

CONTRASTING HIGH-TECH AND HIGH TOUCH EXPERIENCES IN TOURIST ATTRACTIONS

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ABSTRACT

The increasing use of a variety of new and developing technologies presents a number of challenges and opportunities for both tourism management and research. One area that has been given little research attention is the role of technology in creating and enhancing tourist experiences. This paper reports on a study of this aspect of tourism and technology which had the dual aims of providing practical advice for the design of technology-based experiences at tourist attractions, and of exploring the potential role of mindfulness as a construct to explain and predict tourist behaviour. The study involved a grounded theory analysis of positive critical incidents related to memorable technology and non technology-based experiences. The results suggested that mindfulness was a useful explanatory construct for both types of tourist experiences, although the pathways to mindfulness differed between the technology and non technology-based options. For the technology-based examples mindfulness appeared to be based on the ability of the attraction to offer new and multiple perspectives on a topic, the stimulation of multiple senses and ability of the technology to create a complete illusion. For the non-technology based examples mindfulness was associated with living things, authenticity and closeness. In both cases the concept of immersion appears to be important, although that perception is supported by different characteristics. Implications are drawn for both tourist attraction design and the use of mindfulness in tourism research.

KEYWORDS: technology, attractions, visitor experience, critical incidents, mindfulness

INTRODUCTION

In discussions of tourism futures, one of the key trends that has been identified as having a great impact on tourism is the increasing availability and flexibility of many forms of information and computer technology (ICT) (Moscardo et al., 2000; Rayman-Bacchus and Molina, 2001). Despite the potential widespread impact of ICT on tourism, research into this phenomenon has been restricted to studies of “technology as a tool of the tourism industry” (Stipanuk, 1993, p. 267). In particular this research has focussed on the use of ICT in the operational divisions of tourism businesses such as hotels (O’Connor, 1999), and on the use of ICT in destination marketing (Buhalis, 2000). Stipanuk (1993) provided a more holistic framework for understanding the roles of technology in tourism with a range of options including technology as a:

- contributor to tourism growth,
- creator of the tourism experience,
- protector of the tourism experience,
- enhancer of the tourism experience,
- focal point of the tourism experience,
- tool of the tourism industry, and
- destroyer of the tourism experience.

Stipanuk (1993) suggested that more research was needed into these other roles and although this proposition is now more than a decade old, very few researchers have explored technology and tourism from this more holistic perspective. This paper will focus on contrasting the use of ICT (or high-tech) approaches and more personal (or high-touch) approaches in the creation and enhancement of experiences in attractions.

KEY DIMENSIONS OF TOURIST ATTRACTION EXPERIENCES

Tourist attractions are often described as a key component of the tourism industry. While they have received increasing attention from researchers, attractions continue to be poorly understood, with research lacking conceptual sophistication and depth (Richards, 2002). A major area of tourism research has focussed on understanding tourists in various settings. However, the experiences of visitors at tourist attractions have received very little explicit attention. Few attempts have been made to classify visitor experiences or to assess visitor responses to the wide array of features or exhibits found in tourist attractions. There is, however, a useful body of research dealing with visitor preferences for, and satisfaction with, various interpretive features at heritage and wildlife attractions such as museums, zoos and educational attractions.

Two reviews of the interpretation research by Moscardo (1996, 1999) proposed the use of the social psychological construct of *mindfulness* to explain the interaction between visitors and interpretive experiences. Langer and Moldoveanu (2000, p.1) define mindfulness as an active cognitive process characterised by “sensitivity to one’s environment, . . . openness to new information, . . . the creation of new categories for structuring perceptions, and . . . enhanced awareness”. The alternative to mindfulness is *mindlessness*, which refers to a situation where an individual engages in limited processing of information and relies on well-established or easily followed behavioural routines. In psychological studies the construct has been shown to explain and predict a range of different social behaviours (Langer and Moldoneanu, 2000). The mindfulness/mindlessness dichotomy has also been used to explain and predict a range of behaviours in health (Langer and Moldoneanu, 2000), education (Ritchhart and Perkins, 2000), management communication and decision making (Krieger, 2005), and consumer behaviour (Williams, et al., 2004). In the fields of tourism and leisure it has been applied to wildlife-based tourism (Woods and Moscardo, 2003), the management of heritage tourism (Australian Heritage Commission, 2000), tourist market segmentation to support destination management (Frauman and Norman, 2004), tour guiding (Pastorelli, 2003), and evaluations of heritage experiences (Prentice et al., 1998).

The outcomes of these two cognitive states and the factors that predispose people to be either mindful or mindless are of particular importance to the present discussion. Mindfulness has been shown to be associated with better decision making, greater learning of new information, enhanced perceptions of control, better health, and greater satisfaction with life in general (Langer and Moldoneanu, 2000) and with tourist experiences in particular (Moscardo and Woods, 1998). Mindlessness on the other hand, is likely to result in feelings of dissatisfaction and boredom (Langer and Moldoneanu, 2000). Moscardo (1996) has argued that in tourist settings “mindful visitors will be more likely than mindless visitors to enjoy their visit, express satisfaction with their visit [and] learn more from their visit” (p. 382). Figure 1 lists these outcomes as well as the experience factors likely to encourage mindfulness.

The mindfulness model described in Figure 1 distinguishes between two types or sets of experience factors – those that act as pre-cursors to mindfulness and those that more directly contribute to a mindful or mindless cognitive state. This reflects an important division between attracting attention, a necessary but not sufficient condition for mindfulness, and dimensions that more directly encourage the active mental processing that is a key feature of mindfulness.

Precursors <i>Attract Attention</i>	Experience Factors <i>Direct Link to Mindfulness</i>	Cognitive State	Outcomes
Extreme stimuli (large, loud, etc) Movement Surprise/novelty Closeness/proximity Living things	Variety & change Multi-sensory Opportunities for visitor control Opportunities for visitor interaction Personal relevance New/multiple perspectives Authenticity	Mindfulness	Satisfaction Learning Interest Control
Familiarity Lack of movement Distance	Repetition Uni-sensory No visitor control No visitor participation apart from observation No personal relevance Single/traditional perspective	Mindlessness	Dissatisfaction Boredom

Figure 1. Mindfulness Characteristics

RESEARCH AIMS

At a pragmatic level, many tourist attraction operators need to find ways to provide for a range of both technology-based experiences as well as other experiences based on personal interaction. The objective of this research was to address this challenge by exploring visitor perceptions of ‘high-tech’ interactions and other sorts of experiences offered in tourist attractions. High-tech experiences are defined as attraction exhibits or encounters where ICT plays a central role in the creation of the experience. This contrasts with experiences where technology plays a supporting or ancillary role (such as transport used to simply take visitors to the core part of the experience).

At a more theoretical level it would be valuable to see how the factors outlined in Figure 1 contrast between technology-based and non-technology experiences in attractions. It is also useful to explore whether ICT offers new dimensions that have not previously been identified. Such information could contribute to the further refinement of constructs to explain and predict visitor responses to attraction experiences. Therefore the present study had two aims. The first was to analyse visitor perceptions of the features of technology and non-technology based experiences at tourist attractions in order to determine factors related to positive evaluations. The second aim was to explore the value of the mindfulness model in this setting. Together these aims sought to provide practical advice for the use of ICT in the creation and enhancement of visitor experiences at tourist attractions.

METHOD

The study used the critical incidents technique to support a qualitative evaluation of the best technology experiences and the best personal interactions reported by visitors in a range of tourist attraction settings. The critical incident technique (CIT) was first described by Flanagan in 1954 as a tool for investigating applied problems in psychology and for seeking insights into complex phenomena that had not previously been studied. Flanagan defined a critical incident as “any observable human activity that is sufficiently complete in itself to permit inferences and predictions to be made about the person performing the act” (1954, p. 327). Descriptions of critical incidents can be generated by participant observation, through interviews with target participants, or with semi-structured questionnaires. In survey approaches respondents are usually asked to describe a best and/or worst incident or experience in some situation, or an incident that they believed was critical to the overall outcome of the experience. The power of the technique lies in the direction of attention to critical episodes which are usually easily remembered and described by participants (Chell, 1998) and which often have already been examined for causes and outcomes by the respondents (Flanagan, 1954).

While the technique has been used extensively in a variety of managerial and engineering settings (Chell, 1998), its application in tourism and hospitality is of particular interest in the present situation. The critical incidents technique has been a popular method for studying dimensions of, and processes related to, service quality in hotels (Mei, et al., 1999), restaurants (Chung and Hoffman, 1998), and transport (Edvardsson, 1998). Other uses of the technique in tourism include the development of a model of travel motivation (Pearce, 1982), an exploration of entrepreneurship in tourism businesses (Chell and Pittaway, 1998), and an analysis of factors that contribute to visitor satisfaction with wildlife based tourist experiences (Woods and Moscardo, 2003).

A sample of 356 domestic and international tourists were surveyed at a major nature based built attraction in Townsville in northern Australia. Table 1 provides a demographic profile for the sample. As can be seen there was a relatively even spread across gender and age categories. While the majority of the respondents were Australian visitors, more than one third were international tourists giving the sample the potential to generate a wide range of positive attraction experiences.

Table 1. Demographic Profile of the Sample

<i>Gender (n=349)</i>		<i>Origin</i>	
Male	51.9 %	Australia	63.7 %
Female	48.1 %	United Kingdom	11.8 %
		Germany	5.8 %
<i>Age (n=332)</i>		Netherlands	2.9 %
24 and under	22.6 %	United States	2.9 %
25 to 44	45.5 %	Other	13.0 %
45 to 64	25.6 %		
65 and over	6.3 %		
Mean age	37.7		

Tourists were asked to complete a questionnaire containing questions about their interest in technology based experiences in tourist attractions, their use of, and attitudes towards, technology use in every day life and socio-demographic details. The questionnaire also asked respondents to describe their best technology-based experience and their best non-technology based interaction experiences in any tourist attraction. These positive critical incidents are at the core of the present paper.

CONTENT ANALYSIS OF INCIDENTS

After gathering a description of the critical incidents, researchers typically use content analysis to extract major themes relevant to the incidents under study. Tourist descriptions of positive high-tech and high-touch incidents were analysed using an inductive thematic approach, which involves generating classes of general patterns or themes that emerge from within the data. The research adopts a grounded theory approach that involves identifying theoretical categories that are derived from the data through the use of a continuous comparative method (Glaser and Strauss, 1967). The comparative method requires the researcher to interact continually with the data at various stages during coding. The underlying philosophy of this qualitative approach was to allow the central themes to emerge from the data through an inductive process, rather than being forced to fit a preconceived theoretical framework (Glaser and Strauss, 1967). In a review of grounded theory in management research, Douglas (2003, p.45) argues that Glaser and Strauss have “parted in their views on Grounded Theory” since their seminal work in 1967. Glaser’s (1992) creative approach to grounded theory differs from a more systematic approach prescribed by Strauss and Corbin (1990). Glaser prefers an analytical method that is more general and allows for issues to emerge in the course of the research process, while Strauss and Corbin adopt a more

structured set of analytical steps (Douglas, 2003). The coding approach used in this research follows Glaser’s method. The process involved scanning for similar issues, ideas and concepts by reading the incidents. These were then labelled to establish an index of themes, which were further refined and grouped into categories.

FINDINGS AND DISCUSSION

In order to provide some context for analysing the incidents it is useful to consider the location, types of attractions and experiences that form the setting for the critical incidents. Table 2 describes the setting of the incidents, while Table 3 provides a basic description of the type of attraction experiences discussed in the critical incidents.

Table 2. Locations of Critical Incidents

	High-tech experience	Non-technology experience
<i>Location of Experience</i>		
Australia & New Zealand	94	133
North America	36	18
United Kingdom	15	9
Asia	2	5
Europe	4	4
Africa	-	5
South America	-	4
<i>Type of Attraction</i>		
Theme Park	40	13
Aquarium or Zoo	28	66
Shopping / Entertainment Precinct	22	1
General Museum	18	9
Science centre / museum	16	3
Specific Themed Attraction	10	1
Historic Site	4	9
Natural Environment/Park	3	53
Other	9	29

As would be expected from the survey location and sample demographics the majority of both types of reported experience were located in Australia, although a substantial number were located in North America and the United Kingdom. High-tech experiences tended to be located within theme parks, captive wildlife settings, and shopping and entertainment precincts. Non-technology experiences were also very likely to be located in captive wildlife settings. Apart from this category, however, the non-technology experiences were located across a wide range of settings.

Table 3 indicates that the three most commonly reported best technology based experiences were multi-dimensional films and shows, simulated rides or environments and films, usually Imax or large screen. The three most commonly reported non-technology based experiences were wildlife interactions, guided tours or personal presentations by a guide, and whole sites, which typically included built attractions such as art galleries and museums.

Each incident was content analysed as previously described allowing up to two main themes to be recorded. In the case of the high-technology incidents a total of 53 different themes were identified, while a total of 62 different themes were identified for the non-technology based incidents. Almost identical sets of themes were generated by two independent coders suggesting high levels of reliability.

Table 3. Type of Attraction Experiences Included in the Critical Incidents

Type of Experience	No. Incidents
<i>Technology-based (Total = 149)</i>	
3D/4D film / show	21
Simulated ride / environment	21
General film	17
Whole site	16
Interactive display	14
Holograms	12
General rides	9
Touch screens	9
Virtual reality / virtual tour of place	5
Other	25
<i>Non-technology based (Total = 183)</i>	
Wildlife viewing / feeding	48
Tour / talk / story telling	35
Whole site	31
General sightseeing	15
Touch tank	14
General exhibit / display	9
Recreated settings / re-enactments	6
Other	25

A basic argument in the mindfulness construct as it has been applied to tourism is that mindful visitors should remember experiences in more detail. Thus the critical incident technique should generate descriptions of memorable and therefore mindful experiences. Following on from this assumption it can be argued that if the mindfulness construct does apply to this situation then the descriptions of the incidents should include the pre-cursors and direct factors listed in the mindfulness model in Figure 1. In order to test these assumptions the first set of themes were categorized according to the factors identified in the mindfulness model.

Table 4 shows how the themes were reclassified into mindfulness and other categories. For the mindfulness categories themes were categorized according to their use of words or phrases that were the same as, or synonymous with, the mindfulness feature. Responses not able to be classified in this scheme were categorized based on common meanings. This second step in the content analysis produced a smaller set of categories more amenable to further investigation. The relative frequency of occurrence of these second categories is provided in Table 5.

Table 4. Classification of First Set of Themes in to Mindfulness Factors

Mindfulness Factors	Themes	
	<i>Technology-based Incidents</i>	<i>Non Technology-based Incidents</i>
Pre-cursors		
<i>Extreme stimuli</i>	Visual stimulation, big size, size, spectacular	Size, big, colour
<i>Movement</i>		Movement, animation
<i>Surprise/Novelty</i>	Unusual, unexpected, first experience, different, experience something you can't otherwise, unique, new, new experience, not done before	Unique, different, first time, once in a lifetime, unexpected
<i>Closeness</i>	-	Close, touch, getting close to wildlife
<i>Living things</i>	-	Seeing wildlife, dangerous animals, animals working with humans, wild animals, rare animals, intelligence of animals

Mindfulness Factors	Themes	
	Technology-based Incidents	Non Technology-based Incidents
Experience Factors		
<i>Variety & change</i>	Choice, variety	Variety of animals, change, variety, diversity
<i>Multi-sensory</i>	Multi-sensory	Multi-sensory
<i>Opportunities for visitor control</i>	-	-
<i>Opportunities for visitor interaction</i>	Interactive	Holding or feeding animals, hands-on, participation, interaction
<i>Personal relevance</i>	First hand experience, personal experience	Personal, could relate to it
<i>New/multiple perspectives</i>	Different perspective, close-up view, sensing something not normally visible,	
<i>Authenticity/perceived realism</i>	Realistic, life-like, brought to life	Authentic, real, realistic, brings to life, natural, untouched, living, back in time, immersed in another world
Other Factors		
<i>Technology itself</i>	Technology itself, dissolves technology anxiety,	-
<i>Features & quality of the technology</i>	Excellent graphics, excellent visuals, 3D, colour, good presentation, flexible, high quality, surround sound, detail, sound	-
<i>No technology</i>	-	No technology
<i>Staff/guides</i>	-	
<i>Scenery/view</i>	-	Scenic view, beauty,
<i>Emotional response</i>	Exciting, excitement, fun, anticipation, emotional, entertaining, good, funny, fantastic	Relaxing, fun, fascinating, awesome, entertainment, enjoyable, interesting, escape
<i>Content/learning</i>	Content, interesting information, information, aided understanding, learning, interesting	Contribution to conservation, learning, information, well-organised, insights, education, easy to understand
<i>Allowed social interaction</i>	Allowed shared learning with kids, kid friendly, mix with others	Meeting people, with family/friends, opportunities for kids
<i>Other</i>	Multi-lingual, comfortable, no waiting	Comfortable, basic features, not over the top, intricate, overcome fear,

Several features of this classification are worth noting before the pattern of results is discussed. Firstly, for the non-technology based experiences a substantial proportion of the sample mentioned wildlife with no further detail, while others discussed the variety of wildlife seen or the opportunity to interact with wildlife. The former were placed in the precursor category of living things, but it is possible that this classification may underestimate the importance of the direct mindfulness features. In a similar fashion several of the categories in the 'other factors' section of the table may be masking direct mindfulness factors. For example, the category of emotional responses was used for statements such as "exciting", "fun", and "relaxing", while the content/learning category was used for responses which included phrases such as "aided understanding" and "interesting information". It could be argued that these two sets of responses are not experience features, but rather outcomes of mindfulness. While this provides support for the assumption that the use of the critical incidents technique has resulted in the description of mindful experiences, again this may have resulted in an underestimation of the direct mindfulness factors. Further the categories of technology itself and scenery/view were used when the respondents indicated that the best feature of the experience was either the actual technology used, or the scenic views, general atmosphere or beauty of the setting. The respondent who gave these statements could be assuming the features of the technology, such as the opportunity for visitor control, or the features of the setting, such as authenticity, are obvious. A similar argument can be made for

the category of staff/guides. It has been argued elsewhere (Moscardo, 1999) that guides may contribute to mindfulness through offering visitors the opportunity to ask questions and thus make the content and experience more personally relevant. This proposal has not, however, been tested. In this first classification implied mindfulness factors were not considered, only the actual words and phrases provided by the respondents.

Table 5. Mindfulness and Other Factors Identified for the Two Types of Experience.

Mindfulness or Other Factor	Technology-based		Non technology-based	
	n	responses (%)	n	responses (%)
<i>Pre-cursors</i>				
▪ Extreme stimuli	10	5.1	19	7.2
▪ Movement	-	-	2	0.8
▪ Surprise/novelty	19	9.6	11	4.4
▪ Closeness	-	-	21	7.9
▪ Living things	-	-	49	18.6
<i>Experience Factors</i>				
▪ Variety & change	8	4.1	10	5.4
▪ Multi-sensory	16	8.2	5	1.9
▪ Opportunities for visitor control	-	-	-	-
▪ Opportunities for visitor interaction	11	5.6	14	5.3
▪ Personal relevance	4	2.0	4	1.5
▪ New/multiple perspectives	8	4.1	-	-
▪ Authenticity/perceived realism	25	12.7	29	11.0
<i>Other Factors</i>				
▪ Technology itself	30	15.3	-	-
▪ Features & quality of the technology	20	10.2	-	-
▪ No technology	-	-	5	1.9
▪ Staff/guides	-	-	20	7.5
▪ Scenery/view	-	-	27	10.2
▪ Emotional response	19	9.6	19	7.2
▪ Content/learning	18	9.1	23	8.6
▪ Allowed social interaction	4	2.0	9	3.4
▪ Other	4	2.0	7	2.7

Bearing in mind these cautions, the results reported in Table 5 revealed several interesting patterns. Firstly, it appears that mindfulness is a useful construct to explain attraction features that contribute to memorable experiences in both categories examined. However, it seems that there are different routes or pathways to mindfulness. The three most commonly reported mindfulness factors for the technology based experiences were perceived realism, multi-sensory nature and novelty. Further the technology based experiences were more likely to be associated with multiple and new perspectives on a topic. Mindfulness in the non-technology experiences, however, was associated with living things, authenticity and closeness. In the area of museum exhibit design these three features have been noted as central to the creation of what are called immersion experiences (Harvey et al, 1998). In a similar fashion mindfulness has been shown to be associated with these factors in cultural tourism settings (McIntosh, 2004) and natural environments (Stewart et al., 1998).

A second noteworthy feature of these results is the category of authenticity/perceived realism. A similar number of responses for both types of experience were placed in this category based on the occurrence of phrases such as “authentic”, “real”, “realistic”, “natural”, and “brought to life”. Clearly these perceptions of reality or authenticity are based on different experience features for technology and non-technology based experiences. In the non-technology based experiences the responses fit more closely the concept of perceived authenticity as it has been applied to tourist settings. It is interesting to note that in many cases the concept of authenticity or naturalness was associated with captive wildlife displays and historic recreations, highlighting the perceptual element of authenticity. Some of the memorable technology based experiences were also based on perceived authenticity or realism. These responses, however, seemed to be associated with the quality and

completeness of the simulated experience. In short it seems that the underlying process contributing to mindfulness is the same in both types of experience with a combination of vividness, stimulation of multiple senses and immersion in the experience as the core pathway to mindfulness. The two types of experience differ only in terms in of the characteristics of the setting that encourage these perceptions. In non-technology experiences the environment itself offers many of these characteristics, while in the technology experiences it is the quality of the design of the technology, in particular its ability to create a complete illusion.

This argument is strengthened by a consideration of the most common types of experiences listed in each of the categories (see Table 3). For the technology based experiences the three most common experiences were multi-dimensional films and shows, simulated rides and environments and Imax and large screen films, making up nearly half of all the responses in this category. These three types of experiences share the common features of being multi-sensory, and offering a total or complete simulation of, or immersion in, an alternative reality. In a similar fashion the three most commonly reported non-technology experiences were wildlife interactions, a guided presentation and an entire natural or historic site or built attraction. These three types of experience share the features of vividness and immersion.

A third feature of the results presented in Table 5 was the importance of the features and quality of the technology. A more detailed analysis of the design quality of technology-based experiences provides some clear applied guidelines for attraction designers and managers. The results suggest that tourists have a wide range of experience with different technologies in attractions. The responses that included items such as “good use of colour”, “excellent graphics and visuals”, “surround sound” and “three dimensional” indicate that visitors have high expectations for design quality. It is suggested that these expectations may be partly attributed to the increasing sophistication of other entertainment products such as television, cinema and online content. In short attraction managers need to invest in quality design and recognise the need to regularly update technology-based experiences.

A fourth feature of the results related to the factors ‘social interaction’ and ‘absence of technology’. Some of the non-technology based responses noted the importance of social interaction and the absence of technology itself, but these were not common features of the responses. Sheldon (1997) proposed that tourists could be classified according to their responses to technology using a high-tech / high-touch paradigm. In this argument some travelers will have an expectation of higher levels of ICT embedded in, and supporting their travel experiences. Sheldon argues that these high-tech tourists appreciate the application of technologies that deliver more efficient travel experiences and seek out entertainment and attractions that use technology in the creation of visitor experiences. Conversely, there is a high-touch market segment referred to as ‘luddites’ who view technology as being destructive to the tourism experience. These high-touch travelers seek out travel experiences that allow them to escape from the modern technological world by providing more personalised, human interactions. The present results suggest that people are more flexible in their approaches to technology by adapting their evaluations to the particular type of experience. In the present study the majority of respondents (81%) provided incidents for both types of experience, thereby reflecting an interest in a wide range of experiences. Further there was little evidence of the existence of ‘luddites’ who shun technology and who seek personal interactions.

A fifth feature of the results is a broader link to the existing literature on general attitudes towards technology, which has focused on Internet and computer use in work and educational settings. Most notably, the development of a Technology Acceptance Model (TAM), has suggested that individuals adopt new technologies based on their *perceived ease of use* and their *perceived usefulness* (Davis, 1989). The value of this model does not appear

to be supported in tourist attraction settings. While tourists are concerned with aspects such as perceived realism and quality, very few memorable incidents could be connected with perceived usefulness. Ease of use was also notably absent as a characteristic that made the technology experiences of tourists memorable.

Finally some limitations of the research need to be highlighted. Although the sample of critical incidents could be described as varied and incorporating a range of different experiences, the prominence of the wildlife interactions in the non-technology based experiences may reflect the use of wildlife based attraction as the survey setting. This raises the possibility that a wider range of factors could be associated with the non-technology experiences than were identified in the present study. In particular the use of wildlife attraction may have biased the sample towards those with a specific interest in wildlife and these respondents may be less interested in human interaction thus underestimating the importance of social interaction in the non-technology experiences reported.

IMPLICATIONS AND CONCLUSION

This research had two aims, one was to provide practical design advice to attraction managers and the other was to explore the relevance of the mindfulness concept as a theoretical construct to explain and predict tourist behaviour. In terms of the first aim the research indicated a number of proposed guidelines for the design of technology-based experiences. Generally it is important that tourist attraction managers invest time and effort into the design of technology based experiences to ensure that the technology works to create a complete illusion or experience such as in simulated rides and environments. Further it is likely that technology based experiences will have shorter working lives as they will become dated as novel new technologies become available and expected. More specifically the use of high quality graphics and sound in features like 3D films and shows and the inclusion of multi-sensory stimulation are highly favoured by visitors.

The results also suggested that it may not be very fruitful to classify visitors into those with an interest in high-tech and those with an interest in high touch experiences. It seems more likely that visitors respond to the experiences as they are presented and respond to the mindfulness features regardless of the use of technology. This is consistent with the conclusions drawn by Prentice, Witt and Hamer (1998) in an examination of visitor experiences in heritage parks. The difference between the technology based and non-technology based experiences lay in the pathways to mindfulness. It could be argued that the best overall visitor experiences will be in those places that provide a variety of technology use in the attractions reinforcing a range of different pathways to mindfulness.

The existence of different pathways to mindfulness connects the practical aim to the theoretical one. Overall the mindfulness construct did seem to be useful in explaining the pattern of results with a different pattern of contributing factors in the two different types of experience. Despite these different pathways there seemed to be an underlying importance of immersion or the totality of the experience contributing to the mindful outcomes. This is consistent with the development of the construct in psychology. Earlier studies focused on the specific cognitive activities associated with mindfulness, while more recent discussions have moved towards definitions of mindfulness that stress the involvement of the whole individual in an enhanced awareness of their surroundings (Langer and Moldoveanu, 2000). More recent discussions of mindfulness have also highlighted its positive psychological outcomes for individuals (Sternberg, 2000) and this raises some new possibilities for our understanding of the benefits of travel. Finally these more recent discussions have also raised the possibility that mindfulness could be like a personality trait (Sternberg, 2000). These possibilities provide directions for future research into visitor preferences for

mindfulness and the connection between travel motivation and personality traits and mindful tourist experiences.

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