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RESEARCH ARTICLE

Tourists' perception of time: Directions for design

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ABSTRACT

How tourists perceive, use and respond to time in their holiday experiences provide opportunities for recasting the design of many situations. Drawing on work in cognitive psychology and neuroscience, this review paper considers ideas about the perception of time and temporal features of tourists' social episodes. Specific studies are outlined that document tourists' use of time and the management of time. Key links between time, emotion and other triggers to recall are considered. Six principles for furthering the consideration of time in the better design of contemporary tourism experiences are then articulated. The defining principles are Specifying duration, Managing and filling downtime, Preparing for emergencies, Tailoring tourist sequences, Encouraging engagement, and Implicating time in memorability.

Introduction

The current interest in the topic of time is directed towards designing tourists' experiences so that such concerns as waiting and queuing, scheduling activities, and structuring an itinerary are to the fore (Best & Hindmarsh, 2019; Weiler & Black, 2014). Conceptual schemes, theories and empirical findings about time are used to generate a list of principles for designing tourists' experiences. These sources draw principally on existing work in neuroscience, psychology and tourist studies (Birenboim, 2016; Bitgood, 2016; Falk & Dierking, 2016; Friedman, 2004; Green, 1997; Kim & Fesenmaier, 2015; Sacks, 2017; Shoval, 2018; Yang, Gu, & Ryan, 2009; Wittmann, 2013; Zare, 2019; Zimbardo & Boyd, 2008). The approach is, however, best described as inductive rather than deductive, since suggested design principles are built through a review. That is, there is no one grand theory of time that can be deployed to explore time-based points in tourism. Instead the review builds upon ideas from an array of sources rather than drawing down principles from one established grand approach. The researcher prioritises the needs of users rather than being predominantly oriented towards meeting commercial interests, though the conjunction of the two sets of needs is a long held goal of good design and analysis (Peters, 2005). Throughout, the attention to time does not negate the importance of attending to equity, community concerns, and sustainability issues in experience design.

The present work has its own allocation of time and attention. Initially, some key points about the way time influences tourists' experiences are reviewed. This literature is built on several approaches: firstly, there is an interest in studies that are concerned with cognitive skills and perceptions involving time. This topic explores the way human attention and memory are influenced by basic cognitive mechanisms for assessing time. A second area of attention is the rather longer and variable kind of time duration involving social episodes. The term social episodes or tourist episodes is used here as a convenient label for identifiable aspects of the behavioural stream with symbolic, spatial and temporal boundaries that both participants and managers can identify as meaningful units (cf. Forgas & Williams, 2016). This interest deals with the chunks of tourism activity where time currently is, and in the future, can be managed to facilitate the tourists' experience. The identification of social episodes includes and extends beyond the treatment of critical incidents. The latter can be seen as specific episodes with the power to have a strong influence on tourists' experiences (Koc,

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2019).

In summary, two overarching aims for this review can be specified. The first aim of the paper is to provide an accessible overview of two key topics – the cognitive psychology of perceiving time and then, the remembering, valuing, and structuring of malleable tourist episodes. This first aim is then augmented by showcasing specific studies where tourists' use of time, and the management of time, have played a role in shaping how tourists interact with places and people. As a second aim, the author seeks to use the literature and the cited studies to offer some key principles- potentially conceived as advanced tips- for furthering the consideration of time in the better design of contemporary tourism experiences.

Literature review

Psychology fundamentals

Appraisals of time, the way it is measured, and its relationship to distance, mass and life's meaning are often viewed as concerns for theoretical physics, philosophers and religious thinkers (Gale, 2016; McCarthy & Seidelmann, 2018; Waugh, 1999a, 1999b). The present interest is directed more towards pragmatic studies of the human perception of time, some of which have a long history in psychology. For example, in one of the first empirical studies about time perception, Axel (1924) established experimentally that participants under or overestimated the passing of time according to what they were doing. He asked individuals to estimate time periods that actually lasted up to a minute. Some were engaged in just sitting quietly, others were asked to tap a pencil on the desk, while two further groups solved anagrams or tried to complete puzzles. The consistent finding was that those actively engaged in a complex task underestimated the actual time that had passed, while those in the do nothing or limited action categories thought that longer amounts of time had passed. Following this work, and with more studies of his own, Fraisse (1963) proposed that every time we turn attention to time it appears to pass more slowly.

Our sense of time has no direct sensory system that specifically supports our appreciation of the duration of events and activities. Nevertheless, it is widely recognised that we do have skills in assessing how much time has passed, even if we do not fully understand how we process the relevant information or, as yet, cannot identify all the parts of the cortex that are involved. Researchers have, however, developed the notion of an “internal clock” and multiple models have been proposed for how this works at the physiological level (Church, 1984). Current reviews suggest that different mechanisms and brain systems appear to be implicated when perceiving very small periods of time (parts of a second) versus longer (but still very limited time periods) such as a few minutes (Allman, Teki, Griffiths, & Meck, 2014; Herzog, Kammer, & Scharnowski, 2016). Two findings from the research about perceiving small time periods are likely to have implications for tourism study. Firstly, attention and distraction have been shown to play a role in the estimation of time. The direction of these influences lies in the consistent result that distractions or intruder events take the focus away from thinking about time, and reduce estimated duration (Allman et al., 2014). Secondly, Wittmann (2013) reported that time estimates appear to be shorter when there is an “embodiment of emotions” (2013: 14). That is, it is not simply watching emotionally stirring episodes or stimuli that matters in reducing time estimates, but individuals have to be engaged with those emotions for the estimates to be reduced. These detailed experimental studies confirm much of Fraisse's earlier writings that by not attending to time it passes more quickly. One further noteworthy issue arising from this work on the internal time clock is that we view time periods dominated by sound as lasting longer than equivalent clock time intervals when only visual stimuli are present (Meck, 1984). More colloquially, this can be cast as wanting an alarm to be turned off because it seems to have been ringing for an ‘eternity’, whereas a bright light lasting for an equivalent period of time is judged to be on for a relatively shorter period.

A deeper understanding of contemporary work on time perception and processing is provided by the work of Wearden and colleagues under the heading scalar expectancy theory (SET) (Wearden, 2001; Wearden, 2016; Wearden & Lejeune, 2008). Three parts of this model are seen as necessary to account for time perception (Allman, Penney, & Meck, 2016). The first component is a pacemaker-accumulator internal clock which provides “raw” representations of durations. Next there is a memory system consisting of a short-term working memory reflecting accumulator content. This purported mental unit works in conjunction with a longer term store or reference memory component. In the reference memory component “important” times such as those associated with key life events (such as a lecture or, in earlier eras, the length of a prayer) function as standards (Waugh, 1999a, 1999b). Finally, a judgement or decision component is required; here the contents of working memory are benchmarked against the standards stored in reference memory. Wearden argues that through much experimental work there is good evidence for these systems (see Wearden, 2016). The theory uses the label scalar because there is the same relative degree of accuracy (and therefore inaccuracy) in time perceptions irrespective of the amount of time being judged. More formally, this perception follows the laws of perception and constancies of judgement laid out by the Weber-Fechner law. For a history and review see Howard and Shankar (2018).

The work of Wearden and colleagues is not the only significant line of experimental psychology inquiry about time perception. Wittmann (2013, 2016) has focused on developing a rich account of the perception of time which he terms ‘Felt Time’. He relies less on memory comparison processes and incorporates more physiological and neuroscience work than Wearden. Wittman argues that the integration of various bodily processes and sensations (e.g., heartbeat, respiration, digestion, pain, temperature, emotion) provide a monitor. They are combined in this view to form a ‘Gestalt’ of feelings which provide a monitor of time; for this researcher these processes account for the essence of ‘Felt Time’ (Allman et al., 2016).

Even though the work on the internal clock is relevant to our tourism–based interest on perceiving time, nearly all of the experimental studies focus on quite short intervals. Two other topics from psychological foundations offer further perspectives for this review. The first consists of findings from the studies of human reaction times. Simple reaction times, that is responding in one way to one stimulus as fast as possible, tends to take most humans one fifth of a second (Welford, 1980). Pressing a buzzer

immediately when asked to do so, recoiling from an electric shock, and hearing an alarm are everyday examples. When more stimuli are involved, and individuals have to make choices about what they do, reaction times increase quite markedly. Drinking even one cup of coffee speeds up reaction times (Chan & Maglio, 2019). Moderate amounts of alcohol consumption work in the reverse direction (Jurk, Mennigen, Goschke, & Smolka, 2018). Experience with a topic or set of stimuli improves reaction times and the ability to make decisions. Prior warnings of likely threats or danger also improve reaction times (Kosinski, 2013). Again, this small scale and detailed experimental work offers some implications for tourism design. For situations in which tourists may be put in danger, such as quick aggressive responses by animals, or avoiding an accident, coaching and interpretive material can be all important in preventing disaster. It is anticipating what can happen, knowing what to do to prevent being at risk, and, all importantly, being aware of how to respond immediately to minimise that risk that can avert danger and save lives (Durrheim & Leggat, 1999).

Another theme of fundamental interest lies in the duration of attention. The question of how long individuals remain attentive is of course a matter of context, comfort, interest, and motivation (Ooi, 2005). Many educators suggest that listening to a lecture style presentation, even if the speaker is relatively skilled, tends to see many people lose some concentration after 10–15 min (Anderson, 2016). The results show a lot of individual variability (Wilson & Korn, 2007), but building variety into the presentation format reliably improves vigilance (Young, Robinson, & Alberts, 2009). The extensive literature on the topic of our human capacity to listen passively to a presenter provides somewhat obvious but key pointers for tour guides and those tasked with presenting and interpreting their settings (Weiler & Black, 2014). When the audience is asked questions, when challenges are set, when specific multisensory opportunities such as touching, tasting and listening for key cues are built into the presentations, then the “boring” guide attribution tends to disappear. Such attention grabbing and concentration renewing strategies are consistent with what we know about inducing socio-cognitive mindfulness and active mental processing (Langer, 1989, 2009). The perception of time declines and interest is elevated if there is physical and emotional engagement with the guide or presenter's work. Mere activity is helpful, but as noted in the earlier work about time estimates, genuine embodiment and involvement is likely to be effective in converting the recitation of facts into effective co-creation. Humour too, both on the part of the guide and in reply by the audience, has been shown to be effective in enhancing positive ratings of the time spent (Zhang & Pearce, 2016).

An additional emphasis in the foundation work on time has been on the way emotional states distort time (Droit-Volet & Gil, 2016; Lake, 2016). There is an argument that at times the appraisal processes involved in determining what the individual feels may work either to slow time down or make it appear to pass more quickly. While the emotional effects are documented, the processes at work are less clearly understood. Other forms of time distortion, such as the effects of heat and cold on the body, may be explained by more physiological functions of the human system, but affective influences appear to lengthen time more in motivationally significant situations; that is those with a high relevance to the individual's goals (Uusberg, Naar, Tamm, Kreegipuu, & Gross, 2018). The extra time taken to process and appraise the situation, and potentially ensure an adaptive response, appears to be a viable account of some current work. The research team summarise their work as follows: “downstream effects of appraisal processes may include the subjective lengthening of mental representations in service of personal goals and concerns” (2018, p.13). The setting for the work of Uusberg and colleagues was winning in a gambling situation; a positive affective context. The less positive affective context such as the frustration of not accessing a service, for example waiting in a long queue, may work through the same appraisal processes. This perspective expands the earlier work of Fraisse (1963) - it is the cognitive processes involved in paying attention to interpreting emotional states that increase the duration of perceived time.

Tourists and social episodes

The previous discussion has not dealt with the concept of time as a flow of conscious experience or its treatment as remembered and experienced chunks or episodes. As noted already, the view that time can be divided into meaningful units is a fundamental starting point for the discussion of remembering and managing the tourists' sense of time (Gobet, Lloyd-Kelly, & Lane, 2016). The pivotal concept of a ‘chunk of time’ has been defined as “a collection of elements having strong associations with one another, but weak associations with elements within other chunks.” (Gobet et al., 2001, p.236). There is a further distinction in this field between deliberate and automatic (spontaneous and potentially not consciously realized) chunking. One language employed in social psychology to characterise units or chunks of the behavioural stream is to refer to them as social episodes. These units have a clear beginning and end but are also characterised by symbolic, physical and social boundaries (Forgas, 1979; Harré & Van Langenhove, 1999). Germane to this approach, the work of Sachs, amongst others, offers a detailed view of time perception that reconciles the problem that there is a stream of human action that can only be remembered as chunks or experience episodes (Richmond & Zacks, 2017; Sacks, 2017). Drawing on the work of the neuroscientists, most especially the founding ideas of Crick and Koch (2003) on vision, as well as trawling through the insights provided by insightful novelists such as Proust, Isherwood and Borges, Sacks (2017; pp.161–184) argues that our consciousness is actually a set of discrete moments drawn together by overarching top down frames built on our previous experience. This account of consciousness can be fruitfully extended to our conscious memory and recollections. We do not encode our ongoing life in full detail. Instead we organise it into memorable chunks, some more easily retrieved than others (Ben Malek, Berna, & D'Argembeau, 2017; Zare, 2019).

Additionally, Friedman (2004) observes that our chronological sense of the past is largely built on recalling locations while our efforts at remembering the temporal ordering of what we have done exists, but can be somewhat unreliable. Nevertheless, Friedman observes that our memory for time plays a special role in the construction of narratives that are core to personal identity as well as assisting in building a shared past with others (see also Wood, 2019). The view offered in this account of time hinges on the perspective that we use separate narratives to order the lives of ourselves and others, with the surprising finding that the time-based

links and stories we have for different people are largely uncoordinated (Friedman, 2004; p.603). It is particularly clear, however, that there may not be a precise parallel between what happened to us and when and what we recall happening This slippage or gap is variously identified as memory distortion or confabulation (Weschler, 2019, p.337).

These perspectives on consciousness and memory, and particularly autobiographical memory (memories related to our own involvement in the world) have implications for the structuring of tourist experiences. The discussion raises the issue of what memories and what kinds of social episodes matter. Academic tourism researchers have become particularly interested in those incidents that have a transformative or life changing power for the participants. William Wordsworth called them spots in time (de Botton, 2002). In a semi-popular account of this issue Heath and Heath (2017) state: "when we assess or experiences, we don't average minute by minute sensations: Rather we tend to remember flagship moments, the peaks, the pits and the transitions." (2017: p8). While the perspective is in line with the present argument, in fact the term moments in this account is somewhat misleading; it more a cluster of moments into a short block of time that prompts vivid recall and may influence personal change.

The work of Mezirow (2000) is the basis for several studies that seek to understand the processes involved when individuals report significant and sometimes life-changing tourist episodes (Kirillova, Lehto, & Cai, 2017a; Lindberg & Østergaard, 2015; Robledo & Batle, 2017). The contexts considered by Mezirow were largely formal educational experiences, but the ideas have a broad applicability to the chaotic curriculum of travel (de Botton (2002). Transformative episodes capture individual's attention, occupy their time fully and at least challenge and may require a re-working of the way attitudes and values are held. Such episodes may be rated as particularly interesting by researchers because they offer an importance and depth of meaning for tourists and, in some ways, justify the ecological impacts of travel (Kirillova, Lehto, & Cai, 2017b; Noy, 2004). Such episodes are, however, seen by other researchers as uncommon and are perhaps overemphasised in the literature (Binnie, Edensor, Holloway, Millington, & Young, 2007; Caru & Cova, 2003; Edensor, 2007). The common thread amongst these authors is that the everyday places, activities and behaviours matter as much as the extraordinary ones, and engaging in mundane episodes brings key rewards for participants in terms of personal identity, security and a way of ordering the world (Binnie et al., 2007). That is, instead of tourist experiences consisting of a moving parade of uplifting moments, it can be suggested that much of the time tourists are simply having satisfying hedonic moments and encoding less profound but memorable social episodes. Attention to the common tourist episodes, rather than numinous and elusive emergent moments in time, is arguably more appropriate and feasible for tourist experience design.

It is easy to identify examples of social episodes to suit our purposes of using time in tourism as a feature of design; starting a tour, ordering a meal, planning a day's activities, and bargaining for a souvenir are good examples. Each has a clear start and conclusion, key behaviours tend to take place, and there is a desirable synchrony between the tourist, the setting and other people. In an early but clear illustration of this kind of episode identification, Khuri (1968) identified the etiquette and well-timed behavioural sequences that need to take place for successful bargaining in the Middle East. Others have looked at tour design, museum visiting and time spent on national park trails (Bitgood, 2016; Falk & Dierking, 2016; Manning, Anderson, & Pettengill, 2017; Weiler & Black, 2014). In developing recommendations and principles for tourist design built around time, the concept of the temporal structuring of episodes is fundamental.

These perspectives about experience and well defined events in tourism implicate both personal engagement and consider the duration of the episodes. There are both some similarities and some differences when considering temporal perspectives about tourism and the purchase of consumer goods. In tourism, the trajectory is drawn out for a longer period as it involves more anticipation and longer periods of reflection, as well as embodied involvement with both familiar companions and strangers. Nevertheless, contemporary views of the customer experience journey such as those discussed in detail by Lemon and Verhoef (2016) and Herhausen, Kleinlercher, Verhoef, Emrich, and Rudolph (2019), have much in common with the array of ideas about tourists' journeys and the orchestra model of tourists' experience (Marschall, 2014; Pearce & Zare, 2017; Yachin, 2018). These marketing and tourism perspectives on experiences, including the role of time in the process, are linked by the reworking of ideas that have existed in management and marketing for some time (Pine & Gilmore, 1999; Schmitt, 2010; Shaw & Ivens, 2002). It is, however, the dynamic interplay of elements (sensory, affective, cognitive, relationship, and behaviour) that defines the special qualities of tourists' experiences. In particular, recent studies recognise that co-creation activities and influences are powerful for tourists and these inputs vary over time (Prebensen, Kim, & Uysal, 2016).

Time in tourism

Six specific studies help illustrate the relevance of thinking about and orchestrating the timing of tourists' activities in the design process. The examples are chosen strategically to illustrate work from multiple countries, varied domains of tourism, different kinds of tourists and shorter and longer time chunks. The cases of interest are itinerary planning by self-drive tourists in New Zealand, Chinese itineraries in the United States, time spent in a European zoo, analysis of tourists' time use and emotional states in exploring the city of Philadelphia in the United States, reactions to the schedule of a light show attraction in China, and managing time during a trip to Australia's Great Barrier Reef.

Becken and Wilson (2007), in their study of tourists driving themselves around the natural landscapes of New Zealand's scenic islands, note that the tourists followed a consistent time budget of three to five hours for each day's route. Using time well was pivotal to a good day, but frustration and annoyance prevailed when the time allocated to the driving left the tourists with no time to explore the destination they had reached. Those tourists who had mentally set themselves to spend the time driving long distances were the least perturbed by their time management. These outcomes reinforce the view that the perception of time spent on a holiday can be connected to a suite of expectations, emotional reactions and judgments (cf. Fennell, 1996; D. Pearce, 1988).

In their study of Chinese views of desirable travel routes in the United States, Yang et al. (2009) asked over 4000 respondents in

mainland China to design ideal itineraries for a 10 day holiday. Respondents were provided with a map of the south western part of the country supported by information about distances and the attractions. Los Angeles was identified as the arrival point for their hypothetical tour. In analysing the routes drawn, gender and age differences showed few significant differences. An analysis of the respondents' open-ended answers explaining their choices revealed that time, and the associated concept of saving time, were the most commonly used descriptors of the planning process. The researchers noted a cultural theme in the use of time by the Chinese. A preference for being in and especially staying in urban environments was observed. Further, the modulation of time use was highlighted by bursts of energy desirably being followed by slow periods; this process included a desired quiet period of relaxation before flying back to China.

The first two studies considered in this set of tourists' views of time are directed towards the structuring of a whole holiday. Views of time are also relevant at the scale of the single attraction or site. Birenboim, Reinau, Shoval, and Harder (2015) used the experience sampling method to assess tourists' responses in time and space at the Aalborg zoo in Denmark. In these studies the researchers argue that new technology tools, notably tourists' ability to send phone messages (SMS) that can be linked to their spatial location through Global Positioning System (GPS) devices, facilitate the close examination of the spatiotemporal resolution of affect. The emphasis in this work is on momentary experiences. The advantages of this experience sampling approach to collecting reports of how visitors feel in situ about their visit are limiting recall bias, reducing the role of social norms associated with later reflection about one's reactions, and providing ample longitudinal data across a visit that can be used for tracking the rise and fall over time of visitors' feelings. The approaches to recording on-site experiences have existed for some time (Lee, Dattilo, & Howard, 1994; Stewart & Hull, 1996) and adding geotagging to this approach has been developed more recently (Loiterton & Bishop, 2008; Pettersson & Zillinger, 2011). While doubts remain about the reactivity effects of asking visitors to interrupt their experience by commenting on it, the approach does offer one attempt to link the tracks and paths people take with the feelings they are experiencing at select times. In the Aalborg zoo case study, the simplicity of the text messages provided by the tourists thwarted any sophisticated emotional appraisal but some insights about the way visit duration affected the experience were established. Using a logistic regression analysis, a significant positive correlation was established between the duration of the visit and the experience reported (here simply the number of the positive comments). The animals that attracted the most comments were identified and the overall time spent in sections of the zoo were recorded. The researchers advocate the further adoption of fine-grained spatioemporal resolution of experiences in other tourist settings.

Kim and Fesenmaier (2015) pursued this intensive kind of study with a small number of individuals who explored the city of Philadelphia. Their work incorporated the measures of electrodermal activity (EDA) from tourists during a four-day visit. By assessing the physiological record of emotional arousal every second, this study advances the measurement of the tourists' reactions beyond the simple text messages used by Birenboim and colleagues. Further, by linking the EDA material with post hoc interviews, including time, locations, and activities undertaken, the researchers observed peaks and troughs of arousal. The individuals studied were shown to have distinctive responses to the places visited, what they did, and with whom they interacted. These kinds of data also generate detailed plots of tourists' movements. At this stage in the development of the physiological measures, there is no direct correspondence between the arousal and specific emotions. Inferences still need to be made and the concurrent reporting of tourists' feelings may not be isomorphic with the “hard” measures being recorded (Pearce, 2018). For the purpose of this review, however, the value of this kind of work lies in drawing attention to the variability in experiences across the visit trajectory and potentially therefore the design and planning of such time-based events.

There is a further argument that we way treat time in tourism settings varies according to cultural rules and norms. In an analysis of international tourists' satisfaction with an iconic tourist site in southern China, Sanjie Liu, Pearce and Wu (2018) observed the frustrations about waiting in multiple queues before the performance. This annoyance at waiting in line was widespread but seemed, perhaps not surprisingly, to be less of an issue for domestic tourists who are possibly accustomed to these not very customer friendly arrangements. The recent work by Ryan, Hernández-Maskivker, and Valverde (2018) on positive waiting suggests that management attention to the flows of tourists and clear instructions to tourists can ameliorate these troublesome behaviours and reduce negative time periods. In an allied suggestion about using time well, Pearce and Pabel (2015) note the way tourists can use their phones to fill time, amuse themselves, and engage with others when they are less interested in the visited spaces.

In an early study at a very specific time scale, Green (1997) identified the way tourists can mishandle the on-site time available to them. In the analysis of tourists going on a catamaran to the coral reefs in north eastern Australia, Green noted that there are precisely four hours when visitors are at the reef. Lunch is provided on such trips and the activities available include viewing the reef through a glass bottom boat, swimming, snorkelling, scuba diving, fishing (limited but with a special permit), and at times taking a helicopter ride. Green reported that many tourists were sitting on the boat after three hours because they had been in the water once, accessed the semi-submersible to view the reef, eaten lunch and then felt it was too challenging to go back into the water again. Since they were mostly first time visitors to the setting, it was very likely that this would be a once in a lifetime experience because of cost and the remoteness of the site. A prevailing sense that they had mismanaged their expensive day was not uncommon.

Developing time-oriented design principles

As design science emerges in tourism and related fields, time trajectories provide a platform for the construction of many episodes and encounters (Fesenmaier & Xiang, 2016; Stickdorn & Schneider, 2011). Autoethnographic accounts confirm that the self-generated management of time and the imposition of time periods (such as opening and closing times) are clear markers of the tourist experience (Custer, 2014; Oktadiana & Pearce, 2019). It is possible to outline seven themes from the review of time-based issues in the preceding sections. They can be used separately or in combination as items to employ in the design of tourists' good times. The

principles vary from pragmatic and operational considerations through to more creative attention to managing the lasting value of the time spent in the tourism context.

Specifying duration

In many settings, tourists' frustration can be reduced and planning assisted by specifying how long the activity will take or how long until the desired space or event is reached. Examples include indicating the distance to be covered and time for self-drive tours and walking tracks. Care needs to be taken to specify levels of energy, speed of movement or required fitness required to make the journey. Curiously, return distances are not always differentiated from one–way distances and these two time periods must be separated or marked clearly. For the waiting in line scenarios, sometimes the redesign of the entire queuing system can be considered, including the take a ticket approach. The physical needs of the tourists - opportunities to refresh themselves, take drinks, water and food, or use toilets - can be important accompaniments to the management of the cognitive processes. At other times markers along the path or according to queue length can be informative and help tourists engage with others or entertain themselves during the waiting period. Disney theme parks lead the way with the use of technology and theming to entertain waiting–in line visitors (Bryman, 2004).The imperatives provided by Fraisse (1963), Friedman (2004) and Ryan et al. (2018) are important here.

Managing and filling downtime

Despite the best planning efforts of tourists and those who provide services for them, there are often passages of time where people have to wait or occupy themselves before the resource they seek is accessed. The ways to fill this time and provide opportunities for new forms of engagement or alternate pursuits are suggested by the queuing studies. Encouraging tourists to contemplate, reflect and enjoy these moments of pause is one useful suggestion and direction (Ryan et al., 2018). It is also easy to envisage the hundreds of bland waiting spaces in international passport control being used more creatively to help incoming tourists better anticipate their experience. Technology can play a role here by directing those seeking more information or alternate resources to suggested apps, associated websites or more simply easy wifi access to the topics, entertainments and interests of the tourists' choice. Technologies which are built into the “wired city” and which provide material about the building or view on offer may also be useful.

Preparing for emergencies

The anticipation of difficulties, likely moments of danger and the attendant set of skills needed when activities go wrong is a necessary management tool for many tourists episodes. The role of time in these situations is often pivotal to the well-being and safety of the tourists and staff. There is, arguably, inadequate rehearsal of these safety measures in tourism. Grout (2020) reports that even in the controlled environment of an aircraft, reliable practices in terms of handling dangerous situations are rarely simulated. How quickly can passengers put on a life vest? How much time does it take to get first aid when a wildlife tourist is attacked? Are the requirements in place to enable tourists to exit a building or public space in a timely way when there is an earthquake, fire or sudden lightning storm? Breakdowns of vehicles in very hot or very cold conditions can expose individuals or tour parties to hypothermia or hyperthermia and the time taken for the onset of these potentially fatal events needs to be reviewed in relation to the resources needed to rescue those under stress.

Tailoring tourist sequences

One of the creative possibilities for better managing tourists and their time use involves using high touch or high tech advisory services to plot tailor made journeys through sites and attractions. Following the ideas expressed in the work by Green (1997) and the use of greeters and facilitators in museums and visitor centres (Pearce, 2011), the wasted time that may occur and frustrate visitors who find themselves in the wrong parts of complex and unfamiliar settings, can be minimised. Many world heritage sites confront tourists with these kinds of difficulties. Sprawling cities and temples from earlier centuries, apposite examples are Borobudur, Indonesia and Persepolis Iran, represent challenges for how to tour such structures and avoid the stress of the heat and the walking distances. The possibility of specialised routes for children, the elderly, as well as the aficionados and the less interested, might be imagined and realized as ways to tailor visit times and reduce the impact of all visitors. The sustainability advantages of this tailoring of tourists' routes should not be underestimated. The closure of key sites across Asia and Australia because of mass tourism pressures, recent examples include Maya Beach (Thailand) and Boracay (the Philippines and the climb at Uluru, (Australia), attest to the problems of people overusing a setting in one way that can be restructured differently to better meet the varied needs of diverse groups.

Encouraging engagement

The knowledge of the time an episode will take or before it commences is valuable but facilitating tourists' embodied affective activities, can relieve stress and reduce perceived time. This principle derives closely from the power of distractors or intruding elements to redirect attention away from the slow passing of time; a result identified in the Aalborg zoo data where key species re-engaged visitors' attention (Birenboim et al., 2015). The power of emotional engagement is not restricted to waiting times and isolated exhibits but extends to viewing scenes, performances and participating in activities. This principle of getting involved, suspending disbelief and concentrating well, works both at the smallest of time scales of a few minutes (Wittman, 2013) as well as when listening to longer talks, presentations and watching performances (Ooi, 2005; Young et al., 2009). Tourists can be encouraged to adopt this approach by presenters and managers employing the same techniques that induce social-cognitive mindfulness - asking questions, role playing, strong story-telling, linking to personal interest and relevance and employing humour (Langer, 2009; Pabel, 2016; Pearce, 2011). The rush of recent academic studies in tourism on the power of emotions and emotional engagement effectively

support this principle (Bastiaansen et al., 2019).

Implicating time in memorability

Much contemporary writing in tourism has begun to recognise the centrality of memories as a key personal outcome of being a tourist (Zare, 2019). What tourists recall and why they recall the events and activities they experience is also emerging as a key interest for destination managers, marketers and specific tourism businesses. An understanding of the ways in which the date (calendar time) of the episode, the sequence of timed periods within the visit, and duration itself facilitate recall are not yet fully understood. It may be that cueing tourists with more information about time and a sense of the occasion through anticipatory savoring could strengthen encoding in autobiographical memory. That is, recall itself may be sharpened if the encoding of time is used as a supplement to the characteristics of places. The work on savoring in psychology, which has been extended to tourism studies, also reveals that longer term recall of the key times in our travel lives have some consistent features (Bryant & Veroff, 2007; Filep, Cao, Jiang, & DeLacy, 2013; Pearce & Mohammadi, 2019). Conducting and then using the findings of experimental and quasi experimental studies implicating time in fostering memories is a further principle to consider for tourists' well-being.

The academic and research issues here are, however, not all straight-forward. For a long time, researchers in social cognition have proposed that there is the concept of time neglect when life's episodes are recalled. The evaluation of painful events, for example, appear to be determined by a weighted average of “snapshots” of the actual emotional experience, implying that duration of the pain is almost neglected when these processes are at work (Fredrickson & Kahneman, 1993; Kahneman, 2011; pp. 409–410). The concept of duration neglect in this context means people would be more likely to opt for longer periods of pain in the future. These studies, and there is a rich set of variants to the early work, suggest a distinction between the experiencing self and the remembering self. The work has been applied broadly by Kahneman to thinking about life and holidays (see pp. 388–390 and Chapter 38, 39 and Conclusions in Kahneman, 2011). This kind of thinking leads to the view that a one week holiday may be remembered and have the same psychological benefits as a longer event. Is it wise or sensible, however, to rely too much on the remembering self? It is apparent that for many people the remembering self works through peaks and key moments while the experiencing self necessarily lives through all the moments. Does an alternative exist? For our overall well-being, dwelling on memorable moments should involve a consideration of duration thus adding to the weight of the evaluation (cf. Kahneman, 2011; p. 409). These ambiguities about the perception of time, the extent to which time and time duration are encoded in memories, and the value of doing so for the remembering self, all offer research directions for the tourism researcher interested in building an understanding of the tourism experience-memory-time nexus.

Conclusion

Holiday times are often promoted as the “time of our lives”. Clearly for many people both domestic vacations and international travel represent threshold crossing, spatial disjunctions, in tourists' day-to-day lives. The concept of time is implicated in these transitions in many ways. Yet time in tourism has arguably received little attention because the one discipline that features time as its central rationale, that of history, tends not to look at the closer and smaller temporal intervals of interest within the trajectory of tourists' experiences. In this review paper, it is argued that the confluence of work in psychology, neuroscience and tourism studies is beginning to offer a coherent set of lenses to view time in tourism. Not all of the physiological mechanisms underpinning how we judge time or recall time are in place. It is at least clear, however, that the coherence of our identity depends on threading a timeline of our past experiences together to create a satisfying personal and often an agreed-on and shared reconstruction of memory based narratives (Wood, 2019; Zimbardo & Boyd, 2008). Further, participating in our holidays and the autobiographical memory involved in recalling that time are more likely to be satisfying when time flows almost unnoticed rather than disrupts and therefore interrupts or annoyingly extends the social episodes. When tourists are absorbed in what they are doing, emotionally engaged as discussed in this review, positive states of flow and associated well-being are more likely (Uysal, Sirgy, Woo, & Kim, 2015).

The orientation in this paper has been towards deriving some themes, or working principles that can be contemplated when those who design or evaluate experiences undertake their work. Reiterating those principles - Specifying duration, Encouraging emotional engagement, Managing and filling downtime, Preparing for emergencies, Tailoring tourist sequences, and Implicating time in memorability – serves as a summary of ideas that scholars and practitioners can build on to preserve tourists' good times.

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