SoundEffects
An Interdisciplinary Journal of Sound and Sound Experience

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A museological approach:

radio as intangible heritage

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SoundEffects | vol. 2 | no. 2 | 2012 issn 1904-500X

Abstract

Radio is a major part of our media heritage, but it is seldom featured in exhibitions or as part of museum collections. Museums traditionally operate with a material concept of artefacts, but with the advent of electronic and digital media the need for a broader concept to accommodate intangible forms of heritage, such as radio, has become apparent. This article outlines the challenges of conceptualising the sounds of radio as artefacts of cultural heritage to be exhibited in a museological context.[1] These challenges range from the purely theoretical matter of delineating intangible artefacts to more practical and methodological concerns about presenting these kinds of artefacts in exhibitions. An appreciative understanding of radio heritage calls for didactic strategies for bridging the knowledge gap that exists between the majority of modern audiences and the historic radio material. This article proposes possible responses to this challenge based on insights from learning and design theories.

Introduction: mediated sounds in museums

As the technology for reproducing sound in the galleries has become more affordable, the use of sound effects accompanying displays or moving pictures has become commonplace in modern exhibition practice at museums. In the following I will focus on the use of mediated sounds in exhibitions in museums of cultural heritage. This article leaves aside the use of sound in art museums, as the issues involved in sound as heritage and sound as art are too diverse to consider within the scope of this article.

One of the earliest documented uses of audio-visual aids in an exhibition was in 1908 at the American Museum of Natural History in New York, where a gramophone provided commentary to exhibits about tuberculosis (Griffiths, 2007, p. 72). Many curators have been eager to use the 'new media' of their day in exhibitions, but there have also been many critics. Conflicting attitudes towards including electronic media in exhibitions grew among curators from early on, and the conflict persists to this day regarding digital multimedia (Griffiths, 2003, 2007; Witcomb, 2007). The discussion has traditionally centred on media as tools for interpretation and presentation, not as museum artefacts (Witcomb, 2007). However, as electronic media become old enough to be considered part of our cultural heritage, we need to consider them as artefacts in themselves, and not just as tools for providing contextual information about other material artefacts.

Jeremy Silver points out the frequent auditive deficiency in museum exhibits: 'there is a huge gap in our museums' exhibitions where there should be voices, songs, and other *sounds of what is on display*' (Silver, 1988, p. 194; emphasis added). But

 issn 1904-500X

by pointing this out, Silver gives an illustrative example of the main problem with sounds in exhibits, as he only mentions the sounds of something and not sounds per se. There is a fundamental difference between using sounds as sound effects, or an ambient backdrop to a display of material artefacts, and exhibiting sounds as artefacts, in and of themselves.

With regard to sound artefacts in exhibitions, we need to reverse the conventional relationship between sound and objects, from that of the audio tour and sound effect – as providers of contextual information about objects on display – to objects and labels contextualising sounds. This transforms the visually oriented exhibition space into an auditorium, in the original Latin meaning of the word, a listening place. In order for this transformation to occur, a change in the perceptions of the audience is also required – a change of focus from the visual to the auditive. This process could also be described as a change from hearing to listening, where listening is an intended activity, while hearing is just a passive registration of the surrounding auditive environment (Brown, 2010, p. 130). Such a change in perception involves a didactic aspect, which I will explore further in relation to the concept of intended and perceived affordances in design theory (Norman, 1988) and the concept of instructional scaffolding in learning theory (Wood, Bruner & Ross, 1976).

Firstly, however, I will outline a museological approach to sound and the challenges involved in conceptualising sounds as artefacts to be exhibited. Thereafter, I will consider the case of Danish radio as historical heritage and the knowledge gap that exists between this material and a modern, young audience.

As an adequate description of the exhibition as a medium facilitating a communication process between curator and audience, I propose the concept of the exhibition as an information space with a set of intended informational affordances. If the exhibition design is to be successful these affordances are also perceived by the audience.

Finally, I will describe how auditive artefacts of radio heritage are displayed in an exhibition at the Media Museum.

A museological approach to sound

The museum institution is usually defined as an institution, 'which acquires, conserves, researches, communicates, and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study, and enjoyment' (Desvallées & Mairesse, 2010, p. 57). Museum collections usually consist of material objects that have either been collected at exotic locations or excavated from the earth to be displayed in museums and galleries. Therefore, museums have traditionally operated with a material concept of artefacts. A museum is an institution that transforms things into artefacts. This happens through a musealisation

issn 1904-500X

process, whereby the thing is collected, described, catalogued and perhaps exhibited. The artefact is therefore a product of the museum institution, which disconnects the thing from its relation to the lived life and ascribes to it a new ontological status as an artefact in the museum's collections (Desvallées & Mairesse, 2010, p. 61).

By acquiring objects and incorporating them in a collection, museums ascribe symbolic value to objects as artefacts that may otherwise be regarded as worthless in society's commodity economy (e.g. broken tools and outdated technology). The new value and cultural capital of these objects are the narrative possibilities inherent in them as cultural heritage artefacts (Vasström, 1999, p. 91).

Our cultural heritage does not only consist of material objects. However, it was not until 2003 that UNESCO ratified its Convention for *the Safeguarding of the Intangible Cultural Heritage*. Intangible cultural heritage was defined as 'the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts, and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage' (UNESCO, 2003, p. 2). Intangible heritage, therefore, comprises cultural artefacts that can be recorded but not touched or interacted with directly. The primary focus of the concept of intangible heritage in the convention is on the oral traditions, performing arts, rituals and craftsmanship of indigenous peoples. These activities can have an auditive aspect, such as song or music, but sound artefacts per se are not mentioned explicitly in the convention. However, it is obvious that sounds play an important part in our cultural memory and, therefore, should be considered as forms of intangible heritage (Bijsterveld & Dijck, 2009). Sound does not exist independently of an ear (or microphone) to register it. Sound is pure effect in the form of sound waves (Brown, 2010, p. 215). However, sound is not immaterial. Ellestrøm distinguishes between three forms of material modality of media: human bodies, other materiality of a demarcated character (e.g. 3D objects) and 'material manifestations of a less clearly demarcated character, such as sound waves' (Ellestrøm, 2010, p. 17). For the purpose of museology, and to capture the ephemeral nature of mediated sound while still preserving its materiality, I therefore propose to include sound artefacts in the already established concept of intangible heritage.

It is clear that an adequate concept of intangible heritage is not limited to artefacts from indigenous cultures but should also include artefacts from developed societies. The sound of a dial-up modem is an example of sound as cultural memory. One of several such sounds on www.freesound.org, it has been downloaded over 19,000 times and has led to many comments, such as, 'Does that ever bring back memories!'[2] This shows how a sound artefact can generate a great deal of interest from users and even lead to new uses of this artefact (e.g. on the same discussion board, another user explicitly states that he wants to use the sound as a ringtone on his mobile phone). The artefact is not just the sound of a specific technical instru-

issn 1904-500X

ment. It instantly triggers in many users the same shared experience and collective memory of waiting in front of the computer while hearing this sound (Olick, Vinitzky-Seroussi & Levy, 2011).

When treated as artefact, the nature of sound generates a new set of challenges at every stage of the musealisation process, from acquisition to exhibition. Until recently, our auditive heritage could only be disseminated by oral means and preserved by mnemonic techniques such as rhymes and verses. With the advent of technologies for sound recording, it became possible to collect and preserve our auditive heritage in a more permanent form.

Once collected, the documentation and cataloguing of sound artefacts is further complicated by the temporal extent of sound. Sounds are events rather than artefacts (Brown, 2010, p. 202), and establishing the necessary metadata for auditive content is a time-consuming process. It is close to impossible to adequately describe auditive qualities, such as timbre, in textual form (Silver, 1988, p. 178).

The temporal extent of sound artefacts also raises the question of how to delineate them. For example, in the case of radio, is the entire radio show the artefactual unit, or is it meaningful to view individual segments of the show as separate artefacts? In regard to using radio sound in an exhibition context, it makes sense to divide it up into smaller segments, as the audience is not likely to stay around and listen for a long time. A radio show in its entirety is better appreciated in the form of a podcast, or listened to at home. Another difficulty with sound in exhibitions is the inability to scan it quickly, as you would skim a text. One must listen to it in its entirety, or abandon it all together.

In principle, all heritage artefacts should have the same value (i.e. priceless), but in practice artefacts have different statuses. James Clifford, who has studied this hierarchy of cultural artefacts, distinguishes between the authentic and the non-authentic as well as the mundane (mass-produced objects) and the unique masterpieces (in: Vasström, 1999, pp. 98-100).

All sound artefacts are recordings, and therefore they are all, in this sense, non-authentic. Still, with the difference in the quality of the technologies used for reproducing sounds, it is possible to distinguish between artefacts which are closer to, or further from, the original recording.

Within radio heritage, it makes sense to distinguish between the unique montage documentary (as a masterpiece of radio aesthetics) or a unique radio moment (such as the declaration of the surrender of Nazi Germany after the Second World War) and a mundane news programme or talk show from a random day. Still, the mundane programme can have cultural significance, precisely as an example of the ordinary and the typical.

Sound in exhibitions usually functions not as artefact but as a way to bring 'dead' objects back to life, creating a particular atmosphere in the exhibition or as

issn 1904-500X

narration in the form of historic witnesses or the traditional omniscient narrator, which we know so well from the documentary genre (Silver, 1988, p. 192). However, at a media museum, the sound of radio should not only be a soundscape for other artefacts. If we value our media heritage on equal terms with other kinds of heritage, radio shows should be treated as heritage artefacts in their own right.

The knowledge gap: radio as heritage

In Denmark, the Media Museum[3] in Odense is the institution tasked with treating the Danish media heritage as museum artefacts. As easily recognisable as the media phenomena of today are, just as quickly are they forgotten, and they can become difficult to re-actualise in an exhibition context. Of course, the difficulty of bridging the gap between the audience of today and historical media material through re-actualisation intensifies with the age of the material.

Most media objects are not only volatile in their development, but also in their essence, for example, TV and radio shows, which are designed to be experienced in the moment of broadcast. But with advances in digitalisation, they can exist independently of any specific medium. They can therefore be seen as intangible forms of heritage, compared to material artefacts such as flint axes. This designation creates unique challenges in the dissemination of these artefacts in exhibitions. There are also legal challenges concerning copyright issues, as there is no established practice for audio-visual citations in exhibitions, and no concept of Fair Use[4] within Danish law. This is a real obstacle for the dissemination of radio heritage, a matter too complex to be discussed further here.

Media products are a special case of heritage artefacts in a museological context, as they are usually collected and preserved by other institutions – often archives and libraries – while museums collect the hardware of our media heritage. Thus, the museum curator has to select from already established archives in constructing the narrative for a given exhibition and, thereby, transforming archival records into artefacts.

Although the Danish Broadcasting Corporation (DR) provides quite a lot of historic radio shows on a designated website,[5] this article will argue that there is a didactic advantage in disseminating radio heritage through the medium of a museum exhibition rather than a web-accessed CMS.[6] The majority of modern audiences lack the knowledge to be able to understand or get the full pleasure of listening to historical radio shows. At most, it will generate a curious amusement along the lines of, 'they sure talked funny back then!' The audience needs contextual information and thematic links to their own horizon of experience to be able to appreciate their radio heritage. In other words, they need instructional scaffolding, to borrow a term from Wood, Bruner & Ross . (1976).

issn 1904-500X

The concept of scaffolding was developed in a classroom context, where an expert, such as a teacher or tutor, helps the pupils perform a given task (Wood, Bruner & Ross, 1976, p. 89). However, 'museum learning is self-directed rather than directed by a teacher. Exhibits replace the teacher as the central medium of instruction. Objects instead of words are the principal currency of discourse' (Falk & Dierking, 1992 in: Christensen, 2011, p. 265). The curator is the expert, but is not present in person, so the scaffolding has to be by proxy in the form of exhibition design. Several of the scaffolding functions mentioned by Wood et al. do not necessitate a tutor being present and can instead be implemented in the exhibition design (Wood et al., 1976, p. 98). However, I do not use the concept of scaffolding in a strict sense, as only referring to the didactic strategies mentioned by Wood et al. Instead, I wish to include more aspects of design in the concept and use scaffolding as a general metaphor for the use of design techniques in providing support for the audience in the interpretation of the displayed artefacts, if needed. If a visitor, due to her previous experience, can identify a given artefact, she can just dispense with the interpretative scaffolding.

The exhibition as a medium functions traditionally by means of the curator selecting a series of thematically related artefacts and presenting them to the audience in a scenographic and informational context (Desvallées & Mairesse, 2010). This curatorial process is similar in sound exhibitions. In essence, the curatorial process consists of selecting, ordering and presenting information and artefacts that prevent the audience from succumbing to information overload, which might be the result if they were instead presented with a CMS of the totality of the Danish radio heritage.

An exhibition is a medium for aesthetic and sensory experiences as well as for knowledge dissemination. Knowledge is a cognitive construct of the mind, whereby the user integrates the information provided by the exhibition with previously acquired knowledge. The exhibition, like the book, is only a carrier of externalised knowledge in the form of information; thus, an exhibition can be aptly described as an information space (Bang, 2011, p. 13). The notion of externalised knowledge implies a communication process, where a curator intends to disseminate a certain body of knowledge to an audience. This message is not transported directly into the minds of the audience, as implied by linear models of communication, which underlay the authoritative one-way communicative practices of traditional museum exhibitions (Bang, 2011, p. 13; Hooper Greenhill, 2000, p. 5).

Instead, borrowing the terms of encoding and decoding introduced in the media theory of Stuart Hall, the communication process of an exhibition can be described as follows: the curator externalises the knowledge she wishes to disseminate by encoding it as information in the exhibition design, thus giving the knowledge a symbolic and linguistic form which can be internalised by the user. If this information is perceived, then it can be decoded and reconstructed as knowledge in the mind of the audience through cognitive processes (Hall, 1999; Bang, 2011, pp. 12,

issn 1904-500X

29). There will often be asymmetry between the encoded (intended) and decoded (perceived) information.

The curating process also involves the construction of a narrative that organises the exhibition by ordering, visualising, connecting and evaluating information. 'To put it paradoxically, the event [i.e. the exhibition] must become a "story" before it can become a communicative event' (Hall, 1999, p. 508). The knowledge is externalised in the narrative, which can subsequently be internalised by the audience. Thus, the exhibition design employs different kinds of rhetorical devices for sharing knowledge with the intended audience in a strategic system of representations that implies 'a plan to all exhibitions, a will, or teleological hierarchy of significances' (Ferguson, 1996, p. 179). For example, the intended message often appears as text on exhibition signs and gives what Hall would call a preferred reading of the artefacts and their meaning by delimiting an otherwise ambiguous or open field of possible meanings (Hall, 1999, p. 513). Such a reduction in the degree of interpretive freedom for the audience is also a form of scaffolding (Wood, Bruner & Ross 1976, p. 98).

The audience does not comprise passive receivers of the intended message. They construct their own knowledge from the information resources provided. But if the communication process in the exhibition is to begin at all, the audience must find the information content useful or relevant (Bang, 2011, p. 3).

The unique aspect of the exhibition as a form of communication is that it allows the audience to move freely through the exhibition space and decide for themselves in which sequence artefacts and information shall be experienced and how much time is devoted to each aspect of the experience (Palmquest, 2005). This 'grazing' behaviour turns a visit to an exhibition into a significantly bodily experience and form of communication (Griffiths, 2003). In a study of students engaging with the MyArtSpace smartphone app, Rudman, Vavoulaa, Sharples, Meek and Lonsdale (2008) made the observation that mobile technology slowed the students down by demanding their attention and thereby enabling more engagement with the exhibition (Rudman, Vavoulaa, Sharples, Meek and Lonsdale 2008, p. 160). It is entirely possible that sound artefacts could have a similar effect of demanding the attention and time of the audience. The audience cannot decipher the information quickly by skimming the exhibition space visually and is therefore slowed down by engaging with the sound artefacts – unless they rush by without giving attention to the artefacts.

The exhibition as an information space

If we consider the exhibition as an information space in which the visitor can navigate and locate information, then the concept of intended and perceived affordances becomes relevant when analysing whether the exhibition is designed in such a way that it communicates the desired information to the visitor.

issn 1904-500X

The concept of affordance was introduced by the psychologist James Gibson in his theory about the individual's engagement with his environment, capturing the options present in a given environment (Gibson, 1977). The affordance concept was subsequently used by Donald Norman when analysing design and usability in interfaces between humans and IT systems. Affordance is the potential use or action in a given interface (Norman, 1988). If we consider an exhibition an information space with information encoded in the artefacts displayed, then the exhibition design can afford the decoding of this information if it is perceived by the audience. I use the metaphor of scaffolding as a term for didactic techniques and design aspects that support the audience in perceiving intended affordances which would otherwise have remained hidden.

According to Norman, it is the designer's task to minimise the gap between the intended affordances of a given object and the actual affordances perceived by the user. In a successful design there will be no gap, as it is obvious what the intended affordances are (Norman, 1988).

In his analysis of user behaviour in libraries as information spaces, Lennart Björneborn has extended the concept of affordance to include all interfaces between the user and a given library space, with regard to physical, digital and social interfaces (Björneborn, 2010).

Such a holistic and multimodal concept of affordances in information spaces is suitable for analysing the museum exhibition as a medium, because exhibitions are characterised by communicating information through multiple platforms, including physical (e.g. signs and posters), digital (e.g. audio-visual multimedia) and social means (e.g. staff).

User behaviour can be both convergent and divergent, and the information space must be able to accommodate both kinds of behaviour. Convergent behaviour is characterised by being goal-oriented and focused (e.g. a visitor who wishes to see a certain exhibition of which he has read a review). Divergent behaviour is characterised by being intuitive and explorative (e.g. a tourist who is visiting a capital city and wishes to see the national gallery, but not a specific exhibition). Both kinds of behaviour are latent in all visitors, and visitors can shift between them (Björneborn, 2010).

> When users move through an information space (e.g., library, Web, City) ... they may change directions and behaviour several times as their information needs and interests develop or get triggered depending on affordances encountered on their way through the information space. (Björneborn, 2010)

Convergently oriented visitors can suddenly be inspired by something other than what they were seeking, if the exhibition design affords such divergent behaviour. Likewise, divergently oriented visitors behave convergently as soon as they find something interesting to explore further.

issn 1904-500X

Björneborn follows Lockton, Harrison, Holley and Stanton in distinguishing between three overall approaches to influencing user behaviour through design: an enabling, motivating or constraining approach (Björneborn, 2010, p. 4; Lockton et al., 2009, p. 3). Scaffolding techniques can follow all three approaches and will probably be combined in the overall exhibition design.

Björneborn distinguishes between three factors that determine user behaviour in information spaces: the intrinsic factors of user motivation and literacy, and the extrinsic factor of triggers. *Motivation* can be information needs or special interests. *Literacy* is the user's ability to navigate through the physical, digital or social interfaces. Literacy thus includes the means for decoding the information encoded in the exhibition design (Bang, 2011, p. 13). *Triggers* are design aspects that can stimulate different user behaviours (Björneborn, 2010, p. 4).

With regard to visitor motivation, it is useful to distinguish between the pre- and post-visit periods as well as the actual visit to the exhibition. Motivation and expectations can be affected by the marketing of the exhibition, which can boost the interest in experiencing it. Once present in the exhibition, motivation can be affected by triggering divergent behaviour. Finally, the exhibition itself can have a motivating effect by inspiring the visitor to further investigate the exhibition topic, thereby extending the learning process beyond the visit. For example, experiencing an exhibition narrative weaved from segments of different radio shows might inspire the visitor to listen to the full-length shows as a podcast or at home.

Auditive exhibitions of radio heritage are unknown to the majority of audiences, so the exhibition design should enhance their auditive literacy through scaffolding, thereby enabling an appreciation of radio heritage in perceiving sound artefacts and their function in the overall narrative of the exhibition. For example, giving hints as to what to listen for.

Björneborn lists a series of design dimensions which can act as triggers, several of which correspond to the scaffolding functions proposed by Wood et al. These include exposure of content, contrasts between content, pointers in the exhibition, diversity in content and cross-contacts between content (Björneborn, 2010, p. 4). These ways of highlighting content raise the probability that the informational affordance will be perceived by the visitor.

It is entirely possible that the displayed artefacts can have unintended affordances for some visitors when triggering specific memories based on personal experience. For example, the recording of a sabotage bombing will trigger memories of listening to this sort of broadcast from the BBC during the German occupation, if the audience is old enough to have experienced this. Such memories are not triggered in a younger audience. Instead, it might in them trigger mediated memories or post-memories, as Hirsch terms them in her work on the recollections of second-generation Holocaust survivors (Hirsch, 2008). Thus, a given artefact does not have a fixed

issn 1904-500X

set of informational affordances. The curator will have a fairly fixed set of intended affordances in mind when including a given artefact in an exhibition, but cannot plan for all the eventualities it might trigger in the audience.

Displaying sound artefacts in an exhibition

I will now outline how auditive radio heritage is displayed in the exhibition 'You are what you hear' at the Media Museum. In order to trigger recognition in a younger audience, we have adopted the slogan of the popular Danish radio station P3 for the exhibition title.[7] The aim of the exhibition is to make the audience reflect on the interdependence between the content of radio broadcasts and the listening situation (e.g. we listen to traffic radio while we are driving). From the producer's side, the programmes are intended and formatted to be consumed in specific situations or at designated times (e.g. morning radio shows have a different feel and tempo than afternoon shows).

We have devised a system that enables us to place sounds at exact locations in the exhibition room. Via camera tracking and colour recognition of LED lights mounted on the headsets, we can pinpoint the exact location of four individuals in the room. A sound system channels individual sounds to the wireless headsets. The system enables the visitor to discover the sounds by moving around the room. When not at a designated sound spot, the visitor hears static noise. Each sound spot is a virtual sphere with a diameter of one metre. If the visitor closes in on a sound spot, the sound is slowly faded in, until the visitor arrives at the exact spot and gets a clear signal. This creates the effect of using the body like a tuning dial on an analogue radio set. In the era of digital radio, the phenomenon of static noise and fine-tuning is no longer an inherent part of listening to radio. But given a spatiotemporal extension in the exhibition room, we found that fine-tuning made sense as a narrative frame for the sound artefacts. The seven listening posts in the exhibition then appear as 'channels', which the visitor can tune in to by positioning her body accordingly in the room. The sound system is the digital interface of the exhibition, but the digital aspect is concealed from the visitors as they navigate the room using only sounds and physical props.

In order to enhance the experience of being in a metaphoric space about radio, the visitor enters the exhibition through a portal shaped as a giant, red radio set. The entrance is covered by a black curtain, thus triggering a fundamental curiosity in passing visitors, who are tempted to peek inside.

The exhibition will consist of a series of seven listening situations from different periods in the development of radio as a mass medium. The listening situations are recreated symbolically with a minimum of props, thus keeping the focus on the sound and the exhibition space as an auditorium. The primary affordance of the

issn 1904-500X

props – i.e. an armchair is for sitting – also affords locating the sound artefact, as the visitor gets a clear signal when sitting in the armchair. So the obvious thing to do when confronted with a prop is also the 'right' thing to do. Here the static noise has a further motivating effect, as the visitor will probably strive towards getting a clear signal – hearing the sound artefact instead of noise – and thus take a seat in the armchair.

Each situation 'displays' an auditive artefact consisting of a sound clip from a radio broadcast. For legal reasons, concerning copyright, the duration of the artefacts is limited to a maximum of two minutes. This might not be all bad, though, since the attention span of visitors is limited. Studies show that the average time spent in most exhibitions is less than 20 minutes (Bitgood, 2000). Thus, a larger selection of auditive artefacts or artefacts of a longer duration might result in 'museum fatigue' (Bitgood, 2011).

The auditive artefacts have been selected according to the different situations in which they are heard. There are mundane artefacts, such as a segment from a morning show on a random day in 2006, but also a unique recording of the sabotage bombing of the Always factory during the German occupation of Denmark in 1945.

The listening situations are each equipped with a label. The interpretative label is a museological convention that signifies the status of a museum artefact in an exhibition (Witcomb, 2007). Therefore, providing the auditive artefacts with a label supports their status as the main museum artefacts of the exhibition. According to Norman, the design has failed if simple things need instructive labels (Norman, 1988, p. 9). However, auditive artefacts are complex things and can be difficult to decipher. Thus, the label can attend to the literacy of the visitor and provide interpretive scaffolding if needed, for example a preferred reading of the artefact.

The texts on the labels are split into two parts. One part has an enabling and the other a motivating function. The first provides the data for the artefact (e.g. date, title, channel, type of programme etc.), thus enabling the audience to identify the sound artefact. The second is aimed towards a young audience. In an attempt to bridge the knowledge gap mentioned above, we have situated the radio artefacts in relation to their horizon of experience. For example, references to popular TV drama series are given in the preferred reading about a segment from The Hansen Family – a radio drama from 1952. The collective experience of the family gathering in front of the TV for the weekly episode of a major drama series is the modern equivalent of listening to radio drama as a family. This establishes a symbolic dialogue between visitor, label and artefact (Bitgood, 2000). Combined the label should address both the lack of literacy and motivation when listening to the sound artefacts.

Each label is mounted on a bright orange column. They act as focus points for visitors' attention. The columns also function as landmarks in the exhibition, by which the visitor can easily identify and navigate between the different listening

issn 1904-500X

situations (Bitgood, 2011). This solution combines several of the triggers identified by Björneborn, such as exposure, contrasts and pointers (Björneborn, 2010, p. 4). The mounted labels show how scaffolding often combines different kinds of techniques, addressing different aspects of visitor perception. It is not enough to address visitor literacy and provide contextual information that enables the visitor to interpret a given artefact, if this information remains hidden. This information should also be easily identifiable and accessible to afford interpretation.

Each listening situation is also intended as an activity, where the visitor can interact with the props and thus have a bodily experience while listening to a given artefact. For example, the visitor can grab a broomstick and try to keep up with the barking commands of Captain Jespersen, the host of a morning gymnastics show on Danish national public radio from 1927-1952.

In order to transform a normally visually oriented exhibition space into an auditorium, we have taken a constraining approach to the visual aspects. The room is mostly dark with only single spotlights highlighting the few props that mark the listening situations. The contextual information for each artefact, which could have been displayed on signs or posters, has been confined to a small catalogue, which the interested visitor can bring with her on her visit or take home with her afterwards. In the catalogue, we have used QR codes, so that audio-visual material can be easily accessed via a smartphone. Unfortunately, current legal restrictions do not allow us to link directly to the archives, so we have had to settle for material on the Internet which is already in the public domain. So the scene is easily taken in at a glance, whereupon the visitor can focus her attention on listening. To further support active listening, the social aspects of the exhibition space have also been constrained. The tightfitting headsets exclude other sounds and discourage conversation between visitors. In addition, only four headsets are available, so a maximum of four visitors at a time preserve the exhibition as an intimate listening space.

Conclusion

Radio is a major part of our cultural heritage. Taking into account both the ephemeral nature and the materiality of sound, the present article suggests the notion of intangible heritage as an adequate concept for a museological approach to radio as a museum artefact.

Exhibitions, as communicative media, are primarily visual experiences, and any auditive elements usually serve as sound effects or as providers of contextual information. Therefore, exhibiting radio as an auditive artefact requires a reversal of this relationship between the auditive and the visual, turning the exhibition into an auditorium where other design elements, such as objects and labels, contextualise the auditive artefacts.

issn 1904-500X

The present article has outlined how auditive artefacts of radio heritage are displayed in the auditory exhibition 'You are what you hear'. I have considered exhibition design, as a communicative process taking place in information spaces, and I have adopted a holistic concept of affordances for describing the possibilities for action and information offered to the audience in a given exhibition. The distinction between intended and perceived affordances is useful for evaluating whether an exhibition works as intended. Upcoming user studies will show whether the intended affordances in the exhibition design are indeed perceived, and if the attempted scaffolding strategies have been successful in enabling the appreciative experience of radio heritage by a young audience.

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Notes

1 Museology is the commonly accepted term for museum studies. In some contexts you distinguish between museology, as the theoretical perspective on museums, and museography, as museum practice (Desvallées & Mairesse, 2010). Here I use the term museology to cover both the theoretical and practical aspects of museums.

2 For the original sound and user comments see http://www.freesound.org/people/Jlew/sounds/16475/.

3 The Media Museum is located in Odense. See www.mediemuseum.dk for details.

4 Fair Use is a doctrine in American copyright law, which grants permission to limited use of copyrighted material without acquiring prior permission from the rights holder.

5 See www.dr.dk/bonanza/.

6 Content Management System.

7 The exhibition will be at the Media Museum in Odense from 7 September 2012 until 15 January 2013. Read more about the exhibition here: tinyurl.com/youarewhatyouhear.

issn 1904-500X