

2008

Factors facilitating and inhibiting the use of research to inform interpretation practice: a case study of Australian protected area management agencies

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Publication details

Postprint of: Black, R & Weiler, B 2008, 'Factors facilitating and inhibiting the use of research to inform interpretation practice: a case study of Australian protected area management agencies', *Visitor Studies*, vol. 11, no. 2, pp. 163-180.

Published version available from:

<http://dx.doi.org/10.1080/10645570802355554>

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FACTORS FACILITATING AND INHIBITING THE USE OF RESEARCH TO INFORM INTERPRETATION PRACTICE: A CASE STUDY OF AUSTRALIAN PROTECTED AREA MANAGEMENT AGENCIES

Rosemary Black and Betty Weiler

ABSTRACT

Interpretation research can be and is used to inform and improve interpretation policy-making and planning undertaken by practitioners such as those who work for Australian protected area management (PAM) agencies. This study explores perceptions of the extent to which interpretation research is undertaken and used by these agencies, and the facilitators and constraints to doing so. In-depth telephone interviews were conducted with senior interpretation planners and managers in all Australian PAM agencies. The findings indicate that interpretation research is usually prompted by a crisis or a short-term need such as a specific project and that most research is site-specific and content-focused, while respondents see a need for more longitudinal and evaluation-focused research. Two-thirds of the respondents reported that their agency made poor or no use of research findings for improving interpretation practice. Stated barriers to undertaking and using research included lack of funding, lack of time and that research was not considered an agency priority. Underpinning these were perceptions consistent with diffusion of innovation theory, for example that doing or using research is perceived as being too complex, not compatible with agency goals or not offering relative advantage. Strategies for removing these perceptual barriers to undertaking and using interpretation research and research findings are presented.

Keywords: Interpretation research, barriers, protected area management agencies, Australia.

INTRODUCTION

Research is used by heritage and environmental organisations to help inform and improve interpretive practice and policy, which in turn helps meet a number of organisational goals. This paper presents a case study of the role that interpretation research plays in Australian protected area management (PAM) agencies. The study aimed firstly to explore what types of interpretation research are carried out and used by PAM agencies, how this research is undertaken and how it is applied to inform and influence interpretive practice in PAM agencies, and secondly to identify the factors that facilitate and inhibit both undertaking and using research. The findings of this paper have relevance to any agency or organisation seeking to promote the benefits and support the initiation of interpretation research as a vehicle for more effective interpretive practice.

For the purposes of this paper, *interpretation* is defined as “a mission-based communication process that forges emotional and intellectual connections between the interests of the audience and meanings inherent in the resource” (NAI, 2006). Drawing on the Organisation for Economic Cooperation and Development (OECD)’s definition, the Australian Research Council defines *research* as “creative work undertaken on a systematic basis in order to increase the stock of

knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications” (Australian Research Council, 2008). Thus research is characterised by originality; it has investigation as a primary objective while often contributing to development and application. The OECD and the Australian Bureau of Statistics classify Research and Development studies by type: basic research, strategic research, applied research and experimental development (Australian Bureau of Statistics, 2008). According to Ham (2004), interpretation research, like most communication research, has a decidedly applied focus in that it “uses concepts from behavioural sciences to understand the pathways through which communication influences how humans think, feel and behave” (Ham, 2004). *Applied research* is defined as “original investigation undertaken in order to acquire new knowledge but is directed primarily towards a specific, practical aim or objective” (Australian Research Council, 2008). In this study *interpretation research* is defined as original investigation undertaken in order to acquire new knowledge that can contribute to better outcomes in interpretive practice. As this study investigates interpretation research in field-based PAM agencies, we chose to include under the umbrella of ‘interpretation research’ a wide range of applied research, including but not limited to evaluation, as evaluation and research can have different objectives (Uzzell, 1998).

One depiction of interpretation ‘best practice’ is the Australian and New Zealand Environment and Conservation Council (ANZECC) model (see Figure 1) that proposes the delivery of quality interpretation through five integrated stages (DNRE, 1999). Wearing *et al.* (2006) argue that interpretation research can potentially contribute to each of these five stages. In other words, research can inform and improve how an agency defines interpretation (*e.g.* through its policy, legislation, strategic planning and budgeting), develops interpretation (*e.g.* through product design, development and audience analysis), delivers interpretation (*e.g.* through content, media choice and performance standards), evaluates interpretation (*e.g.* by assessing the impact of its interpretation on experience, satisfaction, conservation knowledge, attitudes and visitor problem behaviour) and supports interpretation (*e.g.* through training, professional development, award schemes, accreditation and certification).

INSERT FIGURE 1 HERE

The publication of the *ANZECC Best Practice* report (DNRE, 1999) is indicative of the recognition given at that time to the importance of nature and heritage interpretation delivered by protected area management agencies. In Australia, the majority of protected areas are managed by state-based PAM agencies and in a few cases by a federal PAM agency. Indeed, 900,000 km² or fully 11% of the continental land area of Australia is managed by these agencies (DFAT, 2008). The number of visits to Australian protected areas has been estimated at 80 million annually, and most Australian PAM agencies consider communication with visitors through interpretation as a core function, reflected in their mission and vision statements (DNRE, 1999). In practice, however, the extent to which there is agency-wide planning, delivery, evaluation and support of interpretation varies between agencies. Each employs to a varying degree a range of personal and non-personal interpretive techniques to enhance the visitor experience, address management issues, increase visitors’ awareness and understanding of natural and cultural values and foster positive attitudes and conservation behaviours (Knudson, Beck and Cable, 1995; Worboys, Lockwood and De Lacy, 2001; Ham and Weiler, 2006; Wearing *et al.*, 2006).

A key objective of this study was to explore how PAM agency interpretation staff perceive that research contributes to the five key areas of the ANZECC model – defining, developing, delivering, evaluating and supporting interpretation. A selected review of two distinct bodies of literature informed this study: firstly, interpretation research, including research on barriers to undertaking and using research and, secondly, studies in allied fields that have drawn on diffusion of innovation theory to identify and address barriers to the dissemination and uptake of research. The review of

literature thus begins with a brief overview of the history and context of interpretation research, particularly research undertaken or applied by protected area managers. This is followed by consideration of the types of interpretation research that are reported in the literature and an assessment of what is currently known about the use of interpretation research by PAM agencies, which informs the first part of the study aim, to examine what and how research is undertaken and used by these agencies. Research undertaken in other fields, notably museum studies and tourism, is drawn on to inform the second part of the study aim, to identify the factors that facilitate and inhibit undertaking and using interpretation research.

Following the reviews of these bodies of literature, the methods and results of the case study are reported. The findings are analysed in relation to both the ANZECC interpretation model and diffusion of innovation theory, as a basis for informing interpretation research by and for PAM agencies in Australia and improving understanding of the interface between research and practice generally.

LITERATURE REVIEW

The History and Context of Interpretation Research in Protected Area Management

Historically, the practice of interpretation in parks began in the United States in the 1920s and spread to countries like Australia comparatively recently (Beckmann, 1991), with research in interpretation lagging somewhat behind but following a similar process (Ham, 2002). In a personal retrospective on the evolution of interpretation research, Ham (2002) notes that interpretation research has struggled to find its niche within the social sciences, and according to Uzzell (1998) and others (Larsen, 2004) this lack of research has been to the detriment of the development of the discipline and profession. Ham (2002) identifies four evolutionary stages of interpretation research, the fourth and current stage being 'early maturation'. Ham's three indicators of maturation are, firstly, the internationalisation of research with more studies emanating from countries other than the U.S. and Canada. The second sign of maturation is the application of more sophisticated theories and methodologies in published studies. Finally, interpreters themselves are embracing inquiry, recognising the need for and calling for best practice and standards for the profession.

Ham's comments reinforce those of Uzzell (1998), who stresses the importance of research and evaluation for heritage and environmental management and interpretation, as well as those of Vander Stoep (2004), who identifies key reasons why interpretation research is needed for both scholarly and practical purposes. While much interpretation research is undertaken (Uzzell, 1998; Vander Stoep, 2004), these authors point to a number of factors that have impeded its continued maturation. For example, Ham (2002), Vander Stoep (2004) and others (Larsen, 2004; Zarki, 2004) argue that, in most countries at a federal level, there is little funding support for interpretation research. Zarki (2004) points out that, at a park level, interpretation research is often less rigorous and less well institutionalised than research in the hard sciences. He suggests this is due to field interpreters and park managers being unaware of existing research, lacking access to research findings, being unaware of how to access them, and being poorly equipped to use and evaluate social science at the park level.

In Australia, the first evidence of systematic research in interpretation by PAM agencies appears to have been an evaluation of interpretation at Kakadu National Park for the Australian National Parks and Wildlife Service (NPWS) undertaken by Elizabeth Beckmann in 1990, which was closely followed by publication of her PhD research which also undertook interpretation evaluation in protected areas (Beckmann, 1990; 1991). In an historical overview of Australian interpretation research, Weiler (2005) notes that since this time there has been a steady though modest output of

interpretation research by university academics, postgraduate students and other researchers, some of which has been captured in three collections: a special issue of the *Journal of Interpretation Research* (Weiler and Ham, 1999), an edited book, *Interpreting the Land Down Under: Australian Heritage Interpretation and Tour Guiding* (Black and Weiler, 2003), and a special issue of the *Annals of Leisure Research* (Black and Weiler, 2004).

Generally, and consistent with Uzzell (1998), Ham (2002), Vander Stoep (2004), Larsen (2004) and Zarki (2004), there is little evidence of financial support for undertaking interpretation research among Australian PAM agencies, although some have provided funding to undertake interpretation research through the Sustainable Tourism Cooperative Research Centre (STCRC)¹ and through limited support to postgraduate research students, yet this appears to be the exception rather than the norm. As noted in the *ANZECC Best Practice Report* (DNRE, 1999), a review of interpretation across all Australian and New Zealand park agencies found that most agencies had a clear understanding of the benefits of interpretation, but this did not translate into a commitment to funding interpretation research programs. This report as well as another by Bolwell (1996) found that the funds allocated by PAM agencies to research and programs in interpretation have been small.

The *ANZECC Best Practice Report* (DNRE, 1999) indicates that, while there have been improvements in certain aspects of interpretation management in the previous decade, the translation of research into policy and practice has been largely *ad hoc* or poorly integrated. While Wearing *et al.* (2006) suggest that the challenges to transferring interpretation theory and principles into practice may be due in part to the limited evaluation of interpretation, there has been a considerable amount of interpretive evaluation research done both within and outside Australia in recent years (Ham and Weiler, 2006). Wearing *et al.* (2006) themselves review a range of interpretation undertaken in the context of tourism in protected areas, and offer a framework enabling the classification of interpretation research linked to management needs of protected areas. Their classification of research identifies three major roles or principles for effective interpretation: research on interpretation mitigating visitor impacts, research on interpretation enhancing tourists' experiences and satisfaction, and research on interpretation encouraging positive attitudes toward nature conservation. All three categories appear to fall into the category of 'evaluation' in the ANZECC framework, a point returned to later in this paper.

It is clear that research can greatly enhance the capacity of the interpretation discipline to contribute to better protected area management practice, and this review of literature suggests that it is timely to determine the extent to which research actually has done so. The literature has also provided a basis for developing some of the interview questions and prompts. However, the interpretation literature offers limited insight regarding the second part of the study aim – *why* PAM agencies might be underutilising research findings to improve their interpretive practice. To determine what might inhibit or facilitate PAM agencies from either using the findings of research or replicating research in an Australian context, the authors turned to a different body of literature.

¹ The Sustainable Tourism Cooperative Research Centre (STCRC) [<http://www.crctourism.com.au>] was established under the Australian Government's Cooperative Research Centres Programme to underpin the development of a dynamic, internationally competitive, and sustainable tourism industry. The Sustainable Tourism CRC is a not-for-profit company owned by its industry, government and university partners. Only member universities and member PAM agencies have access to the research funds and programs supported by the STCRC, and membership requires a substantial annual contribution, typically not less than \$50,000 a year.

Inhibitors and facilitators of research: experience in other disciplines

If research is viewed as an innovation, then it becomes useful to gain a better appreciation of the diffusion-of-innovation process in order to more successfully engage PAM agencies in research as well as disseminate research findings to these agencies. Rogers (1995), whose seminal work on the *adoption and diffusion of innovation* has been the basis for literally hundreds of studies, defines diffusion as the process by which an innovation or new idea is communicated through certain channels over time among members of a social system. Diffusion theory aims to explain the process of innovation adoption among individuals and organisations and to identify those factors and mechanisms that influence this diffusion process (Wolfe, 1994). Toward this end, the diffusion paradigm has been applied across many disciplines including marketing science, consumer behaviour, education and geography (Cooper *et al.*, 2006), including the diffusion of interpretation (Ham and Weiler, 2004), and has been found to be highly robust.

The theory argues that, while an innovation (in this case undertaking research and/or applying research findings) may be judged against a number of criteria, five important questions must be addressed by a potential adopter (in this case a PAM agency) before adoption will occur. Firstly, does the research offer *relative advantage*? In the case of a PAM agency, the research is judged as to whether it can improve the agency's current approach to interpretation practice. Secondly, is the research *compatible* with current practice? This questions whether the research is compatible with the agency's values, needs and past experiences regarding interpretation practice. Thirdly, can the research be *trialled* without unacceptable risk by the agency? Fourthly, are the benefits of the research *observable* and communicable? In the case of a PAM agency, the research is judged as to whether it will make the agency's approach to interpretation practice look good to others. Finally, is the research too *complex*? This final criterion considers how easily the research is to understand or apply to the practice of interpretation (Fazio and Gilbert, 2000; Rogers, 1995; Rogers and Shoemaker, 1971; Schiffman *et al.*, 1997). Theory also suggests that opinion leaders within an organisation have an important role to play as agents of change (Rogers, 1995) and that personal contacts increase adoption rates (Donovan-Neale and Mannell, 1983; Lionberger and Gwin, 1991).

Studies examining the adoption and diffusion of research and research findings in other fields are of particular relevance here, as they provide insight and a theoretical basis upon which to identify what factors facilitate and inhibit the uptake of interpretation research. Studies in allied disciplines such as museum studies and tourism have been undertaken to identify the inhibitors and facilitators to adoption (Smithsonian Institute, 2004; Cooper *et al.*, 2006). Some of these studies, for example Jago and Deery (2007) and Xiao and Smith (2007) make direct links to diffusion and adoption theory. They observe that, despite a considerable body of research, there has been a low rate of adoption of existing research innovations. One of the problems they note is the lack of communication and understanding between the research community and the tourism sector, with Xiao and Smith (2007) observing that researchers and practitioners reside in culturally and structurally different worlds and rarely meet.

Other studies have examined barriers to undertaking and using research. For example, the Smithsonian Institute (2004) examined the extent to which systematic and effective evaluation of school programs was being applied in U.S. museums. The study found that lack of staff and financial resources and lack of support from senior management presented barriers to evaluation. Cooper *et al.*'s study of the tourism industry revealed that the majority of organisations used statistical information, tourist demographic information and marketing information. Most of this information was sourced from government and other public sector bodies and was received via electronic sources (email and internet) as well as print-based sources. Respondents used these information sources because they were easy to access, read and transfer at no- or low-cost. Interestingly, the majority of respondents indicated their organisations did not use academic

research due to difficulty in accessing information, difficulty in reading it, and a perception that the information was not relevant. The few organisations that did use research did so because they found it cost-effective and relevant/useful. While not framed by diffusion of innovation theory, the findings from these studies are relevant to the present study, and help to further elucidate the factors that might facilitate and inhibit PAM agencies undertaking and using research.

METHOD

Telephone interviews were employed in order to capture staff perceptions regarding how and why research does and does not inform and influence interpretive practice in Australian PAM agencies. This approach was considered the most practical and cost effective method, given that the respondents were located around Australia (Neuman 1997). As the research questions were exploratory in nature, in-depth qualitative interviews were used. A semi-structured instrument was constructed using largely free-response questions to ensure consistency and comprehensiveness of questions while allowing for depth in responses. Response prompts were developed based on both the review of literature and input by experts in interpretation research, to make links to interpretation practice and previous interpretation and diffusion research. The definition of interpretation research provided to the study respondents was based on the ANZECC framework, *i.e.* “any research that helps you improve your interpretation, whether that is in the defining, developing/planning, delivering, evaluating or supporting of interpretation”.

Questions focused on what types of research are undertaken (and not undertaken) and why (facilitators and inhibitors), how the research is undertaken (e.g. internally or under contract), sources of research findings, the agency’s use (or not) of research findings in interpretive practice, reasons for not using research, resource allocations to research, and respondents’ perceptions of research needs and priorities.

The instrument and telephone interviewing technique were pilot-tested, refined and then carried out over a period of three weeks. The main change made as a result of the pilot was to abandon the prompts relating to the five criteria for adopting an innovation, as these proved time-consuming and difficult to explain and use, despite the fact that these were provided to the respondent in advance of the interview. Instead it was decided to allow free-responses to the question about why research findings are not used. The final instrument consisted of eight open-ended questions (several with sub-questions) and the ANZECC interpretation framework (DNRE, 1999), which together with a cover letter was emailed to the respondent prior to the interview.

Purposive sampling was used to contact the most senior interpretation staff in all nine of the Australian PAM agencies (State, Territory and Commonwealth governments). As mentioned earlier, these agencies collectively manage 11% of Australia’s land mass and cater for very large numbers of both domestic and international visitors. Fifteen senior interpretation planners and managers were contacted and all agreed to participate in the study. All staff responsible for strategic decision-making in relation to heritage and nature interpretation policy, planning, delivery and evaluation in their respective agencies were interviewed, making the study a census of the views of senior head-office staff responsible for strategic decision-making in Australian PAM agencies. Most respondents had responsibility on a State-wide basis as opposed to a regional or park-basis.

The interviews took between 40 and 105 minutes to complete, and interviewees’ responses were recorded verbatim and later tabulated and searched manually for themes (Denzin and Lincoln, 1994; Holliday, 2002). A research assistant and two experienced researchers independently categorised responses, which then served as a basis for discussion before finalising response categories.

There were a number of challenges, a few of which suggest some limitations in the methods employed. One is that interpretation is an internally dispersed activity within many PAM agencies, so while the most senior staff members responsible for interpretation were interviewed, some respondents could not respond definitively regarding how research is or is not used throughout the organisation. Some respondents were also unable to separate interpretation research from other research undertaken in the organisation. For example, one respondent noted that interpretation planning has to be informed by visitor statistical data: “there is no point in developing an interpretive experience that takes two hours if the visitors and tour operators are only there for five minutes.”

The most problematic parts of the interview were the questions about employing people to do interpretation research and about how much money is spent annually on interpretation research. Both were asked in an attempt to assess the level of agency resources allocated to interpretation research. In some cases, the respondents felt they could not answer the question, for example, in cases where an unspecified portion of a staff member’s time is spent undertaking or sourcing research. There were also issues about whether to include the cost of annual subscriptions to research journals and the cost of attendance at conferences. The inclusion of one-off commissioned research projects also tended to skew the responses. Perhaps most importantly, however, was the finding that even the most senior interpretive staff in Australian PAM agencies have very limited or no knowledge and control of funds for research. Consequently, aggregate responses regarding employment and availability of funds for interpretation research are not reported in this paper, but instead have been drawn on to corroborate responses regarding allocation of resources as a facilitator or inhibitor of research.

RESULTS

The respondents

Most of the respondents had a title of senior interpretation officer (3), coordinator (4) or manager (8) and described themselves as being in a team-leader and/or specialist role. Despite being the most senior interpretive staff member in the organisation, none referred to themselves as part of the senior management team of their organisation. Eleven were based at the agency head office with state-wide responsibilities, two were regionally-based and two were park-based. When asked about their responsibilities regarding interpretation research, most indicated this was part of their job, although usually a small part, with responsibility for undertaking (8), commissioning (9), reviewing (11) and/or using (13) research.

What research is currently done and how it is done

As shown in Table 1, the most common type of research mentioned by interviewees was gathering and analysing information for the subject matter or content of interpretive signs, exhibits and other interpretive media, that is *developing and delivering interpretation (DNRE1999)*. About half of the interviewees used researchers, whether they were internally employed, contracted or were independent researchers, to collect and analyse information for inclusion in interpretive media. Findings that inform interpretive planning and content can also be somewhat serendipitous, illustrated by this example from one interviewee: “We collect survey data from visitors on walking trails and the questions that respondents ask sometimes give us good ideas about what visitors want to know.” As one interviewee noted, it is clear that visitor survey data is helpful in identifying what visitors say they “want”, but research is still needed to inform the agency’s wider interpretive planning and evaluation effort.

While “strategic research” was also mentioned by all (in the case of commissioned research) or nearly all respondents, the examples given by interviewees were more of a tactical nature or were issue-based, typically involving quantitative survey-based research. One-off, site-specific research was also mentioned by at least half of the interviewees as being undertaken, with one respondent noting that research has to “fit into the timeframe of a financial year”, thereby reducing the likelihood of longitudinal research. It seems that, as suggested at the outset of this paper, interpretation research is most often used to inform site-specific activity and less often as a tool for addressing broader regional or national environmental issues. Finally, problem- or management-based research and evaluation research were the least mentioned as being undertaken. In relation to the ANZECC framework, there was a notable lack of reference to research that fits into the category of *supporting interpretation*, i.e. research that informs training, professional development, and accreditation and award schemes.

INSERT TABLE 1 HERE

In terms of how research gets done, internally employing staff, engaging outside consultants, and working in partnership with independent parties such as universities were reported as being employed by half to two-thirds of respondents, with several agencies not making use of any of these. A few PAM agencies have effective relationships with selected universities and the Sustainable Tourism Cooperative Research Centre (STCRC) to leverage cost-effective research, while other agencies do not have the benefit of such partnerships. With respect to particular types of research, there did not appear to be a preference for any particular approach except in the case of *ad hoc* research, which is only done when initiated by independent researchers.

What research is used and how it is currently applied

Nearly two-thirds of respondents reported that their agency makes poor or no use of interpretation research and none thought their agency made excellent use of interpretation research findings (See Figure 2). A few described their agency’s approach as “reactionary rather than strategic”. The responses suggest there is considerable room for improvement in getting PAM agencies to proactively engage with and apply interpretation research findings to inform interpretive practice.

INSERT FIGURE 2 HERE

However, some respondents were comfortable with the limited application of research to inform interpretive practice, arguing that their agency has highly knowledgeable and experienced staff. It was evident in the interviews that some of these agency staff are regarded as opinion leaders and that if they dismiss the need for research, then even the most senior interpretive planners and managers in these agencies will not engage with research. A few commented that most research is either too site-specific or too theoretical to be of value to their work, and one was of the opinion that much of the findings of research are intuitive and that the research is only useful to the extent that it provides figures “to back up what we already intuitively know”.

As shown in Figure 3, the main reported sources of interpretation research findings were the Interpretation Australia Association (IAA), colleagues/selected academics, other PAM agencies and journals. Respondents identified the IAA as playing an important part in disseminating research findings to the profession, through conferences, workshops, newsletters and the website. Some respondents were aware of and in some cases drew on interpretation research undertaken in other settings such as zoos and museums. Others noted that they do not hear much about research,

and feel they have to be “really pro-active to find relevant research” and often do not have the time to do so.

While many saw the need and value of research, they struggled with the way it is sometimes conceptualised (lack of practical focus / lack of grounding), undertaken (too long / too expensive) and communicated (too generic / too academic), evidence that it is perceived as *too complex* and therefore not meeting this criterion of diffusion theory. Several respondents indicated they relied on internal agency expertise to provide information in lieu of research findings stating that “research is nice but not necessary and we can rely on internal agency knowledge and experience”, suggesting they could see few benefits in undertaking or sourcing interpretation research. Other evidence of the relevance of diffusion theory criteria were respondents’ perceptions that some research was *not compatible* with the agency goals and did not offer *relative advantage* (Rogers, 1995; Rogers and Shoemaker, 1971; Shiffman *et al.*, 1997), stating “the system seems to be working pretty well for the implementation of [our interpretation programs]”. Several respondents noted that better ways need to be found to make the research user-friendly and to get it into the hands of end-users, one stating that “not enough research is practical enough and accessible to park staff”.

INSERT FIGURE 3 HERE

Facilitators and inhibitors of research

As illustrated in Table 2, the findings indicate that interpretation research is most often prompted by a short-term need or crisis (85% of respondents) or the demands of a specific project (69% of respondents), for example dingo management on Fraser Island. Other reasons frequently mentioned in response to this question were an approach by an external party and the passion of an individual staff member. These four response categories account for 79% of all the responses volunteered by interviewees to this question. It would appear that strategic planning does not often determine if and when interpretation research is undertaken. On the other hand, there is evidence of some research being linked to management needs, notably Wearing *et al.*’s (2006) category of “interpretation mitigating visitor impacts”. No mention was made by the respondents of Wearing *et al.*’s (2006) other two categories: undertaking research to “enhance the visitor experience” or “foster visitor understanding / positive attitudes toward nature conservation”.

INSERT TABLE 2 HERE

In response to a general question about what limits or prevents the agency from undertaking in-house research and/or commissioning interpretation research, the most frequently mentioned reasons were lack of funding, lack of staff time, and not being seen as an agency priority, with 73% of all responses falling into these three categories (see Table 3). In two states respondents indicated it was difficult to find students to undertake research and, in another state, geographical isolation and the involvement of local Aboriginal communities made accessing research students more complex. A number of respondents mentioned the fact that interpretation research competes with other agency research priorities such as natural resource management research and marketing/branding research. The implication is that interpretation rarely “wins” and it has to wait its turn, for example, when a new agency branding exercise leads to subsequent signage projects. A few also expressed the view that more research is not necessarily needed: “if it ain’t broke, don’t fix it”, again suggesting that the diffusion criterion of *offering relative advantage* was not met (Rogers, 1995; Rogers and Shoemaker, 1971). There were no differences regarding what inhibits in-house (internally-conducted) vs. commissioned (externally-conducted) research.

INSERT TABLE 3 HERE

The research that PAM agencies want

As reported in Table 4, the type of research that respondents want in the future differs from the research currently being undertaken. For example, there is very little evaluation research carried out, yet respondents clearly want more of this type of research. Most of the responses were for evaluation of interpretation in achieving other outcomes; research focusing on the role of interpretation in influencing visitor attitudes and behaviours; and evaluating interpretation effectiveness including the employment of specific media and technology types.

INSERT TABLE 4 HERE

Table 4 also includes a column aligning interviewee responses to the ANZECC framework. Looking at the results through the lens of this framework, it is evident that respondents see a need for research to contribute to the development and evaluation of interpretive practice and to a lesser extent to delivering interpretation. They did not, however, identify the need for research to inform the defining of interpretation (*e.g.* policy, legislation, strategic planning and budgeting) nor the supporting of interpretation (*e.g.* training, professional development, award schemes, accreditation and certification).

As mentioned earlier, several respondents expressed the desire not only for research on particular topics but also research that is more accessible in terms of its content (“the research needs to be more practical”), style of writing (“results need to be readable and understandable”) and availability (“a website is needed that provides up-to-date information about the latest interpretation research”).

The disconnect between interpretation research that is being done and research that is wanted by practitioners, particularly with respect to evaluation research, may be partly a perception of what is meant by evaluation. In the past, this may have been limited to visitor satisfaction and/or cost-effectiveness but increasingly there is recognition of the need to evaluate interpretation with respect to attitudinal and behavioural outcomes. It is also almost certainly a result of the lack of resources to carry out this kind of research, as reported in Table 3. This is consistent with observations by Ham (1999) and others (Vander Stoep, 2004; Larsen, 2004) that there is little funding to support interpretation research. Similar to these authors’ observations, the respondents in this study are calling for research that can improve interpretive practice, but lack the resources to systematically undertake, access or apply research.

IMPLICATIONS AND CONCLUSION

The findings of this study offer insight into agency staff perceptions regarding interpretation research and its application and use in PAM agencies in Australia. Also highlighted are gaps in research and areas where research is underutilised but, perhaps more importantly, the study suggests factors that may be constraining the research effort. Following are implications, particularly regarding this latter issue.

There is clearly variation from one agency to another regarding their commitment to carrying out research, but for the most part there is little evidence that interpretation research is driven by long-term management goals. The findings also indicate that respondents generally perceive that their agency does not make good use of research findings. It was also evident that agencies made better

use of research for enhancing the *developing* and *delivering* stages of the ANZECC model of interpretation (DNRE, 1999). Research is clearly not undertaken and used to help *define* the scope of interpretation, such as to inform policy, legislation, strategic planning and budgeting, perhaps in part because interpretation planners do not see themselves as being part of the senior leadership team in their organisations. Agencies do not use research as much as they would like to for *evaluating* interpretation outcomes, a point returned to shortly. Finally, there is little or no use made of research to enhance how interpretation is *supported*, for example, research that investigates and improves interpretation training, professional development, award schemes, accreditation and certification. Furthermore, because the ANZECC model is not the usual way of conceptualising the interpretation work of their agency, respondents found it difficult to critically reflect on research in relation to this model and easier to articulate research activity and gaps with respect to spatial and temporal dimensions. The findings of this study and those of the ANZECC study (DNRE, 1999) suggest that engagement with the ANZECC model of interpretation might expand the ways that research is viewed and used as a tool for enhancing interpretation practice beyond interpretation product and program development and delivery.

In contrast, respondents found it easier to identify research needs, particularly with respect to evaluation research. Many, though not all, perceived research needs that were consistent with the management needs categories identified by Wearing *et al.* (2006): mitigating impacts, enhancing visitor experience and fostering positive attitudes. In particular, the results suggest there is a desire and need for more research relating to developing outcome-based interpretation and evaluating its effectiveness with respect to visitor attitudes and behaviours and visitor satisfaction. These results support the findings of the ANZECC report (DNRE, 1999) that identified the lack of systematic development of interpretive programs and evaluation studies. The findings also provide researchers with topics for targeting future research, thus improving the chances of meeting agency needs.

The barriers to undertaking and commissioning research identified in this study are consistent with Zark's (2004) U.S. findings and those found in other disciplines such as museum studies and tourism (Smithsonian Institute, 2004; Cooper *et al.*, 2006). Some respondents in this study perceived there was little need for interpretation research as they had access to highly knowledgeable and experienced staff. This finding is supported by some of the interpretation literature that indicates practitioners often rely on intuition and personal experience for management and decision making rather than on research (Uzzell, 1998; Zarki, 2004). It is also consistent with Rogers' (1995) theory regarding the role of opinion leaders in the uptake of innovations, in this case research.

The identified barriers to undertaking or commissioning research in this study seem to align with three of the five criteria that adopters apply when judging any innovation (Rogers, 1995). First, research is not seen to offer *relative advantage* to the agency. An implication of this finding is that interpretation researchers need to design their studies in ways that genuinely improve interpretation practice, and provide compelling evidence that they can do this. While interpretation research is communicated in a number of ways such as through industry newsletters and conferences, it may be that the messages about the costs and benefits of doing research lead agencies to conclude that it is not worth the investment. Second, interpretation research is perceived to lack *compatibility* with the agency's approach to interpretive practice. Researchers need to convey the message that they can work with the agency without threatening or undermining its organisational values, needs and current practice. Third, research is perceived as being *too complex* to be able to understand and use. Research methods and findings need to be better communicated so as not to be alienating to agency staff.

The results also indicate that nearly two-thirds of the PAM agency staff who were interviewed perceive that their agency makes poor or no use of research. This suggests there may be a

disconnect between researchers and practitioners that may be explained by the above three criteria and exacerbated by other factors such as the lack of contact between researchers and practitioners and the lack of involvement of senior agency interpretation staff in determining research topics. Opportunities may exist for interpretation staff to be involved in generating ideas for research, identifying research needs and being involved in the research process for nationally relevant projects that are jointly funded. For example, in Cooper *et al's*. (2006) study of tourism organisations, they found that those organisations that had identified research needs, and been involved in the project were more likely to adopt research findings and information. Researchers also have an important role to play in addressing the barriers to research adoption, for example by articulating to end-users the relative advantage of doing research; convincing interpretive planners that doing research is compatible with current practices and can be used to improve and extend on current approaches, and by researchers providing study findings in plain English or presenting findings and illustrating how they can be applied in venues such as workshops.

The study findings indicate that non-agency interpretation research findings are gained from a range of sources including personal contacts and the IAA. This is supported by the literature (Donovan-Neale and Mannell, 1983; Lionberger and Gwin, 1991) that indicates adoption rates are increased by personal contacts. These findings suggest opportunities exist to improve access to research findings for practitioners. This could be done by increasing contact between researchers and practitioners (Xiao and Smith, 2007) as well as more effective dissemination of research findings, and in particular the role of the Interpretation Australia Association (IAA) and other agencies such as the STCRC. Currently IAA has a research column in its regular newsletter, an email network, and conferences and workshops through which research findings can be distributed, but opportunities exist for further dissemination, for example the IAA website. This might include 'applications of research' abstracts from academic journal articles or summaries of research findings rewritten in non-academic language or lists of journal articles. This type of approach could reduce some of the barriers to research adoption for practitioners, by promoting the relative advantage, compatibility, and lack of complexity of research findings. Reviews of recent books as well as government publications, original literature reviews and bibliographies addressing interpretation could also be published. The internet offers an easily accessible and cost effective avenue for disseminating research findings as well as websites developed for practitioners that apply research findings and theory such as the Interpretive Signage website (<http://www.tourism.uq.edu.au/signage/>).

The study findings revealed that interpretation research was not considered an agency priority, yet there are clearly advantages to using and applying research findings. Executive staff in PAM agencies could be targeted to demonstrate the value of a more strategic approach to interpretation research. For research findings to be successfully adopted within PAM agencies, executive staff will judge these new ideas against criteria such as the relative advantages of research, its ease of integration and application to interpretive practice, and its usefulness and compatibility with agency goals. If they see its value, they may provide resources to support and apply research findings.

The findings of this study have implications for other applied fields and professions, especially those which lack a research culture. The study methods could be replicated in other fields, and the application of diffusion theory to enhance research dissemination would benefit any field of practice. Further work could also explore agencies' preferred channels of communication for research findings as well as how to link researchers and practitioners to ensure research targets the needs of industry.

The value of this study is that it has demonstrated the merit of viewing research uptake through the eyes of the prospective adopter and ensuring that the research is seen to offer relative advantage and compatibility while not being too difficult or complex for an organisation. Given the soundness

of the theory on which this study is based, the findings and strategies suggested in this paper for facilitating the adoption of research by PAM agencies may have relevance and applicability to other applied disciplines.

Acknowledgements

The authors are grateful to Brendan Kelly and Lisa Gormley who worked as research assistants on this project. We also wish to acknowledge the time and enthusiasm of the 15 very busy interpretation practitioners who agreed to be interviewed for this project. Each one of them made an important and enthusiastic contribution through honest, detailed and sometimes colourful responses to the interview questions.

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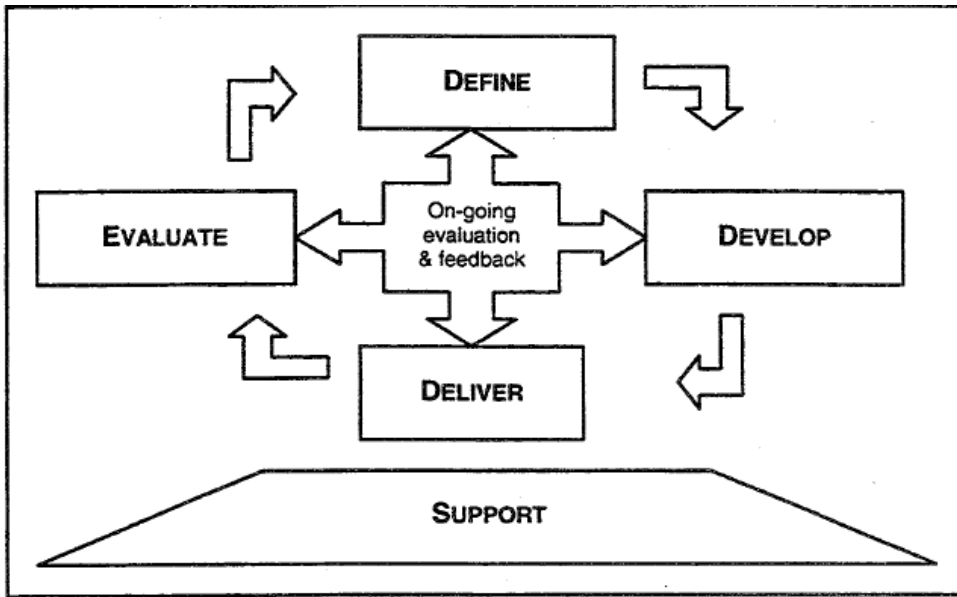
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A Model for Park Interpretation and Education

Figure 1. The ANZECC Best Practice Interpretation Framework (DNRE, 1999)

Table 1. Types of interpretation research undertaken by Australian PAM agencies (n=15)*

| Types of interpretation research done | Internally employed researchers (n=8) | Commissioned or outside consultant research (n=9) | Independent or partnership research (n=7) |
|--|---------------------------------------|---|---|
| Subject content for interpretive media | 8 | 9 | 6 |
| Strategic / survey-based | 7 | 9 | 5 |
| Non-strategic issues | 6 | 7 | 9 |
| Site specific projects | 5 | 5 | 4 |
| State wide issues | 4 | 3 | 3 |
| Type of interpretive media | 4 | 2 | 5 |
| Specific audiences | 3 | 3 | 4 |
| Longitudinal | 3 | 2 | 1 |
| Evaluation of interpretation projects | 2 | 2 | 1 |
| Management problem-focused | 2 | 2 | 1 |

*multiple responses were possible to this question.

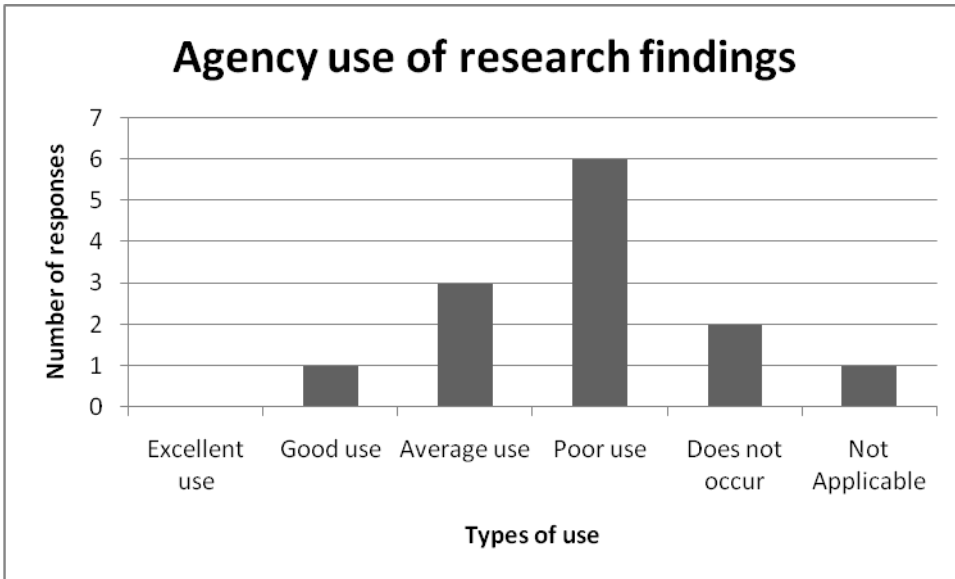


Figure 2. Respondents' opinions of agencies' use of research findings (n=13)

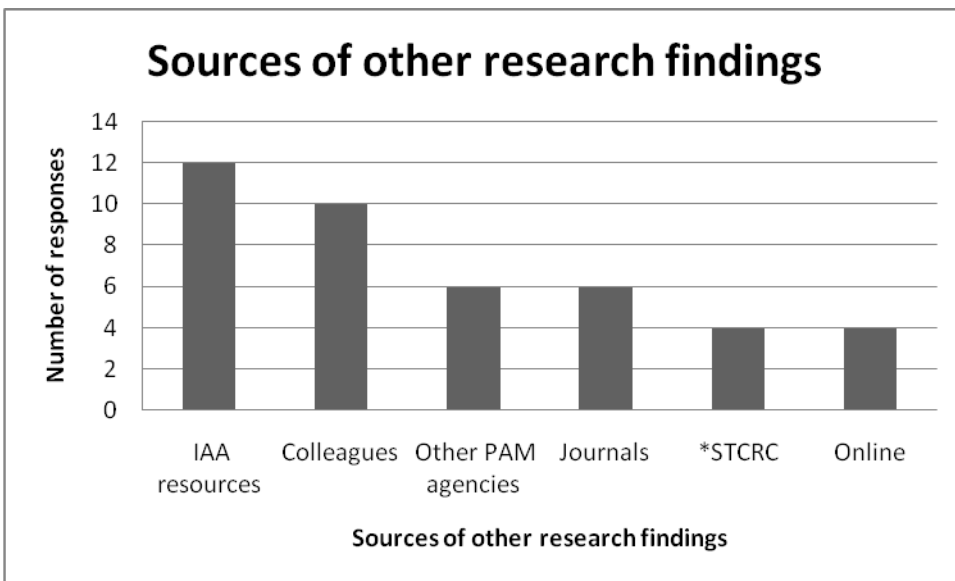


Figure 3. Sources of interpretation research findings (n= 12)

*STCRC= Sustainable Tourism Cooperative Research Centre

Table 2. Prompts to undertake or commission interpretation research (n=13)

| Research is prompted by ... | Frequency | % of respondents* |
|--|-----------|-------------------|
| A short-term agency need or crisis | 11 | 85 |
| A specific project need | 9 | 69 |
| An external approach to undertake research | 7 | 54 |
| An individual staff member's passion | 6 | 46 |
| Other | 9 | 69 |

*multiple responses were possible to this question.

Table 3. What limits or prevents undertaking or commissioning of interpretation research by Australian PAM agencies (n=13)

| Research is limited or prevented by ... | Frequency | % of respondents* |
|---|-----------|-------------------|
| Lack of money | 10 | 77 |
| Not seen as an agency priority | 10 | 77 |
| Lack of time | 9 | 69 |
| Lack of available researchers | 2 | 15 |
| Other | 9 | 69 |

*multiple responses were possible to this question.

Table 4. Most frequently mentioned types of interpretation research desired by Australian PAM agencies (n=12)

| Types of research wanted | Number of respondents | Relevant ANZECC category |
|---|-----------------------|--------------------------|
| 1. Evaluation of interpretation outcomes / effectiveness | 11 | evaluating |
| ▪ Visitor enjoyment and satisfaction | | |
| ▪ Tools for effective non-personal interpretation | | |
| ▪ Evaluating effectiveness of interpretation to influence visitor attitudes and behaviour | | |
| ▪ Cost effectiveness | | |
| ▪ Evaluating effectiveness of interpretation to reduce impacts in parks | | |
| 2. Influencing visitor attitudes and behaviour | 10 | developing |
| ▪ Research to inform the design of interpretation to do this | | |
| 3. Media and technology | 7 | delivering |
| • Visitor preference and media effectiveness | | |
| • New technologies | | |
| 4. Targeting specific audiences | 6 | developing |
| ▪ Children | | |
| ▪ Next generation / generation X | | |
| ▪ Relevance of interpretation to Australian audiences | | |
| 5. Specific interpretation themes / messages | 2 | developing |
| ▪ Using interpretation to influence social issues | | |
| ▪ Using interpretation to sell management practices (e.g. kangaroo culling) | | |

*multiple responses were possible to this question.