

What is Museum Fatigue?

Gareth Davey

ABSTRACT

Research in the 1920s and 1930s revealed that museum visitor interest towards exhibits decreased as visits progressed, and this concept was coined “Museum Fatigue”. Since then, studies have shown that several behavioural changes characterise fatigued visitors, but the literature has not drawn them together. Further, the causes of museum fatigue remain speculative, and have not been evaluated in detail. This article reviews recent research about museum fatigue, and discusses its causes. Visitor attributes, the museum setting, and interaction between them, seem to underpin fatigue, and their relative importance differs according to the behavioural changes under investigation. An updated definition of museum fatigue is provided, along with suggestions for museum professionals to investigate fatigue within their museums. Further research is needed, particularly with cognitive psychologists, in order to unravel visitors’ cognitive mechanisms that play a role in interest towards exhibits.

The earliest visitor studies were conducted by Benjamin Gilman in the 1910s, Edward Robinson in the 1920s, and Arthur Melton in the 1930s (Gilman, 1916; Robinson, 1928; Melton, 1933, 1935; 1936). They noticed that some visitor behaviour was consistent across different museums, and these patterns are now considered to be rules of thumb within the Visitor Studies field. One example is “Museum Fatigue”, a term that characterises decreased visitor interest towards exhibits as visits progress (Gilman, 1916; Robinson, 1928; Melton, 1935; Falk et al., 1985). Since these early studies, research has shown that other behavioural changes characterise fatigued visitors. For example, it has been shown that visitor interest also decreases across a small number of exhibits, and fatigued visitors tend to cruise around galleries with increased selectivity towards exhibits (Falk et al., 1985). Museum fatigue is comprised of different phenomena but the literature does not draw them together, and the concept remains ambiguous. Further, explanations for museum fatigue

remain speculative, and have not been evaluated in detail. Understanding museum fatigue is important because visitor interest is correlated with effective communication of exhibit messages, and visitor learning (Falk, 1983; Serrell, 1997; Hein, 1998; Bitgood, 2002; Falk and Dierking, 2002; Falk and Storksdieck, 2005). To address these issues, this article reviews and analyses the literature about museum fatigue, presents an updated definition, and provides an entry point for museum professionals to research, and counteract, museum fatigue in their institutions.

A REVIEW OF MUSEUM FATIGUE

Gilman (1916) was the first to describe museum fatigue and his definition focused on the effort required to observe displays. He noticed that some exhibits at the Boston Museum of Fine Arts demanded more effort to view because of the way they were presented. He found that “after a brief initial exertion he [the visitor] will

resign himself to seeing practically everything imperfectly and by a passing glance”. In a later study, Robinson (1928) showed that museum fatigue generalised across four museums with varying characteristics. Melton (1935) provided further evidence for the concept; he varied the number of paintings in a museum gallery and observed decreased visitor interest as the number of displays increased.

More recently, Falk, Koran, Dierking and Dreblow (1985) investigated museum fatigue at the Florida State Museum of Natural History. Visitors were observed, during their entire visits, for the occurrence of behaviours indicative of either interest in museum exhibits, interest in other aspects of the museum setting, attention towards other people, or self-interest. They found that people’s interest initially reached a high plateau, then remained constant for about 30 minutes, and later decreased to a lower level. Visitors’ orientation changed from initial slow movement around the exhibits, to cruising around halls, and more selective stopping

What is Museum Fatigue?

behaviour (indicative of diminished interest towards exhibits).

Beverly Serrell has conducted a large amount of work on the duration and allocation of visitors' time in museums. In a study at over 100 exhibitions (Serrell 1997; 1998), she found that visitors typically spent less than 20 minutes in exhibitions regardless of topic and size. Her research supports the notion that visitors have a limited time frame after which their interest towards exhibits diminishes.

Museum fatigue has also been observed in zoos. For example, Bitgood, Patterson and Benefield (1986) found that visitors in Birmingham Zoo's reptile house viewed the first reptile exhibit for longer than subsequent exhibits, and this pattern was upheld when visitor flow was reversed. Similarly, Marcellini and Jenssen (1988) tracked visitors as they travelled through a reptile house and observed similar behaviour. This pattern also existed when traffic flow was reversed. They state "In normal flow, exhibits A-E were more attractive and held visitors significantly longer than areas D-F....However, reversing the traffic flow dramatically reversed the situation. Areas D-F became more attractive and held visitors significantly longer than A-E". In another approach, Mitchell et al. (1990) found that an exhibit near a zoo entrance received significantly more visitors than an exhibit further away. A third exhibit, even further from the main path, received less visitors. All cages were almost identical in form, and the location effects persisted when animal inhabitants were swapped. A possible explanation for this result is visitor fatigue because fatigued visitors are more selective, and therefore likely to skip exhibits (Robinson, 1931; Falk et al., 1985).

The research summarised above shows there are several scenarios of how visitor interest decreases during museum visits. The behavioural changes could be grouped together under the umbrella definition of "museum fatigue" because they all denote decreases in visitor interest during visits. The following conclusions may be drawn from this literature:

1. The traditional view of museum fatigue is that visitor interest decreases as visits progress. For example, it has been shown that interest reaches a high plateau for the first 30 minutes of a visit, and decreases thereafter.
2. A second pattern, whereby visitor interest decreases within smaller areas (such as a succession of displays), has also been reported.
3. The behavioural changes that categorise fatigued visitors include cruising through galleries, relatively rapid rates of viewing without rest periods, and increased selectivity towards exhibits.
4. Patterns of fatigue are generally constant and predictable within an institution and, further, the concept generalises across different museums.

CAUSES OF MUSEUM FATIGUE

The reasons previously put forward to explain museum fatigue will now be reviewed. It is generally regarded that the manner in which people interact with the museum environment is determined by people's individual attributes, factors associated with the museum environment, and interaction between them (Melton, 1935; Falk et al., 1985; Bitgood, 2002). These explanations have never been explicitly stated as hypotheses before, and are therefore discussed here. The first explanation focuses on visitor attributes

(termed the "Visitor Attributes Hypothesis"), whereas the second explanation emphasises environmental factors ("The Environmental Attributes Hypothesis"). Each hypothesis will now be evaluated using the literature reviewed above.

1. The Visitor Attributes Hypothesis

This hypothesis posits that factors associated with visitors are responsible for decreases in visitor interest. For example, one attribute (put forward by Melton, 1935) is "physical fatigue", whereby visitors become physically tired as their visits progress. Indeed, Melton (1935) compared a museum visit with a hike. However, this explanation is limited. Visitors sometimes display fatigue after only a few minutes, or across a small number of exhibits: "truly an exceedingly short time for the production of pronounced physical fatigue" (Melton, 1935). Can physical fatigue really explain decreased interest across a few exhibits in succession?

Cognitive processing has also been proposed as a determinant of fatigue (Melton, 1935; Bitgood, 2002), although this suggestion is difficult to evaluate because of the lack of integration between cognitive psychology and visitor studies. Some researchers have argued that cognitive processes such as attention capacity (attention span) play a role; the amount of processing capacity that people possess is limited (the cognitive resource decreases with time and effort), and people tend to focus on one thing at a time (Kahneman, 1973; Hampson and Morris, 1996; Bitgood, 2002). According to this explanation, limited attention capabilities underpin museum fatigue because there is insufficient capacity for attention towards exhibits during later stages of visits (due to the mental effort exerted

during initial stages of a visit; Melton, 1935; Bitgood, 2002). Support for this argument comes from the fact that decrements in visitor interest are relatively predictable; for example, the study by Falk et al. (1985) showed that visitor interest remained at a high plateau for the first 30–45 minutes, before museum fatigue set in. This predictable change in visitor interest is consistent with the view that attention capacities deplete, and reach a level of saturation, until a critical point. Another area of cognitive psychology that could play a role in museum fatigue is the “mere-exposure effect”. Repeated exposure to a stimulus may initially increase likeness towards it, but over-exposure may result in “wear out” (that is, an observer’s response is no longer positive; Kail and Freeman 1973; Van den Burgh and Vrana, 1998; Nordhielm, 2000). Research has shown that the mere-exposure effect is a determinant in preference for works of art (Leder 2001). This is a viable explanation for museum fatigue because exhibits may share similarities (such as similar theme or size), and repeated viewing of them during a visit could lead to “wear out”. However, further research is needed to investigate the possible role that the mere exposure effect, and attention capacity, play in museum fatigue.

There are other visitor attributes that could explain museum fatigue. It is well documented that some exhibits could appeal to specific gender groups or to people with certain personality factors. Visitors differ widely in their past experiences, interests, visit agenda, intellectual capabilities and their familiarity and comfort; all of these factors influence how people interact with museums (Falk et al., 1985; Diamond, 1994; Falk and Dierking, 2000). This suggestion is nicely summed up by Falk et al. (1985)

who state, “this view suggests that the best way to predict visitor behaviour is to know more about the visitors as individuals. Thus, X% of the visitors would be most attracted to exhibit A, while Y% would not show interest in A”. This view is supported by studies that have reported behavioural differences between different demographic groups (Diamond, 1994). The generality of museum fatigue suggests, however, that visitor attributes are not important determinants; fatigued visitors seem to display similar and predictable patterns despite wide variations in their demographics and other characteristics (Falk et al., 1985). Further, museum fatigue may generalise across countries and, therefore, culture - my research, for example, found decrements in visitor interest amongst Chinese visitors (Davey, 2005).

2. The Environmental Attributes Hypothesis

Research over many years has shown that the museum environment (the arrangement of displays and exhibit architecture) affects visitor interest. Steve Bitgood has done a large amount of work on this topic and his recent review (Bitgood, 2002) is a good point of entry into the literature. Exhibit design factors include isolation, size, contrast with setting background, sensory features (sound, smell, or touch), lighting, and line-of-sight placement (Melton, 1935; Screven, 1974; Bitgood, 1989; Bitgood and Patterson, 1993; Ogden, Lindburg and Maple, 1993; Bitgood, 2002). In zoos, animal variables such as presence, activity, size, colour and visibility also influence visitor behaviour (Bitgood et al., 1988; Johnson, 1998). People’s traffic flow is influenced by the attraction of a salient object, distraction of an open door, and arrangement of displays (Melton, 1935; Bitgood, Benefield,

Patterson, & Litwak, 1991; Bitgood, 2002). Most studies have focused on the influence of one or two variables. A more comprehensive approach came from Johnston (1998) who conducted an extensive investigation into the influence of many factors (initially 50 variables). He found that structural aspects of exhibit appearance had the most significant effects on visitors’ viewing time. Environmental attributes help explain why visitor interest varies between exhibits but they present difficulty for explaining museum fatigue during entire visits. As Falk et al. (1985) argue, visitor interest should resemble consistent peaks and troughs, rather than gradual decreases, if exhibit factors are the most important determinant of behaviour.

It seems that there is support for both hypotheses. Is one set of factors more salient? Museum fatigue consists of several phenomena, and it seems likely that the causes of fatigue, and their importance, differ according to the scenario. For example, physical exhaustion seems a likely candidate during a long museum visit, whereas environmental factors probably provide a more convincing explanation for decreased interest over a small number of successive exhibits. Considering visitor and environmental factors as independent causes may be too simple. An integrationist view, in which both groups of factors are believed to interconnect to shape museum fatigue, may provide a better explanation. This idea is perhaps best illustrated using research from cognitive psychology that centres on the cognitive determinants of object attractiveness. Several design variables are known to influence cognitive processing and, therefore, object attractiveness (Clore, 1992; Reber, Schwarz, & Winkielman, 2004). Thus, there is interplay between visitor attributes (cognitive processing) and

What is Museum Fatigue?

environmental factors (exhibit design). Indeed several design variables (such as the presence of vertical and horizontal patterns, amount of information, symmetry, and figure-ground contrast) are believed to influence aesthetic preference because of their ability to facilitate cognitive processing (Reber et al., 2004), and some research has been conducted using works of art and paintings as stimuli (Nicki Lee, & Moss 1981; Leder 2001; Reber et al. 2004). However similar research has not been conducted in museums, or with visitors, and there is certainly a role to be played by cognitive psychologists in understanding how cognitive processes interact with the museum environment.

This review shows that the traditional view of fatigue offered by early museum workers (that is, decrements in visitor interest during visits) is in need of updating. On the basis of the literature discussed in this review, museum fatigue can be considered to denote

“a collection of phenomena that represent predictable decreases in visitor interest and selectivity either during entire visits, within smaller areas (such as exhibit galleries), or across a few successive exhibits. These changes are likely to be attributed to a combination of visitor factors (such as cognitive processing, physical fatigue, and individual characteristics), factors in the environment (such as exhibit architecture and the museum setting), and interaction between them”.

PRACTICAL IMPLICATIONS FOR MUSEUMS

Museum fatigue has wide-ranging significance for museums. Fatigue influences the extent to which visitors

engage with exhibits, and may affect learning because viewing time correlates with the amount of learning that takes place (Falk, 1983; Serrell, 1997; Hein, 1998; Falk and Dierking, 2002; Falk and Storksdieck, 2005). However, finding a solution to fatigue may not be straightforward because of the complexity of the concept, and lack of knowledge about why it occurs. Fortunately, a large amount of research has probed the relationship between viewing time, visitor learning, enjoyment, and exhibit design. This research is easily accessible to museum professionals. The work of Steve Bitgood and Beverly Serrell provides a good starting point. For example, Serrell (1997; 1998) provided a method for measuring how visitors use exhibits and provided examples of good exhibit design that engages visitors. Serrell believes that developing appropriate communication objectives is essential for good exhibit design and recommends that every exhibit area contains attractive elements and carefully designed labels. Designers should seek ways to capture visitor attention. As Bitgood (2002) points out, in order to hold visitors' attention, it is first necessary to attract it. His suggestions include:

- Increase exhibit distinctiveness (such as size, contrast with setting background, line-of-sight placement, etc), and locate exhibits in relation to traffic flow (landmark objects, hotspots of visitor attention, inertia, and the right-turn bias; Melton, 1935; Bitgood et al., 1991; Bitgood, 2002).
- Reduce mental effort required to understand exhibits by considering how information is presented.
- Motivate visitors to engage with exhibits by asking questions, correcting misconceptions, interesting content, mental imagery, handouts, 3-D objects

and opportunities for interaction (Robinson, 1928; Screven, 1992; Peart, 1984; Bitgood, 2002).

- Minimise distractions such as sounds, competition from other exhibit elements and novelty in the surroundings.
- Provide opportunities for visitors to take breaks (because they will help to replenish attention capacities).

It is important to note that not all researchers interpret visitor behaviour in the same way. For example, Rounds (2004) argues that selective use of exhibits enables visitors to focus only on exhibit elements that interest them, thereby minimising time and effort. He states that “partial use of exhibitions is an intelligent and effective strategy for the visitor whose goal is to have curiosity piqued and satisfied” (Rounds, 2004, p.389). This is an interesting interpretation but it has not been evaluated using visitor studies.

SUMMARY

Museum fatigue is a complex and important concept that influences the amount of time visitors spend in entire museums, galleries, and at a small number of exhibits. There are likely to be various explanations for museum fatigue, including visitor attributes, environmental factors, and interaction between them. More research is needed, particularly in collaboration with cognitive psychology researchers. It is recommended that museum professionals investigate the characteristics of viewing time and fatigue in their institutions, and then develop strategies to counteract fatigue.

REFERENCES

- Bitgood, S. (1989). Deadly sins revisited: A review of the exhibit label literature. *Visitor Behavior*, 4(3), 4–13.

- Bitgood, S. (2002). Environmental psychology in museums, zoos, and other exhibition centers. In R. Bechtel & A. Churchman (Eds.), *Handbook of environmental psychology* (pp. 461–480). John Wiley & Sons.
- Bitgood, S., Benefield, A., Patterson, D., & Litwak, (1991). Influencing visitor attention: The effects of life-size silhouettes on visitor behavior. In *Visitor studies: theory, research, and practice, Vol. 3* (pp. 221–230). Jacksonville, AL: Center for Social Design.
- Bitgood, S., & Patterson, D. (1993). The effects of gallery changes on visitor behavior. *Environment and Behavior, 25*(6), 761–781.
- Bitgood, S., Patterson, D., & Benefield, A. (1986). Understanding your visitors: Ten factors that influence visitor behaviour. American Association of Zoological Parks and Aquaria. Annual Conference Proceedings, 726–743.
- Bitgood, S., Patterson, D., & Benefield, A. (1988). Exhibit design and visitor behaviour: Empirical relationships. *Environment and Behaviour, 20*(4), 474–491.
- Clore, G. L. (1992). Cognitive phenomenology: Feelings and the construction of judgment. In L. L. Martin & A. Tesser (Eds.), *The construction of social judgments* (pp. 133–163). Hillsdale, NJ: Erlbaum.
- Davey, G. (2005). *The influence of demographic, behavioural, socio-economic, and environmental design factors on visitor behaviour in Britain and China*. Unpublished PhD thesis, University of Bolton, UK.
- Diamond, J. (1994). Sex differences in Science Museums: A review. *Curator, 37*, 17–24.
- Falk, J. (1983). Time and Behaviour as Predictors of Learning. *Science Education, 67*(2), 267–276.
- Falk, J., & Dierking, (2002). *Lessons without limit*. Walnut Creek, CA: Alta Mira.
- Falk, J., Koran, J., Dierking, L., & Dreblow, L. (1985). Predicting Visitor Behaviour. *Curator, 28*(4), 249–257.
- Falk, J., & Storksdieck, M. (2005). Using the contextual model of learning to understand visitor learning from a science center exhibition. *Science Education, 89*(5), p744–778.
- Gilman, B. (1916). Museum Fatigue. *Scientific Monthly, 12*, 67–74.
- Hampson, P., & Morris, P. (1996). *Understanding Cognition*. Blackwell Publishers.
- Hein, G. (1998). *Learning in the museum*. London. Routledge.
- Johnston, R. (1998). Exogenous factors and visitor behaviour: A regression analysis of exhibit viewing time. *Environment and Behaviour, 30*(3), 322–347.
- Kahneman, D. (1973). *Attention and Effort*. New Jersey, Prentice-Hall.
- Kail, R. V., & Freeman, H. R. (1973). Sequence redundancy, rating dimensions and the exposure effect. *Memory & Cognition, 1*, 454–458.
- Leder, H. (2001). Determinants of preference. When do we like what we know? *Empirical Studies of the Arts, 19*, 201–211.
- Marcellini, D., & Jenssen, T. (1988). Visitor behaviour in the National Zoo's Reptile House. *Zoo Biology, 7*, 329–338.
- Melton, A. (1933). Some behaviour characteristics of museum visitors. *Psychological Bulletin, 14*(3), 6–8.
- Melton, A. (1935). *Problems of installation in Museums of Art*. New Series, No 14. American Association of Museums.
- Melton, A. (1936). Distribution of attention in galleries in a museum of science and industry. *Museum News, 14*(3), 6–8.
- Mitchell, G., Herring, F., Obradovich, S., Tromberg, C., Dowd, B., Neville, L., & Field, L. (1990). Effects of visitors and cage changes on the behaviours of Mangabeys. *Zoo Biology, 10*, 417–423.
- Nicki, R. M., Lee, P. L., & Moss, V. (1981). Ambiguity, cubist works of art, and preference. *Acta Psychologica, 49*, 27–41.
- Nordhielm, C. (2000). *A dual-process model of advertising repetition effects*. Doctoral thesis, Graduate School of Management, Northwestern University.
- Ogden, J., Lindburg, D., & Maple, T. (1993). The effects of ecologically-relevant sounds on zoo visitors. *Curator, 36*(2), 147–156.
- Peart, B. (1984). Impact of exhibit type on knowledge gain, attitudes, and behavior. *Curator, 27*(3), 220–235.
- Reber, R., & Schwarz, N. (2001). The hot fringes of consciousness: Perceptual fluency and affect. *Consciousness and Emotion, 2*, 223–231.
- Reber, R., Schwarz, N., & Winkielman, P. (2004). Processing fluency and aesthetic pleasure: Is beauty in the perceiver's processing experience? *Personality and Social Psychology Review, 8*(4), 364–382.
- Robinson, E. (1928). *The behaviour of the museum visitor*. New Series No. 5. Washington, DC: American Association of Museums.
- Robinson, E. (1931). Exit the typical visitor. *Journal of Adult Education, 3*(4), 418–423.
- Rounds, J. (2004). Strategies for the curiosity-driven museum visitor. *Curator, 47*(4), 389–410.
- Screven, C. (1974). *The measurement and facilitation of learning in the museum environment: An experimental analysis*. Smithsonian Institution Press.
- Serrell, B. (1997). Paying attention: The duration and allocation of visitors' time in museum exhibitions, 40, 108–125.
- Serrell, B. (1998). *Paying attention: Visitors and museum exhibitions*. Washington, DC: American Association of Museums.
- Van den Bergh, O., & Vrana, S. R. (1998). Repetition and boredom in a perceptual fluency/attributional model of affective judgments. *Cognition and Emotion, 12*, 533–553.

THE AUTHOR

Dr Gareth Davey is a research associate at the University of Chester (Britain) and conducts visitor studies in museums and zoos.