and space as they move around the boardwalk amongst crowds of other tourists (McArthur & Hall, 1993b). In this environment, there seems to be little opportunity to savour the beauty and isolation of the rainforest given the dominating physical barriers and significant numbers of other visitors in close proximity.

The apparent ecological benefits of physically restricting visitors to a given area may be counter balanced by a degradation of the visitor experience (McArthur & Hall, 1993b). While the parameters of personal space and subsequent feelings of crowding vary according to individual expectations and situational context, exceeding the given threshold leads to perceptions of invasion of: privacy; restriction of behavioural freedom; and feelings of threats to autonomy (McManus, 1998). Such negative feelings and perceptions manifest as stress. Visitors may feel rushed or unable to engage with the natural surroundings due to distractions caused by other visitors in close proximity. (McManus, 1998).

Many visitors often find that, after going to significant effort to visit a site, it is disappointingly crowded due to a combination of popularity and restricted access (Morgan & Lok, 2000). While it is preferable that visitors to an ecologically sensitive area are confined to predetermined pathways to minimise ecological impacts (Andersen, 1993), it is possible that this, in combination with increasing popularity, may lead to crowding. Crowding at natural area sites is a significant issue when considering that a common motivation for visitation to natural areas is to experience some level of relative solitude (Heimstra & McFarling, 1974; Hendee et al, 1990). Restricted dispersal of visitors is more likely to result in unwanted close proximity of others, and hence, the perceived invasion of personal space through crowding (McManus, 1998). Invasion of personal space, in turn is generally associated with negative emotions. With this in mind, the perception of what constitutes over crowding in a natural area depends significantly on numerous variables such as:

- the context of interactions with others;
- ability to control interactions with others;
- how the site experience is promoted to the general public; and
- the socio-cultural background of the visitor (Heimstra & McFarling, 1974).

For example, while a hiker in the wilderness may perceive crowding as simply meeting another solitary hiker along a trail, visitors to an urban parkland may tolerate significantly larger numbers of others before the site is perceived as being crowded (McManus, 1998). The negative influence of crowding at a natural area site may counter the positive intent of on-site interpretation.

The visitor experience of a natural area site may be enhanced by the presence of on-site interpretation. This may operate through influencing the visitors' relationship in terms of their knowledge and attitudes regarding the specific site as a natural area, natural areas in general and towards the site as a satisfying tourism destination. Interpretation may also be used to influence visitor decisions in relation to selection of activities and experiences while encouraging concern for relevant issues (Moscardo, 1992). In other words, interpretation may influence visitor movements in time and space, for reasons such as directing them away from ecologically sensitive areas, or for adding meaning to an experience of a site (Bramwell, 1993). This may be achieved through influencing visitor attitudes toward the natural environment while encouraging empathy with site management objectives. In this way, interpretation affords the opportunity to develop

a personal relationship with the site built on trust and an understanding of the significance of the experience undertaken (Bramwell, 1993).

2.1 Interpretation and the Visitor Experience

On-site interpretation has become a ubiquitous part of the experience at managed natural area sites to the extent that it has become a core management practice of Australian conservation agencies (ANZECC, 1999; Kuo, 2002). Hammit (1981) suggested successful interpretation should result in creating meaning for the natural area visitor through developing and influencing attitudes. Morfoot and Blake (1978) also defined the goals of interpretation with reference to enrichment of people's understanding and enjoyment of natural areas. Likewise, Sharpe (1982) stated that one of the main benefits of interpretation was: "... enrichment of the visitor experience". This was also in reference to developing meaning on the part of the visitor with regards to the place of visitation. van-Matre (1990, p228) referred to "enriched perception" when describing the process of increased visitor understanding of natural surroundings through interaction with that environment. He mentioned this might be brought about by carefully planned education programs and/or opportunistic interactions between people and natural areas. Fakeye and Crompton (1992, p162) included "physical self and intellectual enrichment" in their survey of repeat and first time visitor motivations for experiencing the Lower Rio Grande Valley in the U.S. This concept involved statements such as "to enrich myself intellectually" and "to explore and evaluate myself". Fakeye and Crompton's (1992) use of "enrichment" was in terms of visitor knowledge gain and influence on attitudes.

While on-site interpretation may seek to influence the visitor, it is not intended as a means of overtly changing visitor attitudes through imposing a certain point of view. Catton (1960) pointed out that overt attempts to change attitude rarely succeed. This is because visitors tend to selectively absorb desirable messages while ignoring those that counter existing attitudes. Ideally, interpretation does not attempt to prescribe attitudes toward a natural area. Rather, the aim is to help visitors think about their experience of the site and the natural area it presents. That is, rather than a propaganda exercise designed to change attitudes, interpretation aims to enhance the meaning of the experience for the individual.

Field and Gough (1998) described influencing visitor attitudes and knowledge of natural environments in a similar manner to the concepts of Hammit (1981) and Sharpe (1982). They commented that such changes may take place spontaneously given the right combination of physical setting and experience. Howard (1998, p66) summed up Tilden's (1957) vision of environmental interpretation by stating that it, "... was for the enrichment of the human mind and spirit", suggesting a range of influences including knowledge and attitude. Sharpe (1982) cited a definition of interpretation by Yorke Edwards (1965) that described interpretation as a means toward new insights, new interests and a new understanding. These ideas all point toward interpretation as a means of influencing of how the visitor experiences a site and the meaning they gain from their experience.

Orams (1997) stated that a goal of interpretation should be to provide a satisfying experience for the visitor. This relates to the importance of conveying information in a positive atmosphere to increase the likelihood of visitor receptivity. Moscardo (1998) and Moscardo and Woods (1998) also described interpretation as an effective means toward providing a satisfying experience for the visitor. Interpretation may function to 'value add' to the experience such that visitors have a greater sense of satisfaction afterward. Satisfaction is an important aspect of the visitor experience and is often the focus of management agency's assessment of the success of a natural area site (McArthur, 1994; ANZECC, 1999). However, measurement of satisfaction does not equate with assessment of the influence of the site experience on the visitor. Influencing the visitor may well encompass satisfaction as a component but visitor satisfaction alone does not equate with influence on attitudes and knowledge.

Lee (1998) observed that visitors might demonstrate great satisfaction with an experience while experiencing little or no alteration in attitudes. His example of a British Nuclear Power Industry interpretive display indicated satisfaction was accompanied by reinforcement of negative attitudes, where an attempt to overtly encourage positive shifts in attitudes backfired. While the display was popular and visitors appeared to enjoy the experience, surveys revealed most visitors left with a more negative attitude toward the industry. This was owing to the distrust the visitors had in the nuclear industry as a reliable source of information. The distrust in the source created a strong discounting effect where-by visitors dismissed the content of the display as propaganda, a perception that reinforced the negative attitude toward the

industry. Thus, while visitor may have been satisfied with their experience to a certain extent, their existing negative attitudes were reinforced not positively influenced. Sharpley (2000) also made a distinction between the provision of an satisfying experience and positively influencing visitor attitudes. He commented that the proportion of visitor satisfied with an experience did not relate to the extent of change in attitude. Sharpley (2000) mentioned that many managers mistakenly equate satisfaction with effectively influencing attitudes and knowledge of visitors. This confuses face value with the underlying educational effectiveness of the experience. Satisfaction relates to the popularity and the level of enthusiasm at which visitors experience a site and is more a function of the entertainment value and demand for a given experience (McKercher, 1993; Sharpley, 2000). Thus, people may be satisfied without any alteration in their attitudes toward the site or focus of experience.

2.2 Environmental Attitude

On-site interpretation partly aims to influence, and is influenced by, the environmental attitude held by the visitor (Hammit, 1981). That is, the visitor brings an attitude toward the environment to the site experience. This attitude in turn may determine the effect the site has on the visitor and may also be influenced by the site experience. For this reason, in order for attitudes to be positively influenced, it is important to be aware of what attitudes are brought to the experience by visitors (Jurowski et al, 1995). That is, environmental attitude may function as both an independent variable brought to the experience and subsequently be influenced by that experience such that an alteration in attitude is evident. Managers are inevitably confronted with the diverse attitudes and underlying values of natural area visitors due to the diversity of socio-cultural backgrounds from which visitors come (Magill, 1995). These circumstances require an understanding of the diverse values and attitudes various visitors carry into a natural area experience in order to ensure effective communication between management and visitors.

2.2.1 Anthropocentric and ecocentric attitudes

The diversity of attitudes toward natural areas may be described as a spectrum ranging from anthropocentric to ecocentric. Anthropocentrism represents a human centred valuation of nature and ecocentrism an ecologically centred approach. In addition, anthropocentrism may take two forms, strong anthropocentrism and weak

anthropocentrism. The strong form only values nature that fulfils a practical function in satisfying basic, concrete human needs or desires (also labelled instrumentalism). This attitude translates into a 'subdue and dominate' approach. Weak anthropocentrism (non-instrumentalism) represents a more considered, but still human centred, approach where nature may be valued for less tangible reasons such as "enriching the human experience" (Armstrong & Botzler, 1993, p276). From this weak anthropocentricism basis, conservation takes on the mantle of stewardship of nature, or conservation for the good of humanity.

As anthropocentric attitudes are centred around action for the human good, alterations to natural areas are acceptable and in certain circumstances preferred. For example, Jurowski et al (1995) found that anthropocentric environmental attitudes were associated with visitor preference for modification of natural areas to better suit the purposes of human use. Conservation from an anthropocentric stand point may also translate into selective conservation where natural areas are set aside as long as the recreational and/or tourism benefit is not outweighed by other resource based benefits such a timber harvesting, mineral extraction or agriculture. Such a conservation approach seeks natural areas that are perceived to offer attributes that may attract visitors, that is, areas that hold aesthetic beauty or unusual phenomena rather than ecologically significant characteristics. This leads to selective conservation that may potentially disregard the broader ecological context of a particular natural area attraction.

Ecocentric attitudes focus on maintenance of ecological processes and protecting ecologically significant areas. Ecocentrism thus is based on the premise that natural areas have an intrinsic value irrespective of any worth to humans (Armstrong & Botzler, 1993). Leopold (1949) and Naess (1973) both conceptualised the ecocentric paradigm in terms of viewing humans as part of, and reliant on, a natural ecological system rather than the reverse. Maintenance of natural areas for tourism or recreation purposes thus becomes a secondary function and is ideally framed within the philosophy of ecotourism. That is, any human interaction is conducted in a mutually beneficial manner such that both humans and the natural area visited gain from the experience.

As with anthropocentrism, ecocentrism has weak and strong components referred to as shallow and deep ecocentrism (Naess, 1973; Acott et al, 1998). Shallow ecocentrism

was used by Naess (1973) to describe what he saw as an inconsistent attitude that focused on conservation of fragments of natural areas that appealed to humans. Later comments by Acott et al (1998) reinforced this notion by suggesting that shallow ecocentrism was a blending of anthropocentric and ecocentric attitudes where nature was valued as long as it conformed to an aesthetic benchmark. This position appears similar to weak anthropocentrism. Shallow ecocentrism was seen by these authors to be ineffectual as a conservation approach as it fails to recognise that all aspects of natural areas are seen as contributing to the whole. Deep ecocentrism is an attitude based on the valuation of natural areas in terms of their intrinsic worth as part of a complex ecological process. Naess (1973) developed an ideal in which humans were viewed as citizens of a biotic community in which all members play an equally important role. Deep ecocentrism focuses on a mutually beneficial relationship between humans and natural areas (Armstrong & Botzler, 1993; Acott et al, 1998).

Authors such as Budianski (1995) and later, Cole (2000) criticised deep ecocentrism for being too idealistic in a world where impacts on natural areas are both unavoidable and necessary for the survival of humans and natural systems. Budianski (1995) had pointed to the ubiquity of human influence on natural areas that has created a reality whereby no natural area is 'ecologically pure'. From this position, he argued that the deep ecocentrism concept of humans being equal members of a larger natural ecological process, exerting minimal or zero impact, was flawed. His argument primarily rested on the view that the 'natural ecological processes' are actually a product of human intervention. In addition to this, Budianski (1995) pointed out that natural areas are subject to constant changes through natural processes of ecological flux and human impacts such that there is no real balanced or pure state of nature. Cole (2000) later argued along the same lines, also referring to the ubiquity of human influence in natural areas. The conclusion was drawn that active management of natural areas is necessary in order to maintain natural characteristics or other foci of natural attractions as they are the product of past human intervention. Thus, in the absence of human impacts, the character of the natural areas would alter and the attraction may be lost.

Given that natural areas are subject to change through natural flux and human influence, if human influence is somehow withdrawn, Budianski (1995) in particular argued that ecological processes may become unbalanced. To this end, the deep ecocentrism concept of the purity of nature with humans playing a minor role does not ring true.

While natural areas may be a product of human influence and undergo constant change, conservation of such areas may translate as minimising negative influences and changes. This requires managerial intervention but not necessarily constant intervention. That is, while the concept of a pristine or pure natural area may be ideological and impractical, the line between desirable and undesirable human impacts must be drawn to maintain the integrity of the natural area as an attraction. Perceptions of acceptable levels of human intervention and impact in natural areas are strongly influenced by environmental attitude (Jurowski et al, 1995).

Where an individual or group is initially positioned along the environmental attitude spectrum is predominantly influenced by social and cultural background. This concept was discussed by Bowers (2000) who pointed to cultural differences and how they manifest as attitudes toward natural areas. She commented that the Western Capitalist culture of utilitarianism results in a view of natural areas based on an anthropocentric stance. On the other hand, Taoist culture approaches the human relationship with natural areas often from a more ecocentric standpoint. These differences have ramifications in terms of how different cultures experience natural areas. Similarly, many indigenous cultures, such as Native Americans and Aboriginal Australians perceived that all aspects of their natural environment are sentient in some way and humans function as part of that system rather than being the sole superior custodians of nature. This is an interesting concept given that such cultures still had significant influences on natural ecosystems and processes in their respective geographical locations. However, the relationship reflects an ecocentric attitude toward nature with a focus on the intrinsic worth rather than human centred benefits (Armstrong & Botzler, 1993).

2.2.2 Quantification of environmental attitude

The social and cultural changes that occurred during the 1960s and 1970s formed the basis from which Dunlap and van Leire (1978) hypothesised that attitudes of the general public had shifted toward an increased awareness of environmentally related issues. This was supposedly a product of the 'green movement' moving from a fringe group concern into the mainstream of social consciousness. In order to measure attitudes toward the environment they devised a scale referred to as the New Environmental Paradigm (NEP) scale. The NEP scale consisted of a series of pro conservation and pro

human domination statements to which respondents indicated their extent of agreement or disagreement on a numerical scale. Dunlap and van Leire's (1978) study demonstrated a significant level of concern for the environment amongst those surveyed. This suggested a general movement away from the traditional human centred approach to interaction with nature commonly expressed up until the mid 20th century. Samdahl and Robertson (1989) and Jurowski et al (1995) later described the NEP scale as an environmental attitude spectrum ranging from anthropocentric to ecocentric. When conducting studies using the scale, they identified clusters of responses that characterized either anthropocentric or ecocentric attitudes toward natural areas that related to certain behavioural characteristics. The NEP scale represents a rough tangible measure of the concepts raised and discussed by Leopold (1949) and Naess (1973) and may be used as a rapid assessment tool for environmental attitude. This method of attitude measurement and its limitations are discussed further in the Methodology Chapter 3.

2.2.3 Influencing environmental attitude

Leopold (1949) proposed that a new approach to morals and ethics was required in order to ensure a mutually beneficial relationship between human society and the environment. He observed that the history of ethical thinking fell into a pattern of increasing complexity as societies themselves became more complex. For example, advances in the extent to which technology is incorporated into lifestyle are directly proportional to the complexity of ethical issues. The invention of the printing press precipitated an ethical dilemma as to whether a vernacular Christian Bible should be printed for circulation in the general population. This raised concerns relating to maintaining the authority of the religious stewardship of the church in the presence of mass access to what was seen as the word of God (Schama, 2000). More recently, medical technology has given rise to an ethical dilemma revolving around the use of human embryos for curing disease. This relates to the sacrifice of one perceived potential human life to save another. This increasing complexity extends to all aspects of society and requires development of increasingly intricate ethical frameworks. Leopold (1949) suggested that the next logical step in complexity of ethical thinking was to extend moral values from purely social issues to the human relationship with the environment. This required a change in attitude away from anthropocentrism and toward ecocentrism.

A series of world environmental education conferences in the 1970s recognized the need for a general shift toward a more ecologically minded environmental attitude in contemporary society. The outcomes of the 1972 UNESCO-UNEP Stockholm conference and subsequent conferences in Belgrade (1975) and Tbilisi (1977) highlighted the need for environmental education strategies aimed at all sections of society with the intent of raising knowledge and awareness and influencing attitudes with regards to the natural environment. This educational approach appears to have filtered through both natural area management, in the form of on-site interpretation, and public thinking. This is evident in managers increasingly using educational strategies, on the form of interpretation, to influence visitor attitudes toward natural areas while visitors appear to expect some sort of educational interaction as part of their experience (Manfredo & Bright, 1991; Moscardo, 1998).

Planned interpretive activities, as part of an organised educational experience, generally form the focus of attitudinal change discussions in the literature owing to more immediate accountability and program effectiveness issues. van-Matre (1990), Attarian (1996) and Brookes (2000) all advocated various forms of formal interpretation approaches as a means toward increasing ecocentric attitudes. Their suggested approach revolves around education programs being conducted in the natural area of concern to enhance the impact on attitudes. These comments were built on earlier work that investigated the relationship between formal interpretation and environmental attitude change as summarised by Crompton and Sellar (1981). For example, Howell and Warmbrod (1974) examined the influence of an educational manual on environmental attitudes of students enrolled in varying science and agriculture courses. They found significant relationships between the provision of the manual and the types of courses taken by students. Those involved in environmentally based courses were more likely to be influenced by the manual.

Later studies of formal interpretation and attitude change have replicated results from earlier work. An investigation by Walker (1996) examined the influence of workplace environmental interpretation programs on environmental attitudes of employees. She found that attendance of these programs was positively related to ecocentric shifts in environmental attitudes. In addition, employees who were subjected to repeated environmental interpretation programs tended to have a greater ecocentric shift than those who took part in a one-off program. Emmons (1997) examined the effect of an

outdoor education program on environmental attitude of students in Belize. Emmons (1997) found that students who had started with very negative attitudes toward nature had undergone a positive shift as a result of the specifically tailored interpretation activities. She concluded that such educational activities in natural areas designed to promote positive attitude toward nature were successful.

Similarly, Metzger and McEwen (1999) found that participants in an adventure canoe trip, centred on an organised program of interpretation, demonstrated a significant positive shift in their attitude toward the environment. The results from this particular study are questionable, as biased questioning may have skewed the data. Participants were requested to write a daily response to the following questions during the canoe trip (Metzger & McEwen, 1999, p38):

- “1. What did you learn in today’s activities?
2. What happened today that made you feel a connection with nature?
3. What activities or events gave you an appreciation of the environment?”

The results of the study by Metzger and McEwen (1999) are questionable as the survey approach appeared to encourage a desired response. The questions suggested to the participants that they should have learnt something, they should have felt a connection with nature as a result of the daily activities and they should feel an appreciation of the environment. Born and Wieters (1978) had earlier warned against survey methods and wording that convey what the researcher is attempting to measure as participants may oblige by providing expected responses. Such leading questions are likely to encourage responses that satisfy the insinuations communicated in order to avoid being seen to fail to meet expectations (Black & Champion, 1976; Fowler, 1995; Neuman, 2000). Thus, even if the visitor felt no change, or worse, experience negative feelings, responses would likely reflect learning, connection with nature and environmental appreciation anyway. Given the character of the survey questions, it is likely that participants in the survey of Metzger and McEwen (1999) were prompted to respond positively and demonstrate the success of the program.

The previously mentioned studies suggested that interpretation programs focusing on environmental issues have a strong connection to positively influencing environmental attitudes. They all involved carefully planned activities performed by willing volunteers

who were supposedly aware of the intent of the program they were involved in. This situation differs from assessment of voluntary, casual interaction with interpretative media in natural areas as a means toward influencing the visitor. Apart from the presence of a defined agenda with set outcomes, participants in formal programs differ from casual natural area visitors in terms of their mind set. In essence, visitors to natural areas may be seen as consumer-oriented individuals taking part in entertainment activities in a natural setting (McKercher, 1993; Sharpley, 2000). In other words, unlike formal interpretation program participants, natural area visitors generally do not place intellectual enlightenment as a high priority. As a result of this, intensive use of interpretive media in an casual natural area setting may work to create negative responses and fail to positively influence visitors (Roggenbuck, 1992). Were such techniques used in formal educational settings, they may have a positive influence. Interpretation in an casual natural area setting operates on an opportunistic basis in which the visitor may decide on the sequence and intensity of information and related themes (Howard, 1998). This may raise questions as to the effectiveness of such experiences, not subject to educational control, as a means of influencing visitor attitudes and knowledge (Orams, 1997).

Orams (1997) stated that natural area experiences are unlikely to influence visitor attitudes without structured interpretation programs. In support of his hypothesis, he conducted a study of the impact of a dolphin feeding experience, in Southeast Queensland, Australia, on visitor attitudes, knowledge and enjoyment. The study was based on a long-term survey period with visitors completing a written survey on-site then participating in a telephone survey three months later. There was an emphasis on the importance of implementing carefully planned educational experiences the visitors' were effectively made to experience in order to gain access to the dolphins. Orams (1997) demonstrated that the experience had long-term positive effects on environmental attitude with a shift toward ecocentrism.

Outside formal interpretation, discussion of natural area experiences and the relationship with environmental attitudes appears to fall mainly into two categories:

- assessment of existing environmental attitudes in relation to types of natural area experience selected by visitors; and
- influences on attitude resulting from natural area experiences.

Work by Dunlap and Heffernan (1975) tended toward the former category. They studied the relationship between environmental attitude and recreational use of environmental areas. Their study was based on a random mail out questionnaire to residents in Washington State. The mail out survey did not measure the influence of casual use of natural areas on attitudes but concentrated on the type of use preferred by respondents of a particular environmental attitude type. Dunlap and Heffernan (1975) differentiated between attitudes emphasising natural areas as a useful recreational resource versus attitudes reflecting non-human centred concerns. While positive relationships were found, it was unclear whether environmental attitudes influenced type of use or visa versa. Dunlap and van Leire (1978) subsequently formulated an attitude scale which they used to quantify the attitudes of Washington State residents in reference to the general perceptions of the human relationship with the environment. This study did not relate attitudes to natural area use preferences.

Later authors conducted similar research relating to the relationship between use of natural areas and environmental attitudes. For example, Jurowski et al (1995) examined the relationship between environmental attitudes and natural areas using the attitude measurement technique of Dunlap and van Leire (1978). As with the former studies, the focus was on categorising visitor attitudes and relating them to perceptions of the natural area experience, rather than how the experience influenced attitude. Hrezo and Hrezo (1984), Heberlein (1989) and Ballantyne et al (1998), among other authors, pointed out that knowledge of visitor attitudes was important in terms of management of natural areas and provision of appropriate experiences. This was concerned with shaping a natural area experience to suit visitor attitudes to maximize satisfaction and differs from assessment of how a natural area experience may influence attitudes.

Authors such as Edwards (1969) tended toward the latter category concerned with attitudinal influences resulting from natural area experiences. He pondered the importance of environmental interpretation, applied to casual natural area experiences, as a method of influencing visitor attitudes. Edwards (1969) described the potential for attitude shifts in connection with experiences in natural areas when supplemented by ranger talks, visitor centres and walk trails. While he viewed such activities as being highly effective in influencing attitudes toward the environment, his ideas were based on observations relating to popularity of the interpretive activities and visitor numbers. Similarly, a study by Lipman and Hodgson (1978) assessed the influence of cave tours

using different interpretation methods on the visitors' interest in that particular environment. The measure used was the change in number of questions asked by visitors. This data was interpreted as representing interest in the environment that indirectly related to environmental attitude. Later authors, such as Lee (1998) and Sharpley (2000), warned against confusing popularity and enthusiasm with educational success.

2.3 Knowledge

Knowledge, as defined in section 1.4, provides an important basis from which influences on attitudes may occur. However, according to Tilden (1957), knowledge should not be an end in itself. Although knowledge of the fundamental functions or components of an environment are important, memorising facts and figures may not necessarily correlate with positively influencing visitor attitudes toward a natural area (Edwards, 1969; van-Matre, 1990; Lee, 1998). This was illustrated by a study examining the knowledge and environmental attitudes of participants in an environmental education youth camp in West Virginia by Burrus-Bammel (1978). He found there was no direct correlation between knowledge gained and environmental attitude. This was despite there having been a positive affect on both environmental knowledge and attitude as a result of attending the camp. A later study by Howard (2000) also found no link between knowledge gain and changes in attitudes. His study of visitors to a turtle-nesting site compared knowledge, enjoyment and conservation behaviour. While all three aspects were positively effected by the experience of the site, there was no relationship found between the extent of knowledge gain itself and stated intentions to take part in conservation activities or reported behavioural change.

While explaining the lack of relationship between attitude and knowledge gain, Howard (2000) suggested that knowledge gain was important because it stimulated thinking and was therefore an end in itself. Interestingly, van-Matre (1990) had earlier stated that provision of factual knowledge destroyed the sense of wonder and motive for exploration in the visitor. By way of example, he claimed that once a visitor is provided with the scientific name and/or an explanation of a natural point of interest, the mystery is removed and the visitor no longer ponders the significance or meaning of the focus of interest. This may be an effect similar to having solved a riddle which then needs no further thought. Rather than providing raw data or facts, van-Matre (1990) suggested

describing the ecological or environmental significance of a point of interest in a manner that directly relates to the visitor's life experience. Along these lines, Bowers (2000) was of the opinion that an over emphasis on the importance of factual knowledge often resulted in experiences being packaged as a series of modular and mechanistic views based on a scientific approach. As with van-Matre's (1990) comments, she viewed this as encouraging an objective distance between the visitor and the experience, effectively discouraging greater awareness and appreciation. If this point of view is placed in the context of Tilden's (1957) and Hammit's (1981) concepts of interpretation, knowledge itself is not a justifiable end but forms an important foundation for building positive experiences.

Bright and Manfredi (1995) found that the extent of acquisition and impact of knowledge depends on the existing attitude to the respective issue or area. If an individual considered the issues or area to be personally important, knowledge appeared to clarify and strengthen attitudes held by that individual. If the visitor deemed the issue or area unimportant, the knowledge-attitude effect was reversed. This concept was illustrated by the results of a study that found a positive relationship between knowledge and increases in minimal impact behaviour and quality of the visitor experience (O'Loughlin, 1996). The study detailed a campaign centred on encouraging minimal impact hiking in the Tasmanian wilderness areas in southeast Australia. The information was distributed by pamphlets, posters, a video presentation and a school educational kit. The information highlighted the link between certain attitudes and behaviours and the quality of the wilderness experience. This approach theoretically placed the knowledge contained within the package in direct relevance to the visitor experience of the natural area. The campaign was deemed a success owing to a significant decrease in illness (gastroenteritis caused by human faecal pollution of drinking water sources) amongst hikers coupled with an increase in minimal impact behaviour such as reduced littering and trampling (O'Loughlin, 1996). This apparently demonstrated a transferral of knowledge that influenced the visitors' attitude toward the natural area, how they experienced it and enhanced satisfaction.

Similarly, Papageorgiou (2001) viewed knowledge transferral as an integral part of positively influencing attitudes amongst natural area visitors. He claimed that knowledge transferral was an important part of natural area management as it increased positive attitudes toward the site of visitation. This argument centred on the concept of

knowledge provision enabling visitors to make informed choices regarding attitudinal relationships with the natural area. Papageorgiou's (2001) survey of visitors, to Vikos-Aoos National Park in Greece, found that a major factor in the effectiveness of knowledge acquisition related to their past experience in natural areas.

An accumulation of experience in natural areas was directly related to the level of interest taken in learning about issues related to the national park and the level of knowledge retained. Visitors who had accumulated experience in Greek natural areas in particular were significantly more interested and able to retain knowledge than were visitors with experiences elsewhere. This phenomenon was attributed to the greater ability of visitors with accumulated natural area experiences, particularly in Greek natural areas, to place the knowledge within a more developed and relevant context. There was a suggestion that the significantly greater interest of visitors frequenting Greek natural areas specifically was due to a greater sense of attachment to those particular types of environment. Papageorgiou (2001) concluded that knowledge provision was most effective when it formed an integral part of a broader experience directly related to the information being communicated. This finding supported comments by Bowers (2000) who emphasised the need for knowledge transferral within a broader context of meaning and experience rather than as an end in itself.

Given that the success of knowledge transferral relies on factors relating to the visitor and the experience, it appears to be of secondary importance to attitude influence. Rolston (1998) suggested that knowledge was peripheral to the enhancement of the visitor experience. He commented that it was not an essential component of appreciating the wonder and mystery of natural areas as these may be apparent despite the lack of factual knowledge. Similar to the views expressed by Howard (1998), he suggested that natural area experiences in themselves might bring about attitude changes simply through their intrinsic uniqueness or confrontational character. Interestingly, Rolston (1998, p161) went on to write that, "... a forest cannot be understood simply by looking long and hard at it...". Perhaps the conclusion drawn may be that provision of knowledge is an augmentation of an experience, providing additional insight into the significance and meaning in relation to the visitor. This suggests that knowledge provision during an experience provides an added dimension to influencing visitors that is not essential but may act as a catalyst for reassessment of attitudes toward the site and the general environment. Thus, knowledge appears to

contribute toward the influence of visitor attitudes only when it is of direct relevance to the immediate natural area experience; and visitor attitudes, both brought to, and fostered by, the experience.

2.4 Attitude Toward Site Experience

A primary component of interpretation is the development of meaning for the visitor in terms of the natural area being experienced (Howard, 1998; Lee, 1998). This concept differs from environmental attitude, which refers to a general evaluation of the human/nature relationship at a more global level. Shafer (1969) mentioned a number of ways in which people may relate to and experience natural areas, that is, the meaning they derived from their experience. He described examples such as aesthetic appreciation of visual beauty or naturally occurring sounds, emotional connection and physical or recreational personal challenges. Visitors may place an emphasis on one or more of these and other aspects that reflect a type of attitude to the natural area as an experience. The variation in attitudes toward an experience of a natural area is directly related to the variation in environmental features and the types of activity undertaken in the given area (Shafer, 1969; Dunlap & Heffernan, 1975). Interpretation, in influencing the meaning of a place in the eyes of the visitor, may thus influence how the visitor experiences that place.

Shafer and Mietz (1969) discussed visitor attitudes to natural area experiences in the context of natural wilderness in the U.S. They identified several categories relating to how visitors interact with such places including: physical exercise; emotional experiences; aesthetic experiences; educational experience and social experiences. Shafer and Mietz (1969) defined physical exercise as interactions with natural areas that involved physical exertion that stimulates the body. This might include climbing or hiking and other activities involving physical exercise. Emotional experiences were described as physical reactions such as the thrill of new experiences and sensations, achievement and interacting with nature. For example, the feelings of wonder or spirituality invoked by experiencing isolation in a geologically dramatic landscape as alluded to by Collins (1995). Shafer and Mietz (1969) also identified visitors' attitudes toward natural areas as places for education that revolved around learning and gaining new knowledge. Visitors may also place an emphasis on social experiences, which refer to bonding with others in a natural setting. Finally, Shafer and Mietz (1969)

identified aesthetic experiences that involved mental evaluation of scenery in terms of beauty, patterns of colour and variety. These categories represent types of awareness and appreciation, one or all of which may be experienced by a visitor in a natural area.

Hendee et al (1971) later identified five primary attitudes visitors may have toward experience of natural areas. These were: appreciative-symbolic; extractive-symbolic; passive-free play; social learning and active expressive. The appreciative-symbolic relationship relates to Shafer's (1969) comments on aesthetic appreciation of scenic beauty. Hendee et al (1971) used this category to describe activities that centred on viewing natural scenery, such as hiking, photography and mountain climbing. The extractive-symbolic category involves activities such as fishing or hunting while passive free-play refers to performing everyday activities, such as cooking, drawing, drinking, reading or relaxation, in a natural setting. Sociable learning focuses on exploration and discovery of natural areas and actively seeking knowledge. Active-expressive interactions involve physical recreational exercise, such as swimming or football, in natural surroundings. All of these categories represent differing ways in which visitors are aware and appreciate natural areas in terms of their interactive experiences.

Categories of visitor interaction with natural areas do not necessarily represent separate and distinct types of experience of natural areas. For example, Heimstra and McFarling (1974) observed that emotional and aesthetic experiences in natural areas might be difficult to distinguish owing to similarities in personal response. That is, an aesthetically pleasing natural area may also invoke an emotional response. They suggested that the difference lies in aesthetic appreciation being a form of mental evaluation (e.g. admiring the impressive height of a waterfall) while emotional experiences are identified by physical reactions such as changes in physiology (e.g. changes in heart rate or breathing). This may be more clearly understood in terms of aesthetic appreciation being an attitude to a natural area as a separate and distant object (metaphorically). Emotional experiences involve a close interaction between the visitor and the place.

Hunt (1973) proposed that attitudes toward interaction with natural areas might correlate with the concepts of Maslow (1968). Maslow (1968) theorised that humans operate according to a hierarchy of needs that are founded on lower, narrow personal requirements and expand to higher, broader social interactions. In this hierarchy, lower

needs must be met before the higher needs can be addressed and fulfilled. The hierarchy starts with basic personal physiological and survival needs such as food and shelter then moves on to immediate egocentric social needs such as belonging, love and esteem. Once these have been satisfied, exploration of the wider environment may be undertaken in terms of the need to know and understand and aesthetic appreciation. Above these needs, the individual may work towards self-fulfilment in terms of emotional development and interactions while the top of the hierarchy involves helping others to achieve self-actualisation. This hierarchy may be viewed as an increasing level of complexity where physiological requirements represent simple needs while self-actualisation represents more complex needs.

Relating this concept back to visitor experience of natural areas, individuals may first view natural areas in a simplistic manner as a fundamental source of food and shelter. However, as most members of Western society have these base needs already met, visitation to natural areas tend to be in the context of the higher needs fulfilment. This includes viewing natural areas as a place for socialisation, exploration and learning and self-actualisation. Within this group of categories, viewing natural areas as a place for fulfilment of social, aesthetic needs may be construed as less complex than fulfilling self-actualisation needs. The categories identified by Shafer and Mietz (1969) represent higher needs where educational and aesthetic interactions represent a less complex form of fulfilment than the physical, emotional, and social needs. Thus, authors such as Shafer (1969), Shafer and Mietz (1969) and Hendee, 1971 #310] identified various attitudes toward interaction with natural areas that generally represent the higher order needs identified by Maslow (1968) that in themselves, represent a hierarchy of interactive complexity.

Recent authors such as Ballantyne et al (1998) also identified various categories of visitors in terms of their natural area experiences. In their study of visitors to Fraser Island in Australia, they found similar groups to those of Shafer and Mietz (1969) and Hendee et al (1971). Ballantyne et al (1998) identified five groups that included: socialisers, sightseers, escapers, four-wheel drive tourers and explorers. Socialisers were visitors who focused on interactions with friends and family in a natural setting. This equates with the social experiences category of Shafer and Mietz (1969) and is similar to the sociable learning grouping of Hendee et al (1971). Sightseers were mainly concerned with “seeing the scenery” (Ballantyne et al, 1998, p17) while

explorers appeared to combine sightseeing with learning. These may equate with the aesthetic experiences and emotional experiences categories highlighted by Shafer and Mietz (1969) and the sociable learning category of Hendee et al (1971). The remaining two Fraser Island visitor groups identified appeared very similar except for the mode of interaction with the natural area. Escapers were said to view the natural area as an escape from the pressures of urban living while four-wheel drivers had the same attitude as escapers but fulfilled their need using an off-road vehicle. These two groups appeared similar to the passive play group stated by Hendee et al (1971) and perhaps the emotional and aesthetic experience groups identified by Shafer and Mietz (1969). The similarities between these visitor groupings over time and space indicate there is a pattern of consistency in terms of visitor populations and experience of natural areas.

Manning et al (1999) conceptualised attitudes toward natural areas in terms of what visitors considered the place offered them as a positive experience. Apart from the categories of visitor previously mentioned, Manning et al (1999) included concepts relating to spirituality and therapeutic value. Therapeutic value was deemed to involve general feelings of physical and mental well-being (Manning et al, 1999), which may perhaps be closely associated with spirituality. Heimstra and McFarling (1974) had earlier suggested that visitation to natural areas was born from a need to escape from urban living and “re-connect” with nature. This suggested that urban living created an attitude of isolation from natural areas that creates a sense of imbalance in people. Along these lines, McArthur and Hall (1993a) noted that people need to experience natural heritage as a reference point to provide a sense of a greater meaning to their lives.

The need to re-connect with nature and add meaning to life hints at both well being and spiritual motives as postulated by Collins (1995) and Rolston (1998). Collins (1995) highlighted the importance of natural area experiences in developing personal spirituality in the context of connecting with the fundamental life force behind human existence. As a Catholic priest, he argued that experiencing natural areas provides the potential for personal spiritual fulfilment through contact with nature as a tangible manifestation of the divine entity. Townsend (1999) pointed to the importance of a spiritual connection with nature as fundamental to true awareness and appreciation of the significance of natural areas and the human place within them. According to Beringer (2000) spirituality through experience of natural areas relates to healing.

Spirituality in this sense may be both a distinct experience while also being closely associated with the therapeutic category of awareness and appreciation. These ideas reflect an attitude toward natural area experiences centred on the spiritual meaning and sense of rejuvenation of well being through contact with such places. In Rolston's (1998) view, the human attraction to natural areas appears to be an expression of a subliminal urge to connect with the primeval past. Presenting a somewhat more secular ideal, Rolston (1998) considered that the human experience of nature provided a connection with the elemental forces and incomprehensible time scales, forming a link to common prehistoric origins. This leads to a sense of well-being (possibly interpreted as spiritual fulfilment) as the stress and pressures of modern living are placed in the perspective of the greater natural processes.

Visitor attitude toward a site as an experience forms a significant aspect of interpretation (Eisenhauer et al, 2000). In developing or enhancing a positive experience of a particular natural area, visitors may develop a personal bond. The character and intensity of this appears to rely primarily on the type of activities visitors undertake in combination with the amount of accumulated experience in natural areas. Such a bond reinforces the value of ecological as well as socio-cultural aspects of the natural area, encouraging behaviour that reflects a conservation ethic (Townsend, 1999). Thus, interpretation may function as a catalyst for influencing how visitors experience a natural area site. Such influences may assist in providing a positive experience, building or reinforcing a bond between the visitor and place (Hendee, 1990; Roggenbuck, 1992; McArthur & Hall, 1993).

2.5 Visitor Variables and Interpretation

Effective use of interpretive media has become a challenge in terms of addressing the increasing social and cultural diversity of visitors to natural areas. This diversity is the product of a global increase in popularity of natural areas as tourism destinations, in turn, increasing the number of international visitors (Diamantis, 1999; Newsome et al, 2002). For example, a study by Moscardo et al (undated) highlighted this issue through examining how visitors, from a variety of cultural backgrounds, interpreted visitor communication in the form of graphical representation. The intent was to determine the most effective method of cross-cultural communication of behavioural regulations using non-language based signs. Magill (1995) addressed an increased cultural diversity of

natural area visitors by discussing the benefits of multilingual rangers and guides. This suggests that place of residence (on an international scale) influences how interpretive messages are received by visitors. Both of these examples highlighted the issue of understanding the diverse socio-cultural background of visitors, with related attitudes and values, and the subsequent best approach to communication with these visitors.

When considering the most effective means of interpretive communication, Ballantyne et al (1998) suggested targeting messages in order to appeal to certain visitor types. That is, shaping intended messages within a relevant context specific to the given group being addressed in order to better relate to the mind-set of the visitor. Targeted communication ideally encourages the chosen group to absorb the intended message and subsequently increases the likelihood of modifying attitudes and/or behaviour. The response of the targeted group theoretically permeates through the remaining visitor population via social interaction and the 'lead by example' concept. Field & Wagar (1973) had previously flagged this concept in their discussion of providing effective interpretation by addressing differing visitor groups in differing outdoor leisure settings. They pointed to the importance of being aware of the motivations of visitors and the socio-economic variables within the visitor population when designing interpretation. In addressing the diversity within a visitor population, they divided visitors into categories of leisure type relating to how they interacted with the natural area. Each of these categories may then have specific communication strategies to address the particular attitudes and behaviour of each group (Field & Wagar, 1973).

Motivation for visitation represents another category identified as significantly affecting responsiveness to communication. Ballantyne et al (1998) found that visitors motivated by exploration were more receptive to interpretative communication than were visitors motivated by other recreational activities such as fishing. In this vein, Ballantyne et al (1998) used examples from Fraser Island, Australia, of targeted communication that improved effectiveness of communicated messages for specific activities. For example, the issue of fishing bag limits was targeted at recreational fishers to ensure sustainable fish stocks. This was approached through specifically developed communication rather than simply attempting to enforce the bag limit for particular fish. This highlighted the necessity for communication to be tailored to specific visitor contexts to maximise effectiveness and impact. It therefore follows that to influence particular attitudes or behaviours, communication must suit the given context in which the target audience

exists. That is, messages specifically tailored for certain groups using the site in a certain way will prove more effective than a generalised communication strategy (Magill, 1995; Ballantyne et al, 1998).

Hvenegaard & Dearden (1998) also advocated identification of visitor sub-groups for targeted communication despite the diversity of visitors possible in any given natural area. This approach relies on the minority group becoming an agent of the management objectives by passing messages to other groups they come in contact with. This can be an effective method of encouraging appropriate behaviour and fostering positive attitudes amongst the visitor population (Cook & Berrenberg, 1981). While McKercher (1996) and Prentice et al (1998) may have a valid point with respect to the difficulties of visitor categorisation, communication targeted at particular visitor groups may still be a significant component of effective communication (McArthur & Hall, 1993).

Rather than targeting specific groups, McKercher (1996) argued that communication in natural areas should concentrate on identifying appropriate park uses and not defined visitor types. His hypothesis was based on the premise that delineating visitors into sub-groups was largely arbitrary and thus, meaningless. In support of this idea, Prentice et al (1998) found that socio-demographic variables were not related to the manner in which visitors experienced a site. In a study of visitors to Rhondda Heritage Park in South Wales, it was found that visitor type might be categorised more significantly according to what meaning the visitor gained from the site experience rather than by the social profile of visitors. Prentice et al (1998) found that visitors experienced the site in several distinct ways according to how they related to the subject matter. This was probably closely related to how the issues were presented. This view compliments McKercher's (1996) comments in highlighting the need for communication design to be based on the types of experience visitors have rather than their socio-demographic characteristics.

The flexible definition of 'tourism' and 'recreation' as labels for natural area experiences are indicative of the arbitrary categorisation of visitor groups. While a given group may be officially classed as undertaking tourism activities and another recreational activities, the use of these terms from the visitors' point of view depends on personal attitudes towards natural area activities (McKercher, 1996). It is apparent that from the visitor perspective, tourism and recreation relate to the perceived naturalness

of the experience being undertaken rather than the specific activity itself. Visitors in a given location will tend to regard those in relatively more commercially developed, crowded or disturbed areas as tourists while seeing themselves as taking part in recreation (Clarke, 1997). Thus, 'tourism' and 'recreation' are arbitrary categories because the visitors' perception of themselves as recreationists or tourists lies on a sliding scale of relativity. Moscardo (1992) and Ballantyne et al (1998) acknowledged the difficulty in identifying distinct groups within a visitor population due to the broad variation that occurs. On the other hand, identifying distinctive groups of experiential type amongst the visitor population may prove equally challenging. Ballantyne et al (1998) suggested targeting an easily identifiable minority with a tailored message may still be more effective in terms of site management than the generalised "scatter-gun" approach to communication.

Repeat and first time visitors to a specific site present an example of distinct target groups with differing wants and needs (Fakeye & Crompton, 1992; Meis et al, 1995). First time visitors may seek variety through a unique or novel experience, repeat visitors may be more commonly motivated by a want for relaxation (Fakeye & Crompton, 1991). As a reflection of this, repeat visitors tend to place more of a focus on socialisation, using the natural area site as a back drop, while first time visitors tend to be mainly intent on exploration of the natural area (Fakeye & Crompton, 1992). For example, data relating to repeat visitors to Fraser Island indicated they generally took part in recreational pursuits, such as fishing or snorkelling. First time visitors mainly concentrated on exploration and information gathering (Ballantyne et al, 1998). As first time visitors were more interested in exploration, they were also more likely to take notice of on-site interpretation while repeat visitors tended to show less interest.

Young (1999) reported that repeat visitors had a better conceptual knowledge than first time visitors of the environment to which they are returning. The familiarity of a given natural area to repeat visitors played a role in their perceived lack of need for exploration. The different attitudes and knowledge of the repeat and first time visitor groups suggest that different methods of communication are needed to influence their attitudes and add meaning to their experience. This was highlighted by Falk & Dierking (1992) when discussing the different ways in which repeat visitors use text based signs at a site (discussed further in section 2.6.1). They considered that repeat visitors have a greater familiarity with a site than first time visitors and will spend more on particular

points of interest rather than exploring the site in general. Thus, these two distinct groups differ in terms of motivation, expectations and the type of experience sought.

Repeat visitors form an important part of visitation to a given natural area. As well as providing consistent and ongoing revenue, they act as a major conduit for site promotion to the broader community, ensuring a sustainable natural area attraction (Fakeye & Crompton, 1991; Meis et al, 1995). In this sense, it is important to ensure repeat visitors are understood as a distinct group targeted by communicative strategies to encourage their continued interest in the site.

The frequency of visitation to natural areas in general have also been identified as a factor influencing the visitor experience of a particular site. This categorisation is not as clearly defined as repeat visitation to a specific site as natural areas vary widely in terms of level of disturbance and character of experience (section 1.4.1). The accumulated experience in natural areas is thus subject to the visitors' perception of what constitutes a natural area experience rather than the more clear cut quantification of the number of times a specific site has been visited.

While taking such points into consideration, it is important to note that McKercher (1996) identified past experience in natural areas as a key factor affecting attitudes toward such places. Collins (1995) also commented that spontaneous experiences in natural areas might result in an influence on attitudes toward natural areas. He suggested that repeated experiences in natural areas increases ecocentric attitudes toward natural areas. Similarly, Bixler and Floyd (1997) commented that childhood exposure to natural areas significantly increased the likelihood of nature oriented career paths and strengthened ecocentric attitudes later in life. Conversely, people living in urban environments, with little contact with natural areas tend to harbour negative attitudes toward nature. The assumption was that accumulated spontaneous exposure to natural areas over an extended period of time influenced attitudes in terms of creating a greater likelihood of expressing ecocentric attitudes. Rolston (1998), in the vein of Collins (1995), suggested that an accumulation of experiences in natural areas may influence attitudes toward nature. These comments revolved around long-term influences on environmental attitude through an accumulation of experiences rather than immediate changes relating to a specific experience. The prevalence of such comments leads to the conclusion that how people experience a natural area is partly a result of an

accumulation of positive experiences in natural areas over a long term period. In other words, people who have never experienced a natural area will potentially have a differing experience of a given site to those with past experiences of natural areas.

The influence of past experience in natural areas may be further understood using Maslow's (1968) theoretical concept of the hierarchy of needs fulfilment. Maslow's process of psychological development involved an increasing complexity of personal fulfilment over time. According to Maslow, "...man's higher nature rests on man's lower nature ... The best way to develop this higher nature is to fulfil ... the lower nature first." (Maslow, 1968, p173). Through an accumulation of experience in a particular environment, an individual may be influenced with regards to their attitudes toward that environment as a place and the experience of that environment. It follows that individuals who have visited natural areas on a frequent basis in the past will be more likely to experience a given natural area site in a different manner than individuals who usually visit natural areas less frequently. Thus, an accumulation of experience in nature may result in a greater sense of meaning when experiencing particular natural settings.

Kuo (2002) summarised a number of demographic variables that are related to the effectiveness of interpretation in influencing the visitor. This included: gender, age, place of residence, and visitor social group composition. In terms of casual natural area experiences, the voluntary nature of visitor engagement with on-site interpretation in a non-captive audience context is also a significant factor.

Past research has identified a relationship between gender and how a site influences the visitor. For example, females generally tend to have a greater empathy toward the natural environment than males. This is most likely a socially learned behaviour partially related to a greater willingness to express emotional feelings about an experience (Dunlap, 1975; Geisler et al, 1977; Arcury, 1990). A greater willingness to express emotional feelings on the part of females may also explain the difference with males who are less likely to admit to 'effeminate' views such as empathy for natural settings (Xu & Bengston, 1997). In contrast, McFarlane and Boxell (2000) found that gender was not reliably associated with expression of attitudes toward natural areas as did Jurowski et al (1995). There was no detailed discussion by these authors as to why gender was found to be insignificant in terms of attitude change.

McTeer (1978) found age to be a significant factor in the expression of attitudes toward environmental issues. He found that teenaged subjects were more concerned about environmental issues than older subjects. The results suggested that younger people were more likely to care and show interest in relation to natural environments and the human relationship with them. McFarlane and Boxall (2000) also found age to be a significant factor affecting the expression of environmental attitudes but not gender. Their study of users of a natural area in Canada indicated that age was a consistent indicator of environmental concern where younger people were more likely to express attitudes in favour of natural area protection. This followed work by Jurowski et al (1995) that demonstrated age to be a significant factor in expression of environmental attitudes, which was indeed the only factor significantly related to attitude where gender and place of residence were found to be unreliable predictors.

The significance of place of residence seems to vary according to whether it is used in the context of geographical locations within a given nation or in terms of cultural background. While Jurowski et al (1995) and McFarlane and Boxall (2000) found place of residence to be insignificant in relation to expression of attitudes toward natural areas, this was in reference to different locations within the same nation. Comments by Magill (1995) indicated that visitors of different cultural backgrounds represent differing sets of attitudes and subsequent responses to interpretation. This was supported by the work of Moscardo et al (undated) who found that visitors from different cultural backgrounds responded differently to interpretive messages that also suggested differing attitudes toward the natural area experience. The comments of Bowers (2000) mentioned earlier (section 2.2.1) highlighted the significant cultural and social relationship with environmental attitudes. That is, the social and cultural context of a place where an individual lives strongly affects their attitude toward the environment. Thus, place of residence may not be significant when used to describe geographical location within a dominant cultural grouping but is significant when used in terms of varying cultural background, such as international versus local visitors.

The social group composition with which the visitor shares the experience appears to influence attitudes towards the place of visitation (Eisenhauer et al, 2000). For example, Fakeye and Crompton (1992) found that visitation to the Lower Rio Grande Valley in Texas, U.S.A. was significantly influenced by the social relationships

associated with the visits. People with strong socially oriented attachments to the valley were more likely to return rather visit another natural area. This suggested that the social context of visitation to natural areas may be associated with how visitors experience the site, and thus, how the site influences them. Eisenhower et al (2000) found that perceptions of particular natural areas in the Southern Utah region of the U.S. more commonly related to associated interactions with family and friends in a natural setting. Factors such as natural physical features and recreational activities were deemed less important and formed the backdrop to the social focus of the experience. Thus, social context may be an important variable in relation to site visitation and its influence on the visitor.

Another challenge presented by interpretation at natural area sites, outside formal education programs, is the non-captive context of the intended audience. The presence of the visitor at the site is entirely voluntary and they may allocate their time according to their own personal preference. This is significant because it means that on-site interpretation must attempt to communicate messages in a casual atmosphere to visitors who do not feel they have to pay attention and may shift their attention elsewhere if bored (Ham, 1992). In this sense, effective on-site interpretation is required to either attract and hold visitor attention or communicate messages within a short space of time. The interest visitors have in on-site interpretation relates to the reason why they are visiting the site.

2.6 Interpretive Media

On-site interpretation, using various forms of media, ultimately aims to communicate certain themes and messages that augment the visitors' experience and also serve site management goals (Moscardo, 1998). The use of different types of on-site interpretive media raises some fundamental issues based on visitor preference for media; what is appropriate for the natural area site experience and resources available to site managers.

According to Mahaffey (1970) the effectiveness of on-site interpretation is significantly related to visitor preference for media. Preferred media are more likely to attract attention and thus influence the visitor. Interestingly, Munson (1987) noted that while no single media represents the best method for interpretation, different media types have not been found to be any more or less effective in terms of influencing different visitors.

This comment may be over simplified in that Munson (1987) based this note on the work of Schramm (1977) who discussed the pairing of appropriate media types with specific learning objectives, not different types of people. Munson's (1987) comment on Schramm's work seemed to add in the additional variable of preferred media type. She suggested that visitor preference for types of media is not related to the extent to which a certain media type influences visitors who may choose between several types during a natural area site experience.

Schramm (1977) presented evidence that "simple media" such as text, photographic images and audio presentations were equally able to achieve learning objectives as so-called "complex media" (television, films, computers). This is an important point in terms of interpretive design with limited resources. In such a circumstance, budget restrictions may dictate the use of more affordable text based media as opposed to interactive computers. That is, according to Schramm (1977), text based communication is just as able to communicate messages as tele-visual media. Ferguson et al (1995) pointed out that the comparative effectiveness of various sources of media was uncertain but appeared to rely on factors such as the objectives of the communicated message, the target audience and the type of information conveyed. The difficulties in determining whether one type of media may be more effective in influencing visitors than another probably relates to the difficulties in assessing how visitors use on-site media and what they absorb from that use (Falk and Dierking, 1992).

As the variation in visitors at a particular natural area site can be broad it is likely that no single medium will provide an all purpose solution to providing effective interpretation to the entire audience (Mahaffey, 1970). This suggests that managers at a natural area site should employ a variety of interpretive media types to ensure the majority of visitors are catered for. Interpretive media may be categorised into three basic forms: text based, interactive and interpersonal. While text based communication presents an economic and readily deployable option, the dynamic approach of interactive media may be more attractive to visitors. Interpersonal communication presents a more adaptable, visitor oriented medium. The three media types are explored in the following sections.

2.6.1 Text based interpretation

Text based interpretation, such as signs, brochures and information displays, are an economic means of communicating with visitors (Doucette & Cole, 1993; Hall & McArthur, 1998). Producing and installing or distributing such media presents a one off cost that may be disseminated over the lifetime of the medium. However, once installed or distributed, such media cannot readily guide the manner of how visitors interpret the messages. For example, Moscardo et al (undated) studied the effectiveness of pictorial symbols used to convey messages relating to minimising visitor impacts and ensuring safety in the Great Barrier Reef Marine Park, Australia. They found that cultural background and other socio-economic factors significantly affected visitor interpretation of the pictorial symbol meanings. In some instances, visitors interpreted the symbols in a manner contrary to the intended message. In cases such as this, the text based modes of on-site communication cannot actively elaborate or clarify meanings within the text for differing visitor types.

Hendee et al (1990) noted that visitors generally spent only 15% of the estimated reading time required to fully absorb messages in a text based interpretation display. This seemed to be supported by the work of Cole et al (1997) who found that, on average, visitors spent at most 25 seconds reading text on an observed display board beside a natural area walking trail. Based on these sources, it seems that effectively communicating with visitors using text based communication requires selection of messages deemed most important and expressed in an abbreviated manner to ensure visitors are able to absorb the intended message in what little time they allocate to reading. However, the reliability of the data on which these findings were based may be questionable.

McManus (1987; cited in Falk and Dierking, 1992) commented that gathering data about visitor reading habits through observation is difficult. This is mainly because it is virtually impossible to know exactly when a visitor starts and finishes reading a particular text based sign. This view was reiterated by Ferguson et al (1995) who stated that not only were the reading habits of visitors difficult to observe, the length of time spent reading a particular sign may not be related to the extent of information or meaning drawn from the text. They suggested that a visitor spending a long time reading sign text may actually be trying to understand what it means rather than

absorbing the intended meaning. Thus, even if reading time is measured accurately, it is not a reliable means of measuring successful message delivery.

Falk and Dierking (1992) raise a number of important points in regard to the use of average visitor reading time data. Firstly, they state that while all visitors will read some text at some point during their visit, a visitor population may be essentially divided into two groups: readers and non-readers. The former group may only spend a few seconds glancing at text based signs while the latter may spend minutes reading a single display. In addition, not all visitors will stop and read the same text sign. Thus, averaging the reading time of a visitor a population leads to a false impression as the data is not normally distributed but more a bimodal distribution.

Other problems raised by Falk and Dierking (1992) in relation to using reading time data related to the heavy influence of site design (e.g. design and distribution of text signs) and the location of data collection within the site. The social group with which visitors attend the site, whether they are repeat or first time visitors to the site and the extent of past experience in the same or similar locations all significantly determine what and how visitors read (Falk & Dierking, 1992).

Rather than average reading time, Falk and Dierking (1992) focussed on the varying behavioural patterns of visitors during their visit to a site. For example, the authors noted a difference between first time and repeat visitors. First time visitors typically spent the first 20 minutes or so reading every sign they came across. This behaviour changed when the first time visitor realised the extreme length of time it would take to read all of the signs at the site. At this point the visitor began “cruising”, in other words, skimming the contents of signs and being more selective about where they focussed their attention. The final stages of visitor behaviour are primarily determined by basic needs, such as hunger and fatigue, resulting from the quantity of text read and physical exertion of walking around the site. Once these needs factors come to the fore, the visitor will ignore signs and seek to satisfy their need (food, toilet) or exit the site.

In contrast, repeat visitors were more discerning to begin with and will usually focus on particular points of interest from the start, ignoring the bulk of signs that are deemed unimportant. Repeat visitors behaved in this way as they were familiar with the layout and content of the site and also do not feel compelled to see the whole site in one visit.

Thus, average reading time for a visitor population is misleading both because of the difficulties measuring such behaviour, the numerous variables that may influence the behaviour and the variations in reading behaviour that may occur with a single visitor on a particular visit.

While recognising that average reading times are meaningless, when considering the visitor population as a whole, text based signs will be given varying degrees of attention by a range of visitors (Ferguson et al, 1995). Based on this idea, a sign must therefore be able to provide meaning for those that skim the content through to visitors intent on reading every last word on the sign (including copyright information). Ferguson et al (1995) address this issue by describing a three stage method of sign layout including the title, introductory paragraph and additional detail. All of these components communicate the meaning of the sign with varying levels of detail. For example, the title on a sign may convey the theme of interpretation to the visitor such that those who only read the title and move on still receive the intended basic message. Below the title, a short introductory paragraph may provide basic information for visitors seeking to add more context to the meaning. Detailed text may then be provided for those who wish to obtain a detailed perspective in addition to (perhaps) other incidental details. Each level reiterates the theme of interpretation with increasing levels of detailed information such that all visitors, from those that skim through to those who spend time reading the whole text, will be afforded some meaning in combination with the desired level of information (Ferguson et al, 1995).

The title and introductory sections of a sign must simplify the information to cater for visitors unwilling to spend any length of time reading. Simplification of messages to cater for visitors who do not take time to read the text in its entirety becomes more of an imperative when attempting to address increasingly diverse visitor groups (Bramwell & Lane, 1993). This not only relates to different cultural or social backgrounds but also different levels of comprehension ability in the visitor population. A drawback is that a simplified or abbreviated message results in a lack of explanation for the reasoning behind the message and potential over simplification or misrepresentation of intended messages (Bramwell & Lane, 1993). Thus, while being relatively financially economic, text based communication presents a challenge in communicating messages to visitors effectively.

The effectiveness of text based media, such as signs, may relate to visual attractiveness and the subsequent level of interest as perceived by the visitor (Beckmann, 1990). Ham (1992) considered this point and stated that while a unique design may attract a larger audience, this does not necessarily correlate with greater transferral of meaning. Interestingly, Cole et al (1997) later hypothesised that enhancing the visual attractiveness of their signs may induce more attention from visitors and improve the effectiveness of communication. While they found visitors giving the display increased attention, there was no significant additional impact on knowledge. Another example cited by Lee (1998) described a nuclear power exhibit in Britain that effectively attracted the desired audience but failed to influence visitors in the intended manner (most visitors left with a more negative attitude). This was despite a vast amount of money being spent on the aesthetics of the exhibit. While visual attractiveness may encourage visitors to pay attention to a display, there is a danger of creating a pretentious overtone that is aimed at entertainment rather than enlightenment of the visitor (Harvey, 1989).

According to Ham (1992) although attractiveness is an important aspect in capturing visitor attention, the content should always take priority over the aesthetic presentation. Taking this into account, attractiveness of text based interpretation may be more significant in casual natural area experiences where visitors determine the activities they undertake and the amount of time allocated to such activities (Kuo, 2002). Owing to the purely voluntary nature of attention paid to interpretive media in such a setting, the ability to catch and hold attention is of importance.

The ultimate advantage of text based modes of communication lie in the low cost, over time, of production coupled with the ability to mass produce and distribute a message consistently (Doucette & Cole, 1993). However, updating the information may prove to be laborious given the time required for redesign, reprinting and removal of outdated messages from circulation. In addition, while individually distributed text based media such as brochures and pamphlets may be targeted at specific groups, on-site signs and displays must be designed to encompass a broad range of visitor types. This may result in over simplification or over generalisation, diluting the intended message.

2.6.2 *Interactive interpretation*

Use of interactive media such as: touch tables, computer based displays, videos and movies are generally appealing as they usually provide a more stimulating experience than a text based medium (Hall & McArthur, 1998). The nature of interactive displays enables the visitors' attention to be more easily attracted and held as compared with text based displays owing to the multiple sensory stimulation (Munson, 1987). Falk and Dierking (1992) commented that visitors to a site spend most of their time looking, touching, smelling and listening - *not* reading. This would suggest that interactive types of interpretation are at least preferred by visitors if not more effective in communicating meaning than other forms.

Mahaffey (1970) found that given the choice between text based and more interactive media, visitor preferred interactive media as it appeared to trigger more interest and enthusiasm. This is presumably because of the multi-sensory stimulation afforded by such media. Mahaffey (1970) also pointed to the greater ease, on the part of the visitor, of receiving messages actively communicated to them in comparison to having to read a body of text and extract meaning. This point was also raised by Ferguson et al (1992) who stated that the advantage of interactive media (particularly computer based media) lay in its ability to provide the desired level of detail and style of information (text, images, sound) to the visitor without them having to filter through unwanted information. Given that visitors tend to spend more time at interactive displays, it may be assumed that they are more popular. However, equating time spent at a display with the effective communication of a message does not always hold true as the sensory attractiveness of the display may work to obscure the intended messages if not planned carefully (Ham, 1992; Lee, 1998).

Such methods of communication may also realistically simulate or immerse visitors in a natural environment without the risk of impacts associated with experiencing the place being represented (Moscardo, 1998). The merits of providing a simulated experience also relate to enabling access to places most visitors may not readily experience, either because of physical or time barriers. While simulations may enlighten visitors to concepts inaccessible by other means, whether visitors can be effectively encouraged to relate and appreciate an environment through an artificial representation is questionable. If this were the case, visitors may simply observe their chosen natural area destination

on a television and gain the same insight and experiential stimulation as physically being present in that environment. Authors such as McArthur and Hall (1993a), Collins (1995) and Rolston (1998) pointed to the importance of people actually visiting and interacting with real natural places as a method of providing meaning to life and reconnecting with primeval roots. It may be assumed that these authors would dispute the merits of experiencing such interactions in the form of a computer simulation. Thus, while interactive media may provide glimpses of environments or experiences beyond the physical means of visitors or site management, it appears that it is important for such experiences to occur in context and direct reference to the surrounding natural area of visitation. In this way, the visitor may directly relate the simulated experience to the actual natural area of visitation, potentially providing for greater insight than the natural area offers alone.

Interactive displays present somewhat of a compromise between text based media and interpersonal media. As with interpersonal communication, cost and time to develop interactive displays present a significant draw-back. However, while the up-front costs may be high, on-going costs are relatively low (Doucette & Cole, 1993). In addition, interactive media tends to be more attractive owing to its capabilities for multi-sensory stimulation and active communication of messages to the visitor, something text based media lack. A draw-back, according to Doucette (1993), lies in updating or modifying an interactive display, which may prove to be more time consuming and costly than both text based media and interpersonal media.

2.6.3 Interpersonal interpretation

Communication of messages to natural area visitors may be more easily achieved through the use of interpersonal communication as opposed to other forms of communication (Markwell & Weiler, 1998). Interpersonal communication may consist of structured or unstructured verbal presentations including guided walks, information points or organised discussions. All of these techniques are considered “more powerful” than other forms of communication (Hall & McArthur, 1998, p176). For example, rangers may actively encourage interest in specific aspects of the natural attraction relevant to the specific visitor at that time. In this way, interpersonal communication allows for flexibility in communication both in terms of differing visitor types as well as methods of communicating various messages. (Magill, 1995). In contrast, text based and interactive modes of communication, while able to be updated

or modified in the long term, cannot easily adapt to immediate or rapidly changing circumstances as presented by a diverse visitor population (Hall & McArthur, 1998).

Lipman and Hodgson (1978) found that the presence of guides in a self guided cave tour significantly increased the visitors' interest in the attraction. They found that providing stationary guides at key points along the walk resulted in an increased number of visitors asking questions about aspects of the attraction. This may be a function of people on holiday emphasising social interactions in conjunction with natural area experiences. Authors such as Shafer (1969), Hendee et al (1971) and Ballantyne et al (1998) listed social interaction as a common feature sought as part of natural area experiences. Dissemination of information through interpersonal communication thus taps into this socialisation focus, providing a motive for visitors to interact with rangers and/or guides. This lends itself to generating more interest and enjoyment on the part of the visitor, which perhaps is more likely to translate into a greater receptivity to communicated messages (Lipman & Hodgson, 1978, p32).

The use of interpersonal communication in the form of park rangers or guides is also advantageous in that their mere presence communicates regulatory messages in terms of appropriate visitor behaviour. This largely eliminates the need for such messages to be verbally or overtly conveyed (Manning, 1986). The lack of need to directly communicate regulations and restrictions, which may be construed as a negative message, allows for concentration on positive messages. For example, a study of visitors to Kakadu National Park found that the interpersonal communication encouraged much stronger positive feelings amongst visitors than the experience of the attraction itself (Hall & McArthur, 1998). In this sense, the presence of a human guide may work towards creating a friendly atmosphere in which the visitor feels 'at home'. This may then encourage receptivity to communicated messages and compliance with behavioural regulations.

Interpersonal media presents the advantage of social interaction and the ability to rapidly update information and tailor it to suit different visitor types in rapid succession. It is ideal for small group situations where audience participation may be easily facilitated by a guide. However, in circumstances where a site receives large quantities of visitors on an on-going basis, interpersonal communication may prove less effective. Large groups are less likely to engage with a single guide while the guide may have

difficulty catering to the inherent increased diversity of visitors present. While employing a larger number of guides may be a solution, the cost of such an exercise could be prohibitive. Doucette and Cole (1993) noted that a significant disadvantage of interpersonal communication is the expense both in terms of time taken for initial training of presenters as well as on-going salaries or wages. The cost of employment of the guides in the study of Lipman and Hodgson (1978) was minimised by restricting the times at which guides were available. This compromise may decrease the effectiveness of guides as only a fraction of the visitor population may have access to them. Thus, in these circumstances, text based or interactive interpretive media may prove more effective in communicating meaning to the visitor population.

Selection of media type appears likely to be determined by the available budget, the style of information delivery deemed appropriate to the natural area experience and the time frame of obsolescence of the messages conveyed. General information that will not become rapidly out of date and may be effectively communicated to a broad audience in a brief manner may be best communicated using text based or interactive communication. Both text based and interactive communication, while perhaps having significant up-front costs, present a relatively cheap and consistent ongoing method of communication. Interpersonal communication is more ideally suited to situations in which complex information may be rapidly updated and individually tailored to a broad range of visitors. This may help to ensure the intended message is not skewed by oversimplification (by the delivery style) or misinterpretation (by the visitor). Interpersonal communication also has the added dimension of social interaction with management, not offered by text based or interactive techniques. Social interaction may prove to be significant in increasing the extent to which visitors access and absorb messages.

2.6.4 Short term and long term influences

The immediate influence of on-site interpretation as part of a natural area experience may not necessarily remain consistent in the long term for either knowledge or attitudes. Short term and long term effects on attitudes resulting from exposure to persuasive communication, a term including interpretation, have quite distinctive attributes. Pratkanis and Greenwald (1985) provided an overview of past research that found the influence of persuasive communication on attitude response altered as the time after

exposure to the message increased. While they were concerned with theories as to why this occurs, of importance to this thesis is the observation that persuasive communication, including interpretation, may have an immediate influence on attitudes and knowledge.

For example, Hovland et al (1949) conducted experiments where military personnel were shown army training movies based on events during World War Two to assess the influence on attitudes of the subjects. As a general finding, they surmised that while knowledge recall from the films decayed over time, attitudes towards these either remained fairly constant or increased in strength with time. Other studies also documented changes in influence of persuasive communication over time. Hovland and Weiss (1951) conducted experiments that also revealed differences between short and long term influences. They found that when an audience was exposed to a persuasive message from a source that was deemed trustworthy, there was a strong immediate positive influence on attitudes that decayed over time. Audiences who were provided a persuasive message from a source that was considered untrustworthy were influenced to a lesser degree initially, but the influence strengthened over time. The cause of this phenomenon was attributed to audiences retaining knowledge of the content of the message irrespective of source trustworthiness. While the content of the message may be remembered in the long term, the source (and its level of trustworthiness) may be forgotten. Thus, in the long term, the knowledge is dissociated from the trustworthiness of the source. In the absence of the suppression of influence on attitudes resulting from perceptions that the source was untrustworthy, the knowledge gained from the message subsequently has a stronger influence on attitudes.

Watts and McGuire (1964) performed experiments using persuasive communication on university students. Subjects were exposed to arguments relating to issues of perceived importance. The researchers noted that the immediate effect of the messages on the students altered over time with a decline in effect on the initially induced attitude. This apparent reversal of attitude is suggestive of a suppression of a response that is expressed at a later date, known as the “sleeper effect”.

Gruder et al (1978) discussed the significance of discounting cues in producing a “sleeper effect”, a reference to a delayed influence of a communicated message. They defined a discounting cue as a component associated with a persuasive message that

indicates it is not credible. This may include a source that is perceived to be untrustworthy. The “sleeper effect” is a function of dissociating the source of the message with the content through use of a discounting cue. The discounting cue determines that the subject may not immediately respond with the attitudes encouraged by the message but may either respond neutrally or with opposing attitudes. However, over time, the source of the message (and its lack of credibility) may be forgotten while the message content itself is remembered, creating the likelihood that the receiver may be influenced by the message in the long term. When explaining the factors that result in the “sleeper effect”, Larisky and Tinkham (1999) commented that early work emphasised the importance of source credibility in creating initially suppressed attitude influences that strengthen with time. They pointed to more recent research that considers the “sleeper effect” to be a consequence of multiple situational factors, of which the most important was related to source credibility.

Larisky and Tinkham (1999) conducted an experimental study examining the influence of negative political advertising on an audience. They documented an immediate influence in favour of the source of the attacking message. This was deemed to be strategically significant given political campaigns attempt to influence voter attitudes in the short term leading up to an election. Larisky and Tinkham (1999) also pointed out that the best defence of the message target is to respond as quickly as possible in an attempt to counter the influence of the negative message in the short term. In the context of political campaigns, the authors also noted that the long term influence of negative persuasive messages was a strengthening of the initial attitude response of the audience.

Both Pratkanis and Greenwald (1985) and Mazursky and Schul (1988) discussed the various theories as to why short term and long term attitudinal influences of persuasive communication are different. Of interest to this thesis is the possibility that the long term changes in influence may be a result of intervening factors between exposure to the persuasive message and measurement of attitude. These factors may be artefacts of the experimental procedure itself (e.g. participants stimulated to discuss the message and compare attitudes between exposure to the message and measurement of attitude) or a result of subsequent experiences that themselves influence how the original persuasive message is interpreted by the audience. The important point to note is that measuring the influence of a particular persuasive message in the long term may prove difficult as

intervening factors may obscure the link between the attitude measured and the influence of the original message. The measurement of short term influences presents a clearer link between the attitude response and the provision of the message.

2.6.5 Interpretation and novel arguments

Presentation of a novel point of view is more likely to generate thoughtful responses and influence visitor attitudes than the use of familiar arguments or examples (Ajzen, 1992). Audience familiarity with issues, examples or arguments may potentially lead to decreased interest. Ramsey and Rickson (1976) highlighted this point in a study of environmental attitudes and knowledge, relating to pollution, of secondary school students in the U.S. They found that increased knowledge of environmental issues such as pollution lead to a moderation of attitudes in the students rather than strengthened concern. They attributed this phenomenon to information saturation through constant exposure to mass media. This suggested that students were familiar with the issue and associated information and were somewhat 'desensitised'. Alternative knowledge or novel points of consideration may counteract the decreased expression of concern measured by Ramsey and Rickson (1976).

Such an approach may be more effective in affecting visitor attitudes than the use of familiar examples; providing the message does not deviate overly from existing visitor attitudes (Cook & Berrenberg, 1981; Ajzen, 1992). If a message deviates overly from the existing visitor attitudes the visitor will either consciously or subconsciously ignore or distort the intended message to suit their own stance depending on the extent to which they trust the source of information (Howard, 1997). In the circumstance where visitor attitudes are already aligned with the intended message the new information is assimilated into the visitors existing belief system, reinforcing the currently held attitudes (Orams, 1995). Thus, presenting unique or novel information within an unusual context may be the most effective way of influencing visitor attitudes providing the source of communication is viewed as credible.

2.7 Intensity of Interpretation

The intensity of interpretation relates to the quantity and type of media used at a site. For example, interpersonal media (such as guides) may be a more intense form of

interpretation than text based media. Interpersonal media incorporate an active delivery of messages and a multi-sensory, complex social interaction with visitors. Text based media is a passive form of communication (with restricted sensory stimulation) where visitor must extract meaning from a written message. Similarly, installing many signs or employing many guides at a site may be seen as a higher intensity of interpretation than few signs or guides.

While site managers increasingly incorporate interpretation programs into natural area management (McArthur, 1994; ANZECC, 1999), there is a danger that the intent to positively influence the visitor may backfire. Intensive use of interpretation may ruin the visitors' sense of exploration and discovery, generating negative impressions of the experience at the site. Roggenbuck (1992) warned that a cautious approach to natural area communication was preferable in order to avoid overwhelming the visitor. In this vein, McKercher (1993) commented that visitors were generally not anthropologists or ecologists seeking intellectual enlightenment. Rather, they may be viewed as consumers of natural area experiences seeking enjoyable leisure encounters. Intensive use of interpretation may impede the pleasurable experience visitors seek in natural areas, who then may ultimately boycott the destination given the perceived negative attitudes generated in this way (Bramwell and Lane, 1993). Thus, a balance must be struck between communicating messages that are deemed important and regulating the intensity such that it does not overwhelm the visitor (Bramwell and Lane, 1993).

Howard (1998) observed that some experiences are obvious in their significance and have no need for explanation. Experiences such as this may only need a low intensity of interpretation, generating a situation in which the meaning is reliant on the visitor being able to 'see' the meaning without facilitation. With this in mind, low intensity approaches to on-site interpretation often raise doubts as to whether such a technique may successfully influence visitors attitudes and knowledge (Ballantyne, 1998). If a low intensity of on-site interpretation is used visitors to a site may not recognise the significance or meaning of a natural area attraction if it is not of the ilk referred to by Howard (1998). It may be argued that not all natural area experience are immediately and obviously significant in their meaning (like the sunset at Uluru or swimming with whale sharks) and the significance may not be obvious unless this is directly communicated (Uzzell, 1998). To paraphrase Rolston (1998), a natural area cannot always be fully understood simply by looking long and hard at it. This may be

especially so if visitors wish to focus on the minutiae of a natural area or with unfamiliar and strange phenomena. It follows that communicating important messages to visitors be tempered by a regulated use of communication media based on knowledge of what visitors expect.

Moscardo (1998) observed that on-site interpretation was becoming an increasingly expected part of the visitor experience. This contradicts the notion of McKercher (1993) who argued that visitors to natural areas were leisure experience consumers generally not seeking enlightenment. Moscardo (1998) pointed to the heavy investment in communication media and guides at the popular Skyrail Rainforest Experience situated in the wet tropics of north-eastern Australia. The large numbers of visitors to this attraction is Moscardo's (1998) testament to the increasing expectation for on-site communication.

Moscardo's (1998) comments imply that earlier studies, highlighting the need to grasp fleeting moments to communicate with recreation-seeking visitors while avoiding the teacher/pupil approach, may become irrelevant as visitors actively look for educative experiences as part of recreation in nature. Lee (1998) and Sharpley (2000) both warned that the popularity of an experience does not necessarily indicate an active seeking of knowledge and understanding. They also point out that popularity of a natural area site and its associated communication does not translate into knowledge or attitude change. Lee (1998) observed that expensive communication media designed to attract the attention of visitors may become entertainment in itself rather than a source of knowledge or attitude change. In this sense, the style, delivery and the context in which communication occurs are important factors, in addition to visitor attributes, in determining the effectiveness of on-site communication (Shanahan et al, 1999).

While some authors describe the interpretive process as a vehicle for providing visitor access to meaning, it is also possible that this may occur in the absence of environmental interpretation or other educational methods. Interpretation is a process of communication with visitors that facilitates discovery of new ways of thinking about their natural surroundings. However, Field and Gough (1998) referred to the concept of "enrichment without words" when describing the experience of a natural area site that intentionally used minimal media to communicate with visitors. This involved the idea that influences on visitor attitudes may take place by simply being in a natural setting

with no overt communicative media to guide thought. Howard (1998) also suggested people may experience alteration in attitude toward natural areas in the absence of interpretation. He cited experiences such as swimming with Whale Sharks and watching the sunset at Uluru, in Central Australia, that are so intrinsically provocative that the experience itself requires no explanation in order to profoundly and positively affect attitudes and awareness. Provocation is a central theme of interpretation in practice. If an environment or experience is provocative in itself, this may thus circumvent interpretation.

However, an important point is that interpretation is a process that seeks to influence visitor attitudes through facilitation of interactions with natural areas. While the success of interpretation may be related to certain independent visitor variables, the process is intended to either provoke self examination of these attitudes or bring to light a new meaning of the natural area being experienced. An intrinsically provocative nature experience, with no interpretation, relies more heavily on the ability of the visitor to recognise its significance (Howard, 1998). If the visitor is unaware of the significance or meaning of the experience, it may potentially have little impact on their attitudes. In this sense, interpretation may be viewed as a catalyst toward influencing attitudes and knowledge that may otherwise occur to a lesser extent or not at all.

2.8 Conclusion

While interpretation as a component of natural area site management may also contribute to other aspects such as satisfaction, activity choice and encouraging adherence to behavioural regulations, this thesis is primarily concerned with the immediate influence of interpretation on visitor attitudes and knowledge. The scope of this research thesis encompassed influences on visitor knowledge, the attitudes the visitor has toward the site experience and environmental attitudes.

Interpretation, in part, is intended to add meaning to the visitor experience of a natural area. In this context, site managers have adopted on-site interpretation as an aspect of site design with the intent, in part, of influencing visitors' attitudes and knowledge (McArthur & Hall, 1996; ANZECC, 1999). This is reflected in the mission statements of the sites selected for this study that reflect the interpretation component of the corporate mission of the agency (CALM) as a whole. Despite the high priority of

interpretation and its association with influencing visitor attitudes and knowledge, most evaluation of interpretation to date has focussed on more market oriented and readily measurable factors such as satisfaction and visitor profiles.

Figure 2.1 summarises the variables and associated relationships that form the focus of this research thesis. While the variables detailed may also have significance in terms of other relationships between visitors and natural area experiences (for example, satisfaction) this thesis has a specific focus on the relationship between the independent visitor variables, on-site interpretation and the influence on environmental attitudes, knowledge and attitude to the site experience. The arrows in Figure 2.1 represent the relationship between the variables listed. For example, the independent visitor variables (age, gender, place of residence etc...) and the on-site interpretation variables (site design, activities and media) may each have an influence on visitor attitudes and knowledge. They may also influence the experiential context, the manner in which the visitor experiences the site, that itself may influence visitor attitudes and knowledge. This relationship is complicated somewhat in that the attitudes and knowledge visitors bring to the site may effect how the site influences these variables, hence the double headed arrow between the attitudes and knowledge variables and the experiential context of the site. Measurement of environmental attitudes, knowledge and attitude to the site experience immediately before and after experiencing the site enables these variables to be examined both as dependent variables and as factors that form part of the site influence on the visitor. The following chapter puts forward a survey methodology for specifically measuring influence of varying intensities of natural area on-site interpretation on attitudes and knowledge incorporating the variables summarised in Figure 2.1. The aim is to measure the immediate influence of relative high and low intensities of interpretation such that links may be made between survey results and specific site experiences.

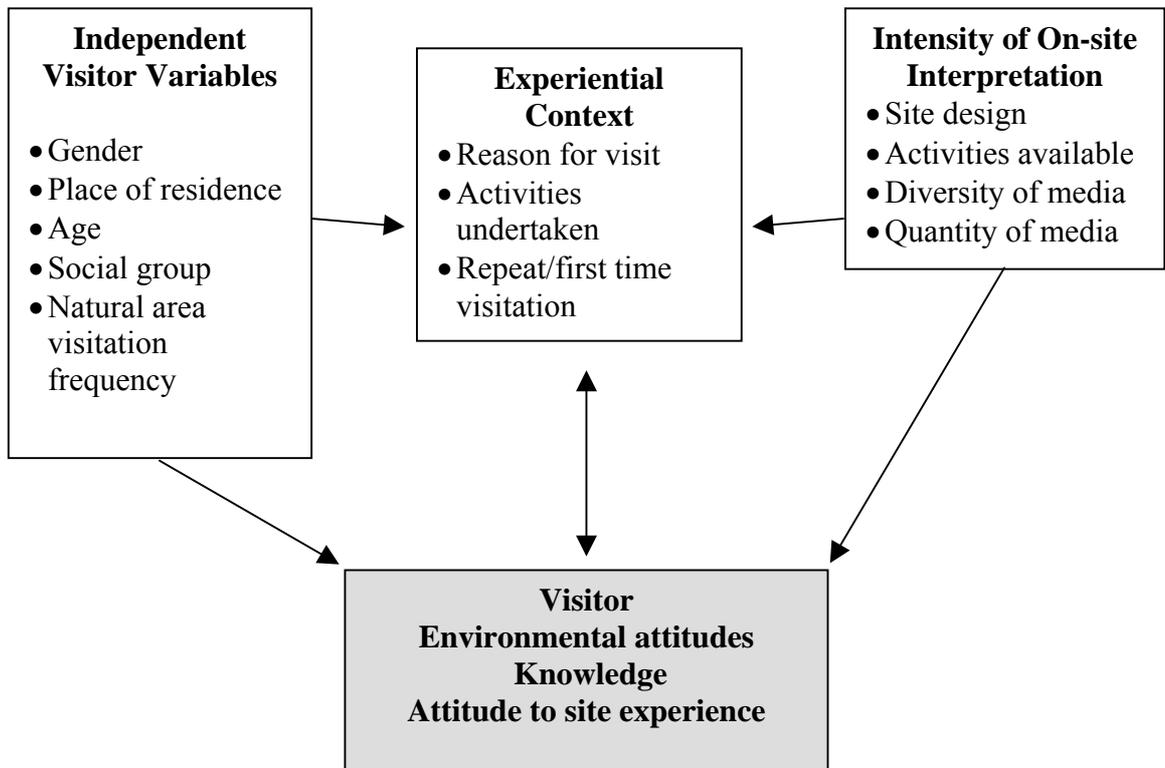


Figure 2.1: Summary of variables relating to influence of a natural area site on visitor attitudes and knowledge.