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Hutchinson, R. and Eardley, A.F.

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The accessible museum: towards an understanding of international museum audio description
practices

Rachel Hutchinson¹ and Alison F. Eardley

Department of Psychology, University of Westminster

Corresponding author:

Rachel Hutchinson

w1580109@my.westminster.ac.uk

University of Westminster

115 New Cavendish Street,

London,

W1W 6UW

Abstract

Introduction: Audio description (AD) in museums is crucial for making them accessible for people with visual impairments. Nevertheless, there are limited museum-specific AD guidelines currently available. This research examines current varied international practitioner perspectives on museum AD, focusing on imagery, meaning, emotion and degrees of objectivity, and the regional differences (Europe, US) in AD traditions, in order to better understand how museum AD can be used to enhance access.

Methods: Forty-two museum describers from 12 countries responded to a questionnaire requiring fixed-choice and free-text responses about the purpose and construction of museum AD.

Results: Inference tests showed that European describers agreed more strongly than US describers that AD should ‘explore meaning’ ($U = 91.00$, $N1 = 24$, $N2 = 14$, $p = 0.03$), and ‘create an emotional experience’ ($U = 89.50$, $N1 = 24$, $N2 = 14$, $p = 0.03$), rating the use of cognitive prompts as more important ($U = 85.50$, $N1 = 21$, $N2 = 14$, $p = 0.04$). Qualitative data enriched this understanding by exploring participant responses on the themes of mental imagery, objectivity and interpretation and cognitive prompts. This highlighted broader agreement between regions on mental imagery, but more acceptance of interpretation in AD from the European respondents.

Discussion: US and European describers’ opinions differ regarding the purpose of AD: whether it is about conveying visual information or whether broader interpretations should be incorporated into descriptions for audiences with visual impairments.

Implications for Practitioners: These findings indicate that further discussion is needed regarding the purpose of museum AD, and in particular the way in which objectivity is

contextualised. They raise questions about AD providing visual information, and/or seeking to address a wider museum experience, including the stimulation of curiosity or emotion.

Introduction

Museum visitors are expected to rely heavily on vision to access museum exhibits, which may be behind glass and rarely available to touch, traditionally making museums inaccessible to visitors with visual impairments. Following legislation such as the UK Equality Act, 2010 and the American with Disabilities Act, 1990, museums are required to offer accessible services. Audio Description (AD) is therefore crucial. AD seeks to make visual information accessible using verbal description. It can be delivered live, by an audio describer or trained guide, or in recorded form, either online or through a listening device in the museum. Despite the importance of AD as an access tool, an audit within the UK showed that only 5% of museum websites mentioned live AD tours and only 3% of museum websites mentioned recorded AD guides (Cock et al., 2018). Enhancing AD provision is crucial to making collections accessible to people with visual impairments.

Museum AD is a relatively new discipline. AD developed as a practice in the US and the UK in the 1980s for theatre and screen, with AD for the visual arts in the UK following in the 1990s (Fryer, 2016). Screen AD is professionalised and UK legislation requires the provision of guidelines for screen audio describers. There are substantial differences between screen AD and museum AD (e.g. Eardley et al., 2017; Fryer, 2016; Hutchinson & Eardley, 2018). Screen AD is primarily concerned with issues of timing and coherence (Braun, 2011) and advice for screen describers typically emphasises the need for strict objectivity (RNIB, 2010), which is reflected by the widely quoted maxim of WYSIWYS (what you see is what you say) in the US AD tradition (Snyder, 2014).

In contrast, museum AD is not regulated. Practitioners face important questions regarding not only which content within a museum should be selected for description, but also what the salient features of a particular piece may be and how to address them. They must decide

whether to describe exclusively colours, shapes and spatial content, or whether to explore information that goes beyond these visual aspects, such as meaning. If AD seeks to promote parity of experience with sighted people, then this requires an understanding what the overall museum experience may be, and the cognitive, social and emotional aspects of which it may consist (Hutchinson & Eardley, 2018; Pekarik, Doering & Karns, 1999). Learning about exhibits is just one aspect of the ‘experience’ of the museum. The visitor experience can also be about escapism, having fun and spending time with others (e.g. Prentice, 2001, Slater, 2007). Thus, museum AD exists within a complex set of parameters.

Despite the complexity of the museum experience, only a small number of international AD guidelines provide any museum-specific AD advice. European guidelines that address museums come from the pan-European ADLAB project (Remael, Reviere & Vercauteren, 2014) and the Spanish Standard UNE (RNIB, 2010). From the United States, there are recommendations from the Audio Description Coalition (ADC), 2009 and from Audio Description International (ADI); ADI’s material incorporates input from Art Beyond Sight and Art Education for the Blind (RNIB, 2010). Comparison of these guidelines reveals points of regional commonality and differences.

Firstly, there is limited advice about the optimal length of a description. The American ADC recommendations emphasise that it takes more time to listen to information than it does to view or read it, and they encourage selection and focus on details that are pertinent to understanding and appreciation of the work (ADC, 2009). The ADLAB project (2014) suggests that a recorded description should be 1-2 minutes (Remael et al., 2014), in order to take account of visitors’ attention span.

Specific advice on content suggests AD should present a variety of information, including factual information (Remael et al., 2014), information about the artist’s technique, such as

brushwork (Remael et al., 2014; ADI, cited in RNIB, 2010), and use of colour and tone (ADI, cited in RNIB, 2010; ADC, 2009; Remael et al., 2014). ADLAB (2014) recommend putting facts before description, saying that “description brings facts to life,” (Remael et al., 2014, p. 81) although the authors recognise that sometimes different types of information should be interwoven. US guidelines, in contrast, tend to recommend keeping the verbal description distinct from other kinds of information (Art Beyond Sight, 2014; ADI, cited in RNIB, 2010).

The guidelines also address language and how best to structure a description. Language should be clear, simple, direct and precise (Remael et al., 2014; ADI, cited in RNIB, 2010) but simultaneously vivid and diverse (Remael et al., 2014). Interestingly, the US ADI recommendations for general AD practice describe it as a “literary art form...a type of poetry, a haiku,” (ADI, cited in RNIB, p. 75) which seems to be at odds with the objectivity principle. Nevertheless, the use of literary devices is not widely discussed, although ADC (2009) does caution describers only to use metaphor if it is likely to be familiar to the audience. All guidelines (excepting the Spanish Standard UNE 153020) explicitly state that the description should move from the general to the specific. Various ways to structure a description are proposed (ADI, cited in RNIB, 2010, ADC, 2009; Remael et al., 2014). ADC explains that it is important to help people to understand the “spatial relationship between things.” (ADC, p. 21)

This emphasis on structure is related in some guidelines to the construction of mental imagery (ADC, 2009; Remael et al., 2014), with ADI explaining that the sequencing of information will allow “a blind person to assemble, piece by piece, an image of a highly complex work.” (ADI, cited in RNIB, 2010 p. 99) The ADLAB (2014) recommendations refer to helping visitors with visual impairments to ‘see’, stating: “at times, the DG (descriptive guide) will lead to “seeing” through positioning, movement or touch.” (Remael et al., 2014, p. 70) Likewise ADI refer to appealing to other senses such as touch or hearing

to help construct ‘highly detailed impressions’. All the guidelines cited here furthermore advocate the accompanying use of touch in AD practice, where possible.

Finally, the guidelines reveal contradictory advice regarding the level of subjectivity within museum AD. The Spanish standards explicitly state that personal interpretations should be avoided (UNE 153020, cited in RNIB, 2010). However, this statement is complicated by the advice that describers should focus on the most significant information for understanding the work, which is necessarily a matter of subjective interpretation. ADLAB (2014) recommends “deconstructing” a work and “recreating through suggestive language, sounds effects and music”, and explicitly states that interpretation is required along with contextualization and selection (Remael et al., 2014, p. 71; see also Neves, 2012). Some US guidelines encourage describers to include subjective aspects, such as the mood or atmosphere of a piece (ADI, cited in RNIB, 2010; ADC, 2009), or to explore interpretative approaches to a work such as soundscapes (ADI, cited in RNIB, 2010). ADC also suggests its readers consider verbal description, which they distinguish from objective audio description owing to the inclusion of evocative information (ADC, 2009). However, objectivity is still urged in some US training materials (Art Beyond Sight, 2014). The broader US emphasis on objectivity has been noted by researchers (Fryer, 2016; Mazur & Chmiel, 2011).

The guidelines recognise that offering visitors with visual impairments a rewarding museum experience involves balancing a number of practicalities and artistic decisions. However, the advice is contradictory between and within regions regarding interpretation in AD practice. Furthermore, the limited museum-specific advice means that museum AD is necessarily contextualised by a broader AD tradition with governing principles of objectivity. These objectivity principles could prove problematic, considering the complex and ambiguous nature of museums. In order to develop and extend museum AD provision within these complex parameters, it is necessary to examine current practices. This research comprises of

the most comprehensive international exploration of museum AD practitioner experiences to date. We explored the role of AD, as part of the museum experience, and the content of AD. Based on the different developments of AD in Europe and the US, we compared responses from regions to establish the degree of practitioner agreement.

Method

Design

This study drew on a mixed methods approach, using qualitative findings to enrich understanding of the quantitative findings. A questionnaire, comprising of fixed choice and free-text responses, examined the experience and approaches of museum Audio Describers. Quantitative analysis grouped participants into 'Europe' and 'US', comparing responses to questions based on a 5-point Likert scale. Where multiple tests were carried out, the Bonferroni-holm correction was used. Thematic analysis was used to analyse the qualitative data recorded in the free-text response boxes, due to its potential to uncover patterns of meaning across a dataset in a relatively under researched area (Braun & Clarke, 2006).

Participants

Forty-one describers and one AD trainer responded to an online survey. Describers were recruited through convenience sampling via VocalEyes, (UK), through Audio Description Association (ADA) directories (UK), the US based Audio Description Project (ADP), and via snowball sampling. Respondents were from 12 countries: UK (16), US (14), Spain (2), Portugal (2), and one response from each of the following: Brazil, Belgium, France, Ireland, Poland, Canada, New Zealand, and Italy. For the regional quantitative analysis, participants were grouped into Europe (25) and US (14), with insufficient data to permit a 'rest of world' category. All nationalities were included in the qualitative analysis. All participants were active and current practitioners of museum AD, one offered training only. The research

followed British Psychological Society ethical guidelines, and was approved by the University of Westminster Psychology Department ethics committee.

Measures

An online questionnaire (available upon request from the corresponding author) requested basic demographic information, and respondents were asked for the ideal duration for an individual description or 'stop' (live/recorded) and for an entire AD tour. Describers were asked to comment on the use of touch to accompany AD.

A series of statements about the role of AD were rated using a five-point Likert agreement scale. These addressed AD as a way of 'seeing' or 'understanding' an artwork/artefact, and whether it should explore meaning, give background information, create an emotional experience or an engaging narrative.

Participants used a 5-point Likert scale to rate the importance of aspects of content and style such as references to colour, the use of factual and contextual information, the use of multisensory imagery, inclusion of technical information, use of literary devices such as simile or metaphor, building a narrative, dealing with measurements (either by using standard metrics, or by relating the item to part of the body), and finally the use of 'thinking' or 'conceptual' prompts for the listener.

Respondents were given the opportunity to add comments and reflections in free-response boxes.

Procedure

Participants completed the questionnaire online, via Qualtrics. Once informed consent had been given, participants completed the questionnaire. No time limit was given, and the duration depended on the amount of free-text response that was provided. Further, although

names were not requested, if participants wanted to receive a summary of the research findings, they were asked to leave their email address.

Qualitative analysis

Online questionnaires were transferred into NVIVO software for coding. Thematic analysis was carried out within a constructivist framework, whereby it is not assumed that one 'truth' can be extracted from the data. Rather, knowledge is constructed by drawing patterns from the individual experiences and meaning described by participants. The creation of themes was nevertheless driven by a deductive approach (Braun & Clarke, 2006). Specifically, the areas of difference identified within the quantitative analysis were used as a starting point for the creation of themes within the qualitative data. As such, the qualitative analysis is used to elaborate on and enrich understanding of the quantitative analysis.

Data were first broadly examined in the context of areas of agreement and disagreement between audio describers. A second phase of analysis explored sub themes within agreement and disagreement. Within agreement these included themes of: 'selection for description', 'information sources', 'integration of information', 'role of curators', 'describing gallery space', 'structuring a description' and 'language and narrative.' Within disagreement, the themes included: 'neutrality and objectivity' and 'cognitive prompts'. The final stage of analysis extracted a broad theme of 'interpretation'. This incorporated all the sub themes from the 'disagreement' category and the sub theme of 'imagery' within the agreement category.

Results

AD duration: There was a wide range of responses on AD duration, although the median and range for both a single stop and a full tour suggest that live AD could be longer than recorded AD (see Table 1). Mann-whitney U pairwise inferences tests for full tours and

single stops for live and recorded indicated no significant differences between the US and European groups (all $p > .40$).

Insert Table 1 here

Use of touch: Over half of the respondents in both the European and US groups commented on the importance of touch alongside AD. Both groups emphasised its sequential nature and the time needed to allow people to discover through touch. The European group recognised some practical difficulties, but emphasised that touch could ‘make objects come alive’, and enhance the tour’s narrative when well executed.

Role of Museum AD: Table 2 shows that no differences were identified between US and European describers with respect to their beliefs that AD should substitute for visual information, create an engaging narrative, provide background about the artwork, and offer the listener with a way of ‘seeing’ the art. Statistical inference tests (Mann Whitney U test) confirmed a lack of difference between these ratings (all $p > .1$).

Insert Table 2 here

The statement ‘AD should provide understanding’, had a higher median value for European respondents, but a larger range of responses in the US, and did not reach the conventions for statistical significance: ($U=122.50$, $N1=24$, $N2=14$, $p=.17$). The Europeans attributed greater importance to the role of both meaning and emotions in AD. Mann-Whitney U tests confirmed these differences were significant (Meaning: $U = 91.00$, $N1 = 24$, $N2 = 14$, $p = .03$; Emotion: $U = 89.50$, $N1 = 24$, $N2 = 14$, $p = .03$).

Within the qualitative theme of ‘interpretation’, sub themes relevant to the role of AD were: ‘imagery’ and ‘objectivity vs interpretation’.

Imagery: There was broad international agreement that the primary function of AD was to facilitate the creation of a ‘mental picture’ of the artwork or object in the listener’s mind. Many comments referred to concise, vivid language that would be able to “create a full picture in the listener’s mind’s eye.” (#36, US). One European describer warned that other aspects of style should not be prioritised at the expense of the creation of imagery: “if it creates an engaging narrative but it doesn't give the listener a picture of the object, it's failed as AD even if it's succeeded as a narrative.” (#25, UK). Another European respondent mentioned that creating mental imagery required a certain structure in the description, with each piece of information adding incrementally to the construction of a mental image: “It is important to keep a logical order in the description of the different elements, building relationships through them, in order to make a composition, or a mental image.” (#35, Spain). Various structures were proposed, with the clock numerals method favoured by US respondents. Discussions about mental imagery were, for some, at the heart of what AD should set out to do. One such respondent was careful to distinguish the creation of imagery, which was specific to AD, as entirely distinct to discussions of context and meaning, which were considered the domain of the museum staff, not the describer: “The work of the audio describer is to audio describe. He or she is not there to replace the work of a docent. The describer must tell what the work looks like, he must use the tools to elucidate the image in the mind's eye of the constituent.” (#18, AD trainer, rest of world).

One European describer gave a different perspective on mental imagery, reporting that mental imagery creation, or even the desire for it, could vary widely between visitors. They suggested that AD should focus on providing a rich experience, rather than aiming to substitute visual information with an image: “The idea of AD... is not to say 'If you could see, you would see this. That is terribly disabling. It's not possible for everyone to have the same picture in their mind, and AD will never achieve that, even if all blind and partially

sighted people were making pictures in their minds, which they tell me they're not. It's not to remind them what they've lost, surely it's to introduce them to something they've never encountered before.” (#1, UK).

Objectivity vs Interpretation: As shown in the quantitative data, there were significant regional differences of opinion regarding interpretative aspects of AD. However, the qualitative data revealed world-wide concern about keeping the right balance between objectivity and interpretation. Despite higher ratings in Europe for statements about meaning, understanding and emotion, there was still focus on maintaining objectivity and creating minimal ‘interference’ in the listener’s assimilation of an artwork: “I would go easy on the creation of an emotional experience – the artwork does that, not the describer.” (#23, UK). However, there was more emphasis amongst European describers on the role of story-telling in AD, with all mentions of narrative coming from European describers.

Describers from the US held much stronger views on objectivity, with many defining the role of the describer exclusively as a ‘translator’ of visual information, separating this translation entirely from a creative or artistic process, as expressed here: “The task of the describer is to describe the visual aspects of an object, production, or experience. Creating emotion alters the experience and is inappropriate for the describer. The describer is providing an assistive service and should not attempt to create or influence the artistic effect.” (#12, US). Many comments from US describers emphasised objectivity: “Audio description is speak what you see. In my opinion, the describer's interpretation should not be a part of the description.” (#38, US). For some, the ideal was for the describer to be a competent but essentially invisible agent by which the visual information is experienced by the recipient, leaving interpretative aspects to the museum professionals: “The audio describer is not there to explain what the work is, what it means. He or she is there to bring to the mind's eye of the

recipient, the visual event he or she, audio describer, is seeing.” (#18, AD trainer, rest of world).

Content and Style: Table 3 shows broad agreement between the US and European respondents on the importance of the majority of content and style variables. Only ‘cognitive prompts’ was identified as significantly different by Mann-Whitney U tests; and these were considered to be more important by European respondents (cognitive prompts: $U = 85.50$, $N1 = 21$, $N2 = 14$, $p = .04$; all other differences $p > .1$).

[Insert table 3 here](#)

European and US agreement across the majority of variables of content and style was broadly supported by the qualitative data. Specifically, there was agreement between describers in all regions that AD language must be simultaneously evocative and concise, and that vivid language would best generate mental imagery. There was also agreement between regions that the use of literary devices such as metaphor could be problematic, as they could generate competing mental images. However, there were interesting regional differences in the emerging theme ‘interpretation’, within the sub theme ‘cognitive prompts’:

Cognitive Prompts: Comments from the US indicated that cognitive prompts were not a recognised part of AD. One US describer, for example, rejected the idea of ‘thinking prompts’ because they were outside the remit of an audio describer, and too close to interpretation: “Incorporating “thinking” and “conceptual” questions is not, in my opinion, appropriate for a describer; that lies in the domain of a docent. (Keep in mind that I describe in the United States, and we emphasize respecting the integrity of the original material and avoiding attempts to interpret it for the person who's listening to the description.” (#12, US). For another US describer, thinking prompts were potentially problematic if they would result in a different experience: “Embedding the description with thinking or conceptual prompts or

questions should only be done if you are doing the same thing for your sighted patrons.” (#40, US). In contrast, European describers seemed to view cognitive prompts as a creative aspect of description with the potential to enrich the listener’s experience. One UK professional stressed the importance of finishing recorded description with a “surprising or amusing fact’, in order to leave the visitor with ‘something memorable... to take away.’” (#30, UK). Similarly, another UK describer talked about how they liked to end their descriptions with something which would leave a hint of suggestion in the listener’s mind – leaving them with “something to ponder.” (#21, UK).

Discussion

The aim of this study was to understand similarities and differences across international museum AD practices, with particular reference to the role of museum AD and its optimum content, style and duration. The quantitative analysis incorporated contributions from US and European describers, and the qualitative analysis incorporated comments from all respondents across different nationalities. The findings suggested that where guidelines agree, for example on structure and language, international museum AD practices have much in common. European and US practitioners tended to agree that the average duration of an AD description should be longer than the 1-2 minute recommendation in the guidelines (Remael et al., 2014). The aspects of AD which were most contentious, such as observing strict objectivity, reflected some contradictory recommendations in the guidelines. The discussions around these issues highlighted some crucial international differences about what museum AD should set out to achieve.

Quantitative and qualitative responses from describers from the US indicated that most describers prefer to reduce subjective interpretation as far as possible. These describers considered their role to be the ‘translation’ of visual perceptual information (e.g. the colours,

the shapes, the structure). This approach is more consistent with the US tradition of objectivity (WYSIWYS). On the other hand, Europeans were more likely to reference strategies that might evoke a deeper sense of meaning, for example, cognitive prompts, narrative, or seeking to evoke emotion. These findings are interesting in the light of research which suggests AD users respond favourably to creative techniques in description which go beyond the WYSIWYS principle (Szarkowska, 2013; Walczak, 2017). European describers also placed more emphasis on touch as part of the AD experience and its potential to tie in to the story-telling function of a description.

Interestingly, the qualitative data suggested that one of the objectives underlying the use of cognitive prompts or emotions, was to make the experience more memorable. Curiosity has been shown to be instrumental in helping us to remember, as curiosity enhances memory for novel information (Kang et al., 2009). The use of cognitive prompts, if they stimulate curiosity, may therefore aid memorability. The use of emotions also relates to the generation of meaning, and enhances memorability (e.g. McGaugh, 2003). The question of whether or not providing meaning is a didactic process, or a way of encouraging a deeper level of processing, is consistent with the broader museum interpretation debates. Such debates continue to question how much explanation is necessary or appropriate in the museum (Pekarik, 2004). Empirical research is needed to explore what effect this trade-off between objectivity, intervention and curiosity might have on the listener experience, and the resulting levels of engagement.

Although the use of mental imagery attracted much agreement internationally, it is interesting to note that many describers discussed enabling their listeners to create mental images of objects– ‘having a picture’ in one’s mind. This phrase, commonly used by respondents, is generally understood to mean a visual image. The focus on visuo-centric imagery is an interesting one. People who are late blind may have ongoing access to residual visual

imagery in the form of memories, and people with low vision may continue to form new visual imagery as they access new visual information through their residual sight. For individuals who are congenitally blind with no residual vision from birth, visual imagery is not possible. One might argue that the purpose of AD is not simply to provide people who have had vision with access to information which may be stored within memory, it is also to provide information to people which can be understood without ever having had access to vision. As with our perceptual experience, mental imagery is experienced in all sensory modalities, including auditory, haptic, kinaesthetic and olfactory (Cattaneo et al., 2008; Eardley & Pring, 2006; Eardley & Pring, 2014). Within AD, imagery, like perception, can be multisensory. For example, grass has a visual form, but it also has a tactile form, a spatial form (covering a surface), and an olfactory form. Agreement with this approach is reflected in the international agreement with the use of multisensory imagery in AD. These views are consistent with the US guidelines, which discuss ways in which tactile or auditory imagery can be embedded in order to create a richer description. However, in recommendations and materials for describers, it would be valuable to expand upon and illustrate the multisensory nature of imagery and its role in description wherever possible.

The role of spatial imagery was reflected in the findings by the comments of many on how they structure an AD. Research has demonstrated that people who are congenitally blind perform similarly on spatial imagery tasks compared to sighted individuals (Eardley & Pring, 2007; Eardley et al., 2016). How this spatial representation can then be enriched, or 'brought to life', can be achieved through the spectrum of non-visual sensory imagery (taste, smell, touch, movement) that is experienced by people with visual impairments and sighted alike (Eardley & Pring, 2014). However, providing the structure to facilitate a mental representation can take significant time and word count within an AD text, or live delivery (Jiménez Hurtado and Soler Gallego, 2013). Keeping in mind the challenges of retaining

attention and not overloading the listener with information, it would be interesting to explore the tolerance of AD users in terms of the time and effort needed to process structural information in sufficient detail to form a mental representation. Some users may wish to do so, others may prefer to experience the artwork in a way that does not require them to invest significant mental effort in forming such a representation. Other tools such as simplified tactile images can help provide access to basic spatial representations, with AD then enriching the spatial structure.

Mental imagery formation has also been shown to aid memorability (e.g. Svoboda, McKinnon, & Levine, 2006), and an AD text that generates strong and enduring mental images could therefore provide a longer lasting and potentially more fulfilling experience. This approach may help AD to facilitate a richer and more multifaceted museum experience for visitors with visual impairments. However, whilst multisensory engagement, such as enrichment with additional sounds, has the potential to explore meaning and evoke emotion, it requires a more interpretative approach and moves beyond a strict provision of visual information. Upholding the objectivity principle should therefore be critically reviewed in the context of providing a rich and engaging experience.

The majority of respondents within this study came from the US or Europe. This reflects the current strength of AD practice within these areas. Future research will be able to explore the development of AD more broadly around the world as the practice of AD grows.

Conclusions: The results of the present research demonstrate broad international agreement on the building blocks of museum AD, such as the use of colour, multisensory imagery and the generation of mental imagery. At the same time, the conflicting views between regional approaches to AD foreground the many different things that AD can aim to do in a museum; provide verbal description of visual elements, create mental imagery, tell a

story, explore meaning and evoke emotions. Approaches to description will vary according to whether AD is understood as a visual to verbal translation or as a museum interpretation tool which seeks to facilitate an experience. Balancing the emphasis given to these different elements is challenging and merits further research attention. As guidelines for Museum describers develop and the role of the describer continues to be professionalised (ADLAB PRO, 2017), exploring these tensions, which are so central to museums and galleries, will be crucial in the development of museum AD. Keeping the emphasis on the full spectrum of what the museum experience can be, and how it can be facilitated through AD, will no doubt lead to new directions and creative possibilities.

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