

Interpretation design: an integrative, interdisciplinary practice

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Abstract

Museums, zoos and heritage sites increasingly rely on interpretation of their resources to provide distinctive experiences that attract and engage visitors. However, the practice of designing interpretation is little researched and ill-defined. Through interviews and case studies the research seeks to better understand the role of design in interpretation projects in an Australian context and articulates practitioner perspectives about the aims and issues of their work. The paper argues that interpretation design is a field of specialized yet interdisciplinary practice that exemplifies the highly collaborative and strategic nature of contemporary design practice. Often working outside traditional museum contexts, practitioners' challenges include limited understanding by many stakeholders and clients, unsuitable project structures and limited published research that integrates interpretation and design. This article is an early step in meeting these challenges.

Key words: interpretation, design, museums, experience, exhibition

Introduction

Interpretation in museums, zoos and heritage sites aims to inform, provoke and inspire the visiting public. Given constraints on public funding for museums and increasing recognition of the value of distinctive visitor experiences (Falk and Dierking 1992; Pine & Gilmor 1999; Mousouri, Adams and Luke 2004; Bannon, Benford, Bowers and Heath 2005; Packer 2008; Jensen 2014), there is a reliance by cultural institutions on interpretation to help attract, engage and retain visitors. Design plays an essential role in communicating the content of interpretation and shaping visitor experiences, yet design in this context is under-theorized and poorly understood.

Interpretation design applies the principles and philosophy of heritage interpretation (Beck and Cable 2002a; Knudson, Cable and Beck 2003; Larsen 2003; Tilden 2007) through diverse media and methods. Design strategies help to shape the visitor experience and communicate complex, layered messages, ideas and information, encouraging visitor engagement with topics ranging from natural and cultural heritage to science and social issues. Often working outside traditional museum contexts and extending beyond traditional exhibition design formats and communication design media, multi-disciplinary designers make use of text, image, sculpture, multimedia, soundscapes, spatial layout, theatrical and sensory environments presented in narrative, thematic, scientific or other arrangements to interpret a subject to visitors. Interpretation design is developing as a specialist design field with particular knowledge, skills and expertise but the extent of investigation into the field's practice is not commensurate with its growing significance.

As most knowledge of interpretation design is held by its practitioners, this research seeks out practitioner perspectives to build understanding of the role of design in the practice of interpretation and to distinguish the field's key characteristics. Reflective interviews with consultant designers inform analysis of two case studies that investigate situated practice. Practitioners selected for the general interviews undertake projects for a range of organizations

from zoos and museums to national parks and heritage sites, mainly within Australia. The two case studies include interviews with consultant designers, clients, site observations and document review.

As one of the few empirical studies in the field, this original research substantiates interpretation design as a field of practice that comprises specific knowledge and expertise, establishing a basis for further academic and practical understanding of interpretation design. The paper argues that interpretation design is a specialization that is strategic, collaborative, multi- and inter-disciplinary. The research contributes to the fields of interpretation, tourism, design and museum studies, the findings being relevant to practicing designers and their collaborators and aims to assist cultural institutions to more effectively harness the contribution of design in interpretation projects.

A discussion of the term interpretation design establishes its relationship with connected fields. A review of the literature establishes the theoretical context of the research, followed by a brief description of the methods used. A summary of findings from the interviews and case studies in relation to the designer role leads into a discussion of the key issues raised. The paper concludes with the proposition of a working definition of interpretation design.

Delineating the field of practice

The term interpretation design refers to the intersection of heritage interpretation and design. Variants include scenography, narrative space, narrative environments and environmental graphics. Delineation between these practices is fluid and fuzzy, with many areas that overlap. Each term reflects its origins and influences from film, theatre, architecture and graphic design respectively (Kossmann.dejong 2010; den Oudsten 2012). Scenography implies the staging of a spectacle or theatrical event; narrative space implies a story-based spatial design; and environmental graphics implies a specifically visual form of design outcome. Interpretation design, with its roots in heritage interpretation, emphasizes the interpretive intent over any specific form or arrangement of the design outcome. Schwarz, Bertron and Frey (2006) locate this type of exhibition design practice between art, architecture and communication design. Unlike the general term exhibition design, however, interpretation design is not limited to exhibitions and does not include purely technical design or commercial display.

In the Australian professional context, the term interpretation distinguishes content-focused design work from technical, architectural and landscape design. It accommodates a broad range of media and arrangements, from a single work such as a sculpture, to digital interpretive media, to a multi-space environment that may not adhere to a narrative structure. Aside from these nuanced differences, these fields share an emphasis on uniting form and content (Kossmann, Mulder and den Oudsten 2012). A distinctive feature of the work is that visitors have free movement and free choice, aspects that designers do not control.¹

Existing literature

The significance of interpretation design in shaping the visitor experience is not well reflected in the literatures of interpretation, museum studies or design. The published knowledge of interpretation and museum studies recognizes that the quality of visitor experience is an important factor for institutions in gaining visitor interest and encouraging learning, but design's contribution to this is not widely examined (Woodward 2009). Similarly, the design literature does not recognize interpretation design as a significant field. The literature review establishes that interpretation design is a developing field of practice and theory in need of research that sheds light on the role of designers within the practice of interpretation and investigates the factors that affect design practice in this context. In particular, there is a need for contributions to the literature from outside mainstream museums and major cultural centres.

The research builds on publications that capture knowledge from practice; in particular texts that stem from the Narrative Space research project (den Oudsten 2012; Kossmann et al. 2012). Through reflection and analysis of their exhibition architecture practice, Kossmann and de Jong (2010) present their design philosophy and detail projects from their folio. Den Oudsten (2012) presents in-depth interviews with prominent design practitioners, investigating wide-ranging aspects of their practice. No comparable investigation of practice in an Australian

context exists, although Roppola and Woodward make significant contributions to knowledge from an Australian perspective (Woodward 2009; Roppola 2012).

One of interpretation's 'founding fathers' is Freeman Tilden (2007 [1957]: 33) who defines interpretation as, 'an educational activity which aims to reveal meanings and relationships through the use of original objects, by first hand experience, and by illustrative media, rather than simply to communicate factual information.' This definition underpins contemporary definitions used by interpretation organizations throughout the world (see for example, Knudson, Cable and Beck 2003: xi).² The field draws on the work of educator and philosopher John Dewey (1938) in relation to learning through experience, psychologist Gardner's (1983) theory of individual learning styles and positive psychologist Mihaly Csikszentmihalyi's (1990) work on optimal experience and sense of flow (for example, Moscardo and Pearce 1986; Ansbacher 1998; Knapp 2007; Weiler and Smith 2009). The interpretation literature recognizes that interpretation is part of a multi-faceted visitor experience. It integrates theory and knowledge from a range of other disciplines including social theory, psychology, communication theory, environmental studies, tourism and leisure studies to discuss the multiple aims of interpretation, including encouraging people make personal meaning from experiences and to affect visitors on cognitive, emotional, behavioural and spiritual levels (Ham 1992; Packer and Ballantyne 2001; Beck and Cable 2002b). Veverka proposes multiple objectives for interpretive exhibits: learning objectives, that is, what visitors will know; behavioural objectives, that is, what visitors will do with that knowledge; and emotional objectives, that is, what will have the most long term impact on the visitor's memory and help accomplish the behavioural objectives of the exhibit.³

In relation to interpretation's educational aims, the field has largely rejected the traditional model of education through information transfer for more complex, constructivist accounts of the learning process (including Falk and Dierking 1992; Falk, Moussouri and Coulson 1998; Eberbach and Crowley 2005; Packer 2006). Falk and Dierking's (2000) holistic view of learning in museum contexts considers the impact and importance of the physical, personal and social contexts experienced over time. The model holds that visitors continue to learn from their museum experience long after it is over, through memory and association with observations in new experiences. They argue that by far the strongest lasting memory is of the physical environment.

The attention given by these researchers to physical and sensory qualities of the visitor experience as outcomes of interpretation is not matched by research that examines the role of design in achieving these outcomes. Design aspects are mentioned by numerous authors but not deeply investigated. Hughes (2010) identifies certain characteristics and intentions of exhibition design including: layering for different audience types such as the expert, frequent traveller, scout and orienteer; considering different learning styles such as visual, auditory and kinaesthetic; interaction design to create visitor experiences; and immersive environments using still and moving images and sound. From among the practice-focused exhibition design literature (including Bonet 2006; Lorenc 2007; Hughes 2010; Locker 2011), Dernie (2006) identifies approaches to exhibition design including narrative space, simulated experience and performative spaces. Kossmann discusses techniques of layering, immersion and abstraction, arguing that a balance between cognitive and sensory experience is essential (Kossmann.dejong 2010: 100). Bitgood (2011: 138–9) identifies seven general approaches to interpretation design: subject-focused, aesthetic, hedonistic, realistic, hands-on, social facilitation and individual difference, the latter aiming to meet the needs of different audience types based on age, learning style, cognitive ability or other factors. Bell, Harvey, Loomis and Marino (1998) argue that a harmonious balance between stimulating exhibitry and soothing ambience may provide the most fertile soil for the positive experiences of psychological flow and sense of immersion. Roppola's (2012) research conceives of the museum visitor experience as being co-produced through relationship with the exhibition environment across four processes: framing, resonating, channelling and broadening. Goulding (2000) argues that the visitor experience is affected by socio-cultural factors that include cultural identification, continuity of theme and story, story-building, variation of stimulus and social interaction, cognitive factors such as the creation of mindful activity, involvement and engagement, reflection and imagination, psychological factors that include scene setting through orientation and mapping and environmental factors such as crowding, seats and noise.

Thus, design is identified as a significant contributor to the visitor experience but is not widely examined as a field of practice, nor models of its principles and processes fully developed. Although the academic literatures of design and interpretation largely demonstrate a mutual neglect, they share an interest in understanding the nature and qualities of human experience. Like the museums literature, the design literature draws on the work of Kolb (1984) and Dewey (1938) that recognize the agency of users in shaping their own experiences through free-choice decision-making and interaction (Forlizzi and Ford 2000; Pucillo and Cascini 2014). Design researchers investigate experience to understand the relationship between people and designed objects with a view to improving such objects and interactions. Recognizing the plural threads of experience, Norman (2004: 20) argues that affect, emotion and cognition are complementary and interact with the physical body. In the literature of human-computer interaction and human-centred design, research into experience aims to make digital products easier and more pleasurable to use, providing satisfaction and positive affect to users (for example McClellan 2001; Shedroff 2001; Sengers 2003; Stolterman 2008; Forlizzi, Zimmerman and Stolterman 2009; Dalsgaard 2010; Edmonds 2010; Wright and McCarthy 2010). The focus in these fields on human-computer interaction and virtual experience does not preclude their relevance to the design of physical environments and visitor experiences but this is not thoroughly examined.

Taken together, design research examining the qualities of human experience recognizes its complex, multifaceted and multi-sensory nature. Subjective experience, personal motivations and psychological characteristics interact with the external world including other people within a particular context over a period of time. Physical sensation, emotion, cognition and interaction are considered key aspects of experience, consistent with the museums and interpretation literature. Discussion of the nature and qualities of human experience prompts consideration of the extent to which designers create experiences for users and visitors. This research takes the position that interpretation designers create tangible and sensory products that aim to engage and affect visitors in intangible, individual ways. Experience is internal and subjective, created through relationship with the external world. Conceptions of the nature of human experience can inform a designer's work, but designers do not *create* experiences, having no control over a person's motivations, emotional state and interests. As Stoinski, Allen, Bloomsmith, Forthman and Maple (2002) argue, 'In the end, no matter how skillful the exhibition makers, no matter how calculated or inspired their choices, the ultimate act of meaning making is idiosyncratic and belongs to the viewer.' Thus, designers design *for* experience that is co-constituted by visitors' engagement and subjective response. This demands a close relationship between design and studies of visitor movement, learning and qualities of experience (Macdonald 2007).

A review of the literature has revealed a substantial gap in the interpretation and museum studies literatures with regard to interpretation design. Some researchers recognize design as a significant link between a project's aims and outcomes but the paucity of discussion about how designers achieve this indicates a substantial deficit in knowledge and understanding. Design's influence on visitors' decisions in free-choice learning environments, its contribution to learning, entertainment, emotional response and the overall visitor experience are examined by only a few researcher-practitioners. Further, Woodward (2009) claims that interpretation design's absence from the literature obscures its presence as a new field of design with an identity in design history and design discourse.

The relatively low profile of design within the field of interpretation and of interpretation within museum studies, together with fragmentation across diverse knowledge domains has slowed the consolidation of theory and practice (Macdonald 2007). Building on den Ouden's interviews with practitioners (2012), this research seeks to contribute to such consolidation by articulating practitioner perspectives about characteristics of current practice in Australia.

Method

The study takes a qualitative approach to data collection and a holistic, interpretive sense-making approach to its analysis. Theory building is inductive as data from interviews, observations and documents are combined and ordered into larger themes, moving from the particular to the proposition of explanations. Such substantive theory has a specificity and usefulness to

practice often lacking in more global theory (Ragin and Schneider 2011: 151; Flyvbjerg 2006).

The research comprises two parts: interviews with practitioners and case studies. The interview sample is purposeful and small. Eight semi-structured interviews with consultant design practitioners each lasted approximately one hour. Through the projects they have undertaken, interviewees represent the range of contexts in which interpretation takes place including national parks, museums, zoos, botanic gardens and theme parks, mainly in Australia. Participants were asked general questions about their work context, process and outcomes and were free to raise other issues or extend discussion on topics of interest. Interview transcripts were reviewed by participants then subjected to three rounds of summary and reduction. Meaningful text segments were retained as original quotes; these were grouped as common themes emerged. Themes were then ordered according to the number and strength of interviewee comments. As the interviews discuss practice in general rather than specific projects, they serve as a useful point of comparison with the case study interviews.

Case studies of two interpretation design projects examine a range of data from multiple sources to contribute a deep and holistic understanding of interpretation design in practice. Purposeful, information-oriented case selection seeks to maximize the usefulness of information provided through such a small sample (Flyvbjerg 2006). The first case is the World Heritage Exhibition Centre situated in a purpose-built space in the Mount Tomah Botanic Garden visitor centre. It interprets a vast World Heritage area across eight National Parks in the Greater Blue Mountains Area west of Sydney. Case two is the Te Wao Nui precinct at Auckland Zoo that interprets New Zealand's native flora and fauna across six key habitat types in interior and outdoor environments. The contexts and content of the two cases have sufficient similarities and differences to provide useful insights into consultant interpretation design practice in nature-based projects. Methods of data gathering included interview, review of documents and observation of the completed projects. For the two case studies 12 semi-structured interviews were conducted with clients, their staff, stakeholders and members of the contracted design team that discussed the projects' context, process and outcomes. As with the general practitioner interviews, data in the form of meaningful text segments were subjected to three phases of summary, reduction and ordering, retaining original quotes where possible.

Limitations

As an early study in the field, the research establishes broad based foundations for future research. The research makes no claim to statistical significance, the frequency and extent of the impact of project specific factors on practice not being measured.

Findings

Practitioner interviews: designer role

Of the eight interviewees, five were practicing consultants and three were employees within large institutions. Three had experience as both consultants and as employees within a large museum. Notable differences were reported by interviewees between the roles of designers within larger institutions and consultant designers. Some larger institutions such as state museums have well developed systems that utilize and support designer expertise. Interviewees with experience in such organizations reported that designers have a clearly prescribed role and play a significant part in shaping projects physically and conceptually. By contrast, many interviewees described instances where smaller or less experienced organizations undertook interpretation projects, often for the first time. These organizations lacked understanding of design processes and roles, design opportunities and methods and had minimal infrastructure to support interpretation projects. Designers in such contexts had a much broader, less defined role. Table 1 summarizes interviewee responses in relation to the role of designers in interpretation projects.

Interpretation Designer Roles	
Consultant designers	Design staff in major institutions
Our role varies so much from project to project, depending on the content, site, client experience and intent.	A designer's role within the broader project team is pretty clear, guided by a detailed brief.
A designer puts together the way in which the public interacts with not only the objects, but the experience of being amongst those objects, in a live sense.	The design team plays a significant role in shaping the project physically and conceptually.
My role is to question the intent of the proposed exhibits and to make them work harder and become more meaningful.	We've got to embed meaning in everything we do rather than using design for design's sake.
Our role starts with creating an environment where people (stakeholders) feel safe to express their opinions to collaboratively develop an approach that everyone owns, that is achievable and clear.	You may have to design for an audience very different from yourself and your peers; the designer has to represent the audience in the development process.
Some designers are aesthetically driven; some design for the appreciation of their peers; some focus on telling stories through objects, which may over-ride aesthetic principles.	A designer's role is to consider the most effective ways to engage all of the audience's senses to connect them with the subject.
A designer has to prove to the institution that they care about their collection, share their passion and aspirations.	
Ideally, designers have an ongoing conversation with curators, specialists and writers to shape stories and create focal points.	
Designers shape cognitive understanding, but also deeper, emotional aspects that are potentially life-changing.	
Designers act as advocates for the audience needs and interests in the design process.	

Table 1. Designer role: summary of meaningful text segments from practitioner interviews.

In discussing their role, interviewees articulated the philosophical aims of their work. Interviewee A's conception of the designer's role was one of expanding the view, opening up the range of possibilities, challenging assumptions and getting to the heart of the story. Such a role involves a global vision, facilitative role and critical perspective. It involves gaining the trust of stakeholders and demonstrating passion for their collection, their work and site. Interviewee B stated that his role is to question everything provided in the brief, to make the design 'work harder' and become more meaningful rather than just a series of props. He stated that rather than seeing the interpretive component as something that can be tacked on, if it is well based in the content and objects, it can actually drive the visitor experience 'from the inside out.' The challenge for designers is to not only shape cognitive understanding, but also deeper, emotional aspects that are potentially life-changing. Interviewee C stated that an exhibition should take a point of view, presenting an opinion about the subject rather than presenting apparently objective truths.

Taken together, the interviewees saw their practice as aiming to spark the audience's curiosity so that visitors would seek out further information and experiences. Designers reiterated their focus on connecting audiences with topics and objects, similar to the philosophy espoused in the interpretation literature. Interviewees spoke of seeking to engage diverse audiences in terms of age, interest and learning modes through analogy with everyday experiences, by seeking out unusual and unexpected stories and by creating experiences that are surprising and sometimes challenging for audiences. Interviewees characterized interpretation design as being message-driven, audience-centred and encouraging social interaction. They represented the design process as multi-disciplinary in that it draws on multiple strands of design practice and other fields, and inter-disciplinary in that designers engage with a range of specialist contributors.

Practitioners identified the most significant influences on their role being firstly the client's often limited level of understanding and experience of interpretation design so that designers often take on an educative role with clients and secondly, the often late engagement of designers on a project generally after the architecture and landscape design is complete. They identified a connection between these two issues, with inexperienced clients likely to consider design as part of the final stages of a project, but stated that experienced clients also often took this approach, engaging designers at a point when they were unable to contribute to the architecture, story lines, object selection or other significant aspects of the visitor experience. Other issues raised include: each project is highly individual, with a unique context, subject and designer role so that designers must start 'from scratch' with each project; the relationship between designers and architects is critical to the designer's role and design outcomes; and audience testing and evaluation are rarely included in the design process.

Case studies

The two cases selected for study are strongly conservation focused and, according to client feedback and the limited visitor data available, both are successful in creating experiential visitor environments that engage their audiences and communicate intended messages. Case study interviewees included client organization staff and stakeholders as well as designers. Through their focus on specific projects, the case study participants framed the designer's role in practical rather than abstract or philosophical terms. The combination of factors that affects the design process in each project provides useful insights with relevance to interpretation design and potentially to other fields of design practice.

Outline of Case one

The World Heritage Exhibition Centre (WHEC) is an interior exhibition environment that interprets the significance of the Greater Blue Mountains World Heritage Area. The area of 1,026,044 hectares across eight national parks includes diverse landscapes, significant species and micro-habitats. The permanent exhibition is a joint project between the Mount Tomah Botanic Garden and the National Parks and Wildlife Service NSW. My close involvement in the project as a member of the design team provided privileged access to case materials and participants.

The project brief specified a diverse designer role, encompassing research of primary and secondary sources, development of themes and text to communicate the specified World Heritage values and aims of the centre, design of all elements, fabrication and installation, thus requiring a highly multi-disciplinary team. The brief recognized the technical, conceptual, artistic and communicative aspects of the role. However, the client's vision in relation to specific items and the completed architectural design constrained the designers' capacity to fully execute this role.

Other influences on the design outcomes include that the project was not based on a collection of objects, but on a set of abstract values defined by the World Heritage Committee. These focus on specific landforms and plant species. The project sponsor provided an expert photographer to the project, including their extensive folio of work from the area, which was a great asset to the project. The clients had significant personal investment in the project, with a long-term association and passion for the area, but had no previous experience in a project of this type. Many aims that were not made explicit at the outset became evident through

presentation and feedback and some debate between stakeholders. One such aspect was that the clients did not want visitors to stay in the space for long, or to specifically cater to young children such that they might inhabit the space and deter older visitors. A 12-month hiatus in the middle of the project occurred due to problems with the building construction tender, which had a significant impact on the project budget.

The design team won the project tender based on a theatrical, sculptural design concept, with a central cave feature. Stylized natural forms remained a constant element throughout the evolution of the design. The design team undertook research in the form of consultative workshops with community members, interviews with specialists such as botanists, site visits and extensive literature review. The two leading team members of the design team collaborated on concept design, one of whom also worked with the project manager on research, interpretation planning and text development. Individual items were allocated to other designers to develop, overseen by the project manager. The clients expressed satisfaction with the design process and outcomes, noting ease of communication with the design team. They noted that differences in the two clients' visions for the project was a source of tension but did not hinder the design process.

Design outcome: a thematic arrangement combines sculptural exhibition furniture, large format photographs, graphics, sound and a short film. It emphasizes the aesthetic value of the World Heritage area, focusing on sensory aspects of the visitor experience; more active experiences are provided in the adjacent garden. Changes in material used for the canyon were necessitated by budget issues resulting from the project hiatus; some remediation was required to improve the aesthetics of this item. Overall, the clients and visitors judged the design outcome a success, with positive responses recorded in the visitor book and anecdotal responses reported by the two clients.

Outline of Case Two

Te Wao Nui is a precinct within Auckland Zoo that showcases New Zealand's indigenous flora and fauna, with a strong emphasis on conservation. The 3.5 hectare precinct is based around a large collection of species, organized into six habitats set within a combination of outdoor and interior environments. This project is unique in New Zealand in its scale and scope and is the largest project Auckland Zoo has ever undertaken. I was a key member of the consultant design team, which provided privileged access to case materials and participants.

The project brief specified that the interpretation must weave together nature, threats to species and habitats, conservation actions and the diverse human relationships with the environment, encompassing both Maori and European perspectives across recreation, resource use and tourism. The project had a 13-year history of development but interpretation designers were not engaged until nine months prior to opening. Spanning three directorships of the zoo, none had identified the need to engage an interpretation specialist. Once engaged, the designers did not have time to negotiate their role or prepare a return brief due to the pressing project timeline. The full scope of work became apparent once the project was under way, this including extensive content research, collating a huge amount of content from outdated documents authored by people no longer engaged on the project and managing the development of indigenous art and text as well as the design of interpretation elements across six interior and outdoor areas and selection and management of fabrication contractors. To meet the pressing schedule, the design team chose to prioritize items with longer fabrication lead times, working simultaneously on concept designs, design development and construction drawings across different elements in the precinct, rather than a more traditional staged design process. Rather than allocating a project manager, the zoo formed a reference group for consultation and design approval. Although convening large meetings for all decisions was often difficult and time consuming, it enabled close involvement by staff who were very passionate about the project. Zoo staff interviewed expressed general satisfaction with the design process but noted that the time pressures limited the depth of discussion in relation to text development and may have resulted in some missed opportunities for interpretative elements in the landscape. Part way through the project the zoo director expressed a wish that he had doubled the budget and the timeframe for the interpretive elements as they have a far greater impact on the visitor than costly infrastructure items.

Design outcome: Te Wao Nui is a beautiful environment to be in, which the zoo director believes is essential to helping people care for the environment. In this way, the landscape underpins the interpretation. Designers used a wide range of media including sculpture, sound, theming, video, interactive models, signage and Maori art to weave storylines through each habitat and in some cases across the whole of Te Wao Nui. The zoo does not gather formal visitor feedback but the education staff and volunteers have reported that responses from visitors, teachers and peers have been overwhelmingly positive, including reports of greatly increased visitor numbers.

Case study findings: designer role

The two cases demonstrate that the designer role is diverse and often poorly defined. In both cases, beyond the roles prescribed by the project brief, the designer role was affected by the timing of engagement, hierarchy of contracts, client inexperience and unspoken or underlying project aims. Many aspects of the role emerged once projects were under way, as the process of design and collaboration with stakeholders revealed underlying intentions, conflicts and needs. The designer role also developed in response to gaps in roles undertaken by others. For example, neither project had a nominated curator or content manager, this role falling largely to the designers. Design aspects not specifically related to interpretation but which were not completed by the architects, such as way finding and orientation, also fell to the interpretive team. The role of the interpretation designer, therefore, included extensive research, curatorship, mediation, cultural liaison, text development and solving way finding problems. At the same time, their role involved educating the client about project requirements, management, processes and possibilities, sometimes resulting in a tension between the role of service provider and that of advisor. Table 2 summarizes the range of roles undertaken by designers in the two cases.

Prescribed/recognized by clients	Underlying/not recognized by clients
Research – visual, experiential, literature	Identifying and clarifying project aims
Concept design and illustration	Advocating for the audience in the design process
Consultation and workshop facilitation	Curatorship
Technical design and specification	Cross-cultural negotiation
Content and text development	Client education
Art and illustration	Materials and methods research
Fabrication management	Strategic planning and design
Management of multimedia development	Mediating between content provider and audience interests
	Resource management
	Relationship management

Table 2. *Aspects of the designer role: findings from the two case studies.*

Impact on design outcomes

Interpretation designers operate on multiple levels. At one level, they focus on the communication of messages to audiences. At a deeper level, they seek to create a coherent environment that supports the interpretive messages, sense of place, intuitive way finding and integrated content. The whale skeleton is an example from the more than 400 items designed for the Te Wao project that achieves multiple outcomes. It assists visitors with the otherwise problematic navigation of

a hairpin bend soon after entry to the precinct by drawing them around the corner and up the hill, alleviating the need for directional signage. Passing through the skeleton orients the visitor sensorially and conceptually to The Coast habitat. It connects the landscape with interpretive signage about whales further along the path and echoes messages about loss of species.

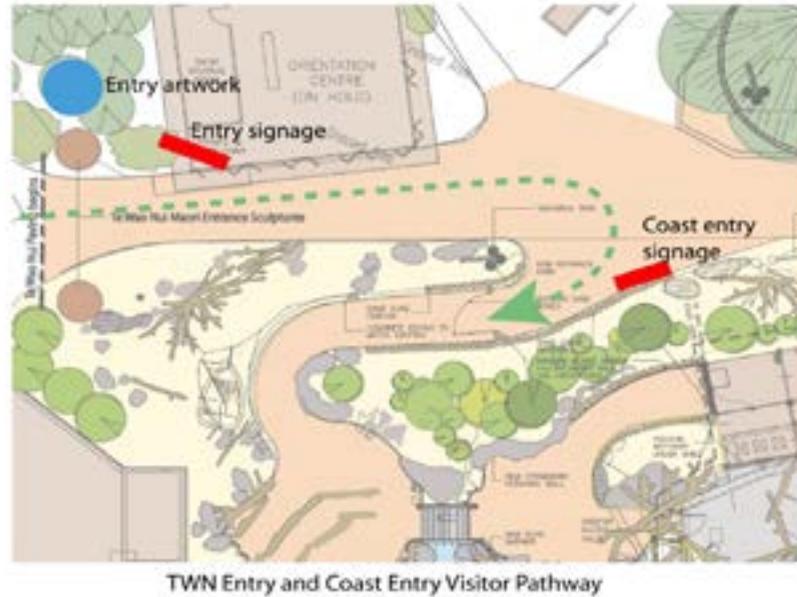


Figure 1. *Te Wao Nui Entry and Coast entry visitor pathway (Motherworks/Hatchling Studio 2011).*



Figure 2. *Whale skeleton, entry to The Coast, Te Wao Nui Auckland Zoo. Photograph by Toni Roberts 2011.*

Similarly, in the WHEC case, the tree forms serve an integrative role. The metaphor of trees holding the stories of a place stems from several local Aboriginal cultures, as described by an Aboriginal participant in an early project consultation workshop facilitated by the design team. This drove the rationale for using stylized tree forms as the main vehicle for presenting content. The faceted forms create intimate spaces for visitors to read panels, watch a video or view objects. The exterior of each tree has a bark print of a specific species and a touch panel of real bark, highlighting the character of each species and inviting visitors to connect. Leaf cut outs soften the transition between the tree form and the ceiling.



Figure 3. *Tree form 2.5 Exterior and interior elevations (Mothers Art 2010).*

The trees are considered by the clients, designers and visitors to be a successful design element within the space. Physically, they create embracing spaces that block bright light from the windows and skylights. Conceptually, they provide a meaningful context for a range of story elements related to eucalypt diversity, Aboriginal culture, early exploration and conservation actions. The series of tree forms maintains the garden's 'hide and reveal' strategy as visitors move through the space.

These examples illustrate that design can play a role in integrating and connecting interpretive elements with other aspects of the visitor environment and ameliorating problems with the architectural and landscape design. Visitors do not notice being directed as they are drawn from one place to the next, their attention being absorbed in the experience rather than in signposted navigation (Hall 1987: 127–128).

The case studies demonstrate that the prescribed role of the interpretation design team does not always match project needs and affordances. In Case 1, the client specified a diverse role, encompassing research of primary and secondary sources, development of themes and text, design of sensory visitor experiences, object sourcing and display, fabrication and installation, thus requiring a highly multi-disciplinary team. The brief recognized the technical, conceptual, artistic and communicative aspects of the role. However, due to designers being engaged after the building design was complete, they were unable to advise the architects on experiential aspects of the building such as visitor orientation and critical practical issues such as light

control and ceiling height. This constrained the designers' capacity to fully execute their role.

In Case Two, the lack of clarity around the interpretation design team's role and the wide scope of work within a compressed timeframe were consequences of the client organization's uncertainty and lack of experience in interpretation design, which zoo management readily acknowledged. The broad scope and role had a number of benefits for the designers together with the challenges it posed, giving the design team significant control or influence over a range of elements. Had the client chosen to separate the project into multiple design contracts, it would have been more difficult to create cohesion across media and to develop threads through the precinct as a whole. However, this project's strategic application of design would have been greatly enhanced by earlier engagement of the design team, giving them time to develop a shared language of design with the client staff, to identify interpretive opportunities, assess priorities and develop a more comprehensive strategy for interpretation across the whole site.

The case studies demonstrate that the designer role, design processes and outcomes are influenced by the project structure, management, context and project parameters as well as designer expertise and budget. Lack of understanding of interpretation design on the part of client organizations constrains the contribution of designers, leading to late engagement and obstacles in shaping the physical environment and messages. Once the projects were under way, the clients recognized that engagement of designers earlier in the exhibition development process optimizes their capacity to create effective interpretive environments. Overlapping contracts between designers and other project contributors such as architects and landscape designers supports a strategic, integrative approach to interpretation design. Strategic planning and design of interpretation reduce the need for instructional and way finding signage, using techniques of attraction and affordance to draw visitors to the next location and invite them to interact. In both cases, the clients expressed regret that they had not engaged the design team earlier in the project for these reasons.

In the two cases, the client's lack of experience and understanding about managing interpretation design projects placed a burden on the designer to educate the client and stakeholders about the role and process of design in interpreting the subject to their audience. Client understanding of design's contribution to the project developed through the course of the project as a result of advice from the designers and experience gained through the design process. In addition, designers needed to educate the client about audience needs and behaviour, particularly in relation to information overload, non-text based means of communicating content, way finding and coherence. Designers acted as audience advocates, representing their needs and interests in the design process. Interpretation designer expertise includes understanding of audience behaviour and needs and how visitor interaction with the environment serves to co-construct their experience. This was an undervalued aspect of designer knowledge deserving of a more central focus within the two projects.

Issues identified in the case studies align with those from the general interviews, strengthening the validity of findings. Five key inter-related findings emerged from the research as a whole:

1. Interpretation design is a multi-and inter-disciplinary practice.

The findings show that interpretation designers are multi-disciplinary, bringing skills and experience from other disciplines to inform their practice. The designers interviewed had training in architecture, landscape architecture, industrial design, fine art and furniture design.⁴ However, much of an interpretation designer's creativity, skill and value are situated in multi-disciplinary design practice. Individual designers may be multi-skilled and may form teams combining complementary skill sets.

The design process involves communication and collaboration with a range of specialists including scientists, conservationists, historians, archaeologists, architects, landscape designers, site managers, marketing, trades and other specialists. Such inter-disciplinary design practice is complex and collaborative, demanding agility and skills in communication, analysis and synthesis, planning and collaboration, identified by Holston (2011) as essential skills for designers. Multi-disciplinary and inter-disciplinary teams are consistent with current practice in other design disciplines that enable the pooling of diverse skills and insights to process and solve problems (Julier 2008: 1; Woodward 2009: 39).

2. The designer's role is significantly affected by client understanding, timing of engagement and sequencing of contracts.

In the two cases examined, the project was the only significant interpretation project that either organization had undertaken. Interpretation is not the core business of either client organization, both focusing instead on sourcing, displaying and maintaining species collections, primarily using basic signage, volunteer guides and staff to communicate with visitors. In both cases, although clients professed recognition of interpretation design's significance, they established certain project parameters that limited its contribution such as unsuitable building design, sequencing of contracts that limited designers' application of their expertise and late engagement such that they had insufficient time to enact their role.

Interpretation design provides the primary interface between an organization and its visitors, design outcomes playing a central role in creating visitor experiences and communicating intended messages to audiences. Design remains, however, an undervalued element of many projects, as indicated by late engagement of designers and frequently low budgetary allocations. Interpretation design is perceived by some contracting organizations as part of the final stages of a project, designers being seen as providing the 'icing on the cake', adding an interpretive layer to an established visitor environment rather than contributing to the foundations of the visitor experience. Such cases neglect the role of designers as strategic planners who consider the whole environment as an interpretive opportunity. Woodward (2009: 24) argues that interpretation design practice exemplifies the highly collaborative and strategic nature of contemporary design practice. However, the research shows that such strategic aspects of the role are largely unrecognized by clients, particularly at the beginning of a project.

We can speculate that funding and project management models from institutions with greater infrastructure and in-house interpretation expertise may contribute to the misconception that interpretation should take only a small portion of an overall budget and commence in the final stages of a project's development, thus presenting unsuitable examples for smaller organizations and those contracting external interpretation designers. Due to the lack of knowledge about suitable models of interpretation design management, it is largely through undertaking projects and experiencing what designers have to offer that organizations develop a better understanding of the contribution of design to the overall visitor experience.

3. Interpretation design focuses on the whole visitor experience.

The research points to a blurring of boundaries between the exhibit, architecture, interpretation and environment design which together comprise the visitor experience. When engaged concurrently with other professionals, a design team can traverse boundaries between disciplines to create a seamless integration of landscape, architecture, way finding, interpretation, play and art. While clients often come to projects with a 'shopping list' approach, requesting or rejecting individual items, interpretation designers aim to develop threads in a range of forms that weave meaning into the entire visitor experience. This multi-layered, multi-modal method can succeed in meeting the needs of diverse audiences with a range of learning styles and interests. Interpretation designers can play an integrative, unifying role, helping to ameliorate issues with the architectural and landscape design to aid visitor navigation and create coherent, meaningful visitor experiences.

This approach treats the whole environment as an interpretive opportunity. The designer's role involves balancing, coordinating and strategically employing a range of media and methods to generate holistic visitor experiences suited to the target audience. To play this integrative, coordinating role, interpretation designers need opportunities to contribute to development of the landscape design, architecture, exhibit development, themes and storylines, pathway layout and even retail design. As Polakowski (1987: 80–81) argues, design synthesizes diverse concepts and elements through theories, principles and processes to create a balanced, harmonious solution and should be considered fundamental and critical to the entire development process from conception to realization. That is, when valued and engaged early in a project, interpretation design can adopt a more transformative role in shaping the visitor experience.

4. Designers mediate between the needs of the audience and the client.

The research demonstrates that designers act as mediators between the interests of the organization and its audience, frequently adopting the role of audience advocate in discussions with the client and knowledge specialists about design and content. Similarly, Kocsis and Barnes (2008) argue that design serves an important brokering role between the content providers' demands for content accuracy and detail and the needs and interests of the audience for immersive qualities of experience. Hall (1987: 22) also argues that the professional designer is not only exercising skill in the visual arts, but is acting as a broker between the other interests behind the project. In the two cases under examination, this was manifest in discussions regarding the quantity and type of content and the means of communication. The clients and stakeholders generally assumed 'content' to mean text, whereas the designers frequently argued for a reduction in text-based content, preferring to find more experiential ways to communicate with audiences. Designers advocated for audience needs in relation to integrating orientation and way finding to support visitor comfort and reduce confusion. They argued for reducing overload of information and using a range of communication methods and modes of visitor engagement to meet the needs of diverse learning styles and interests. In other organizations staff or even audience members may be the primary advocates for audience needs, but in the two cases under examination, no-one was assigned such a role.

The mediator or broker role was often a point of tension for the designers and was not always successful, due in part to the other impacts mentioned in this research such as late engagement. Further research is needed to understand the factors that help designers to succeed in this mediatory role, such research being relevant to other design fields in which designers develop products on behalf of a client for a target audience that is absent from the design process.

5. The designer role is frequently poorly defined and articulated.

Where a client lacks understanding of the designer role a design brief may provide limited guidance as to the project scope, relative weighting of tasks and relationship with other professionals. Dernie (2006) argues that unresolved issues within a design brief will be present in the finished product, so those seeking to engage interpretation designers would benefit from greater understanding of the field for preparing the design brief. It is recommended that the range and proportional weighting of aspects of designer roles be detailed within a project brief. Where it is not, a designer's return brief should challenge client assumptions and articulate the diversity and depth of the designer's role, particularly in relation to design strategy.

Designers ought not recoil from the conflict inherent in the design process that results from the tension between the interest of the client, content provider and the audience, but embrace this as a site of creative exploration where the meaning of the work is constructed. Projects may benefit from designers taking a more authoritative role and arguing for important design elements to prevent clients taking a shopping list approach. However, this requires careful navigation of power relationships and the balance between designers acting as expert advisors and service providers. Designers would also benefit from more published research on the field and practical models that communicate key aspects of practice to clients. As a small step in this process, the research proposes a characterization and definition of interpretation design.

Characterization and definition of the field

Unlike traditional design fields such as architecture, landscape or product design, the field of interpretation design is defined by its intent rather than its form. Interpretation design places the visitor experience at the heart of the design intent, ideally taking into account audience characteristics, motivations, interests and learning styles. Multidisciplinary, collaborative design teams employ landscape, architecture, storytelling, signage, art and play elements to communicate messages and ideas, evoke emotions and provoke actions. Ideally, interpretation helps visitors to connect directly with the resource rather than creating conceptual or physical obstacles to a personal experience of the subject. Interpretation design has the potential to be strategic, integrative and coordinating, balancing the needs of the audience and project

contributors, aiming to achieve multiple specific outcomes such as physical and conceptual orientation, visitor reflection and social interaction while contributing to a coherent sense of place. As a result of the research, interpretation design is defined as follows:

Interpretation design is the strategic application of one or more design forms to shape visitor experiences that communicate specific ideas, values and messages. Interpretation design seeks to engage visitors through cognitive, affective and physical means; visitors co-create their individual experiences through prior knowledge, motivations and actions to learn and make meaning over time. Interpretation design aims to coordinate and integrate elements into a holistic, coherent visitor experience.

Conclusion

The practice of interpretation design has evolved in response to a desire by public institutions to educate their visiting public and increase visitation. Interpretation design continues to grow in importance as institutions aim to provide profound experiences that attract visitors and influence their understanding and behaviour. Published knowledge is not commensurate with this significant role, limiting the relationship between theory and practice and hindering wider understanding of the field.

This research argues that interpretation design exists as a field of practice, replete with tacit knowledge. The field faces significant challenges as it matures. Client project planning and institutional structures often do not recognize the significance of interpretation design or the expertise of designers. Practitioners face a lack of theoretical frameworks and practical tools, designers needing to develop a vocabulary for communicating strategy and achieving wider understanding of practice. The practitioner knowledge presented in this paper constitutes a small sample of the wealth of unpublished knowledge of interpretation design, an early step in addressing these issues.

The research has examined the field by applying multiple methods to gain a holistic perspective on practice. It has established that interpretation design employs interpretive principles within interdisciplinary design practice. Synthesizing understandings gained from the research, the characterization and definition of interpretation design provide a basis for further research and development of theory.

This research is relevant to other fields of design, in particular those that do not fit within the traditional disciplinary boundaries. The mediatory role of designers, the timing of engagement of designers in inter-disciplinary projects and the ways that designers develop and communicate design strategies demand further investigation.

Received: 5 February 2014

Finally accepted: 27 October 2014

Notes

- 1 Ideally, 'experience' would be included in the term, but experience design has been largely colonized by digital media designers.
- 2 Association for Heritage Interpretation (n.d.) *What is Interpretation?* http://www.ahi.org.uk/www/about/what_is_interpretation/, accessed 14 January 2014; Interpretation Canada (n.d.) 'Our work defined', <http://www.interpscan.ca/our-work-defined>, accessed 8 March 2013.
- 3 Veverka, J. A. (2003) *Tips and Concepts for Planning Truly Interpretive Exhibits*, Veverka and Associates <http://www.heritageinterp.com>, accessed 1 August 2012.
- 4 Unlike the United Kingdom, there are few opportunities for relevant professional education in Australia; formal training is limited to single units within either design or museum studies courses and practice is not supported by dedicated conferences such as the University of Leicester's *Narrative Space* 2010 and *Chaos at the Museum* 2014 at Central St Martins College.

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