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# When museums increase listening: sound creation in the service of transmission

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## « When Museums Increase Listening : Sound Creation in the Service of Transmission »

NCMM 3rd Edition

« Listening to today's music »

3 and 5 May 2023, Lisbon

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# DISSERTATION TOPIC

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Sound creation from a media perspective / the importance of listening in the transmission of knowledge and learning in museums



# A MUSICOLOGICAL TOPIC ?

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Music museums / the exhibition of archives by an ethnomusicological, historical or social approach

Museologists, museum professionals or companies's reports

Archeoacoustics, bioacoustics, heritage listening...

« (...) from an academic perspective focused on the auditory dimension, there has been little research on sound in museums to date : musicology and sociology have rarely studied specific spaces of music reception such as museums, (...) The twenty-first century boom in sound studies, the scholarly exploration of how we relate to our environment through the sense of hearing has very rarely addressed the sound dimension of museums (...) » (De Visscher, 2019, 279)



Ringve Music Museum – Trondheim ©Mélissa Mathieu

# AN INTERDISCIPLINARY MUSICOLOGY TO BE INVENTED

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New professions / new skills : digital technology, new technologies, new forms of mediation, etc.

Sound design (ergonomics of sensitivity), writing, composition, research (-action, -creation, development, participative...), art therapy (theme of care), mediation...

Ethical issues

What role do we want to give to museums in the future ?  
What is the place of identity in the sensory experience ?  
What kind of reevaluation of the role of listening in our models of transmission should we opt for ? What definition of "cultural democratization" should we pursue in the years to come ?

# A QUOTE

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« There are only rarely attempts to attend to the different senses and design museums to promote the multisensory experience. This is important because, whether addressed explicitly or not, modern neuroscience teaches us that basically all experience of the world is multisensory. Therefore, museum curators and directors ought to understand the importance of explicitly designing multisensory museum experiences. Essentially, the museum experience will be multisensory, whether we want it or not—thus it is better to pay attention to achieve desired effects rather than allowing for incidental and potentially undesirable effects » (Levent & Pascual-Leone, 2014, 18)

# THE REALITY OF MUSEUMS



Cultural policies

Media orientations  
Marketing...



Funding

Innovations  
Maintenance  
Trainings ...



Infrastructures

Area  
Storage  
WiFi coverage...



Technologies

Trends  
Consumption habits...

# ON A CASE-BY-CASE BASIS

There are always pragmatic explanations

A web-app rather a dynamic binaural device... because of network coverage

The periodic abandonment of headsets or earphones during pandemics for health reasons

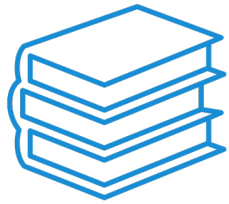


Interviews with museum professionals : understand the pragmatic or political reasons behind the choices made in terms of sound mediation (creation / dissemination )



# PLAN : FROM ORIGINS TO ISSUES

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## State of the art

Understanding acoustics

Understanding the psychophysics of listening

Understanding the visitor experience



## An identified problem

A problem

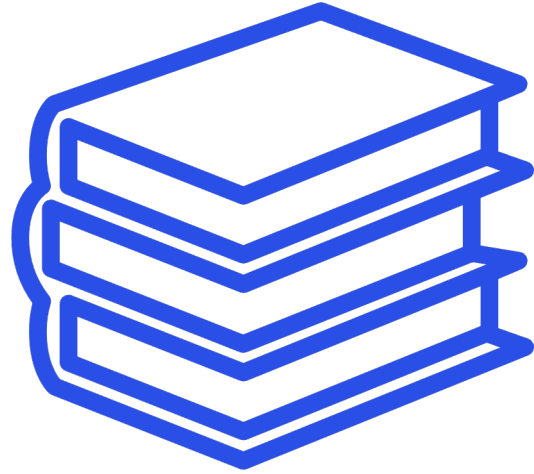
An observation



## The challenges of my research

Goals

An example of an experimental protocol



# STATE OF THE ART



FOR BEGINNING :  
HOW DO WE  
LISTEN TO  
MUSEUM ?

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Music Museum – Paris ©Emmanuelle Giuliani

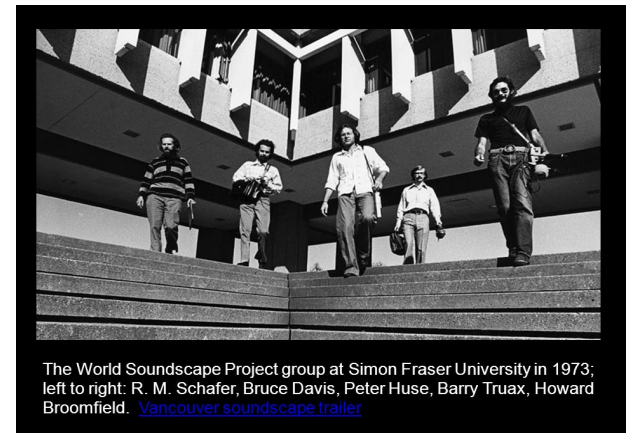
# ACOUSTICALLY

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- Historically, modern museum and galleries as unisensory visitor experience (Lacey et Sathian, 2014, p 3)
- In reality, museums are noisy... omnipresence of sounds in museal environment ! (CRESSON)
  - *Niche* : intersection between a sound message and a context
  - *Flutter echo* : in the reverberation of a room, the emergence of a particular frequency and its harmonics which remain between two parallel and reflecting walls
  - *Reverberation* : propagation effect whereby auditory sensations persist after the sound emission has stopped
  - *Ubiquity* : it is « linked to the spatiotemporal conditions of propagation, and marks the difficulty or impossibility of locating a sound source ». An « open door to the metaphysical dimension of sound »



« Le salon carré au musée du Louvre » (1883)  
Louis Béroud - Musée Fabre - Montpellier



The World Soundscape Project group at Simon Fraser University in 1973;  
left to right: R. M. Schafer, Bruce Davis, Peter Huse, Barry Truax, Howard  
Broomfield. [Vancouver soundscape trailer](#)

# SALOMÉ VOEGELIN (2014) / « SOUND WALK 1 » (TATE BRITAIN)



Tate Britain – London ©Voegelin (2014). Figure 8.1.  
p. 122.

## Start here (on Millbank)

- Stand at the bottom of the steps and listen for approximately two minutes to yourself, then listen for another three minutes to yourself in the environment.
- Walk up the stairs, listening to the people who come toward you.
- Enter the museum.
- (...)
- Walk all the way in a straight line to the very back of the gallery, all the while listening to yourself and other visitors inside the space.
- Go to the first piece of work you find ; listen to it.
- Go to the next piece of work you find ; look at it...

## Listening questions

- How do you listen to the museum ?
- Does the gallery space invite listening ?
- Does that listening, or not listening, have an influence on how you perceived the work displayed ?
- Do you, when looking at artworks in the space, also hear the space?
- (...)
- Where would you have installed a sound work ?
- How would you work with sound in this museum ?
- What would the ideal sound museum look and sound like ?

# VISITOR-ENVIRONMENT DYNAMICS (FORREST, 2014)

Noise causes mental tiredness, negative impact on concentration (Persinger, Tiller & Koren, 1999), psychological distress (Evans & Stecker, 2004)

- "(...) Noise can be synonymous with conviviality, excitement or interactivity... it can also be synonymous with confusion, chaos, overcrowding and the sabotage of contemplation and dialogue" (Sterne & De Luca, 2019, 301)
- [Créneau-Cressound](#)

Aesthetisation of space : articulating the links between stimuli and consciousness (ambient noise, smell, lighting, colour, traffic flow, etc.)

"The interference between what one hears in the headset and what one sees in the environment – the "visio-phonic node" mentioned by Thibaud – is reinforced through contextual narratives that amplify the process of projection of the imaginary linked to what one listens to in the places traversed (and vice versa). Thus, what one listens to rewrites the context, as much as the context (in continuous evolution) transforms what one listens to » (Biserna, 2015, 193–213)

# NEW AUDITORIUMS

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- What produces and generates an auditorium (listening space) ? (Joy, 2015)
  - "The auditorium is a place built according to acoustic standards and arranged for listening to a speaker or to musical or theatrical works" (Wikipedia)
  - The auditorium is a listening space, a place and a common moment for listening and interaction between listeners (concert hall, networked auditoriums, etc.)
- Understand the influence of distances and temporal "delays" on broadcasting and listening, to optimise listening by controlling trajectories, dynamics and positions in order to create an impactful architectural and scenographic context



Cloisons MBA France pour l'exposition « Benoît Clarys, le passé comme si vous y étiez ? » au Musée de Préhistoire de Solutré © SMGS.

# HEARING VERSUS LISTENING

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- Listening is a complex activity that suppresses or diverts sound information to a lower level
- CRESSON / Cressound
  - *Delocalization*: in other words, the recognition of an illusion as to the origin of the phenomenon, « implies the recognition of an error in the location of the sound source »
  - *Synecdoche*: « The ability to select one element or another » in a « complex sound environment ».
- The experience of listening to the museum is above all a **human science** before being an exact science (acoustics), « [...] each man selects what he wants to hear – or what his culture has taught him to hear » (Lortat-Jacob, 2003, 2)



# INCREASE LISTENING

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- Binaural listening : physiological discrimination allowing relief and spatialization
- New generations of headphones : SoundGuide (Sycomore, 2019), the Confident (RSF Studio), the connected Confident (AKKEN)...

« So in both cases, we say that we have to focus on listening through an acoustic tool linked to the ear, and this goes beyond listening with the ears alone. It is said that we must improve, increase human listening, and we talk about techniques to achieve this : methods of isolating oneself in a sound world, methods of participating in meaning and of paying attention to things in a different sound way »

(Between 3m16 and 5m04. Jonathan Sterne, *A l'origine des sound studies*,  
<https://www.franceculture.fr/emissions/la-suite-dans-les-idees/l-origine-des-sound-studies>)



Left : Robust and light, the Soundguide semi-closed headset developed by Sycomore enhances the value of immersive 'hands-free' visits ©Sycomore  
Right : The Confident (here, a 3D simulation) is the basis of the digital mediation system at the Hôtel de la Marine. It provides a sound path that follows the visitor's progress through the monument ©RSF

# THE HEYDAY OF LISTENING IN MUSEUMS

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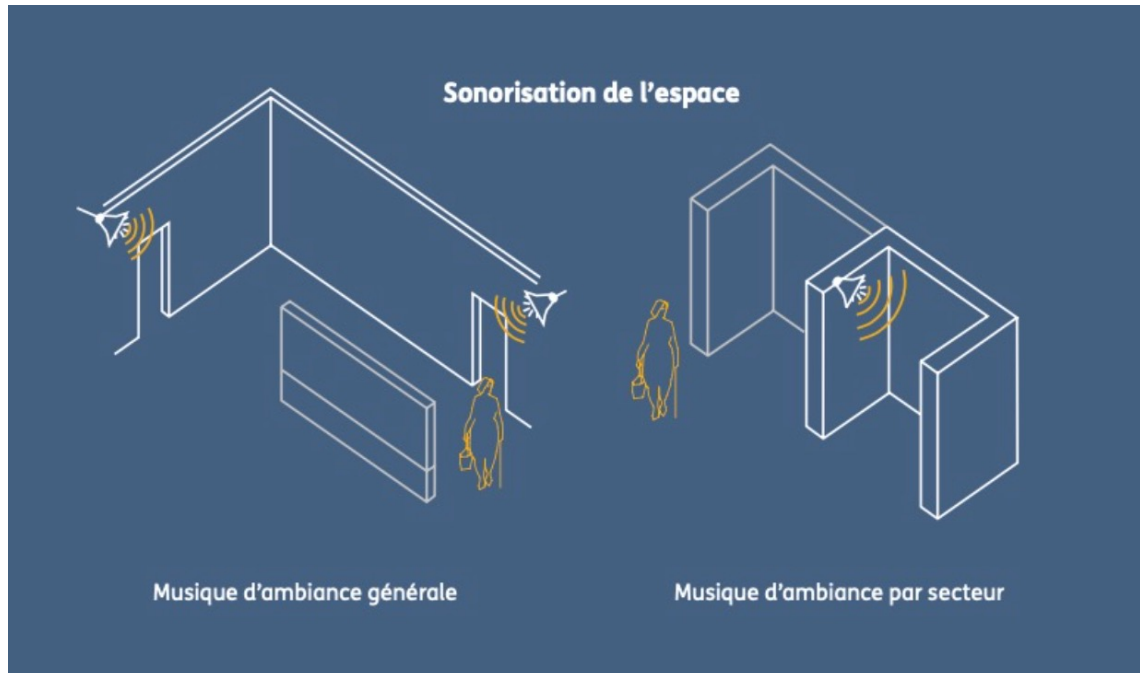
- Second half of the 20th century : development of artistic practices (sound and multimodal), curatorial practices, audiovisual heritage (collections, archives, ICH)
  - 350 exhibitions on the theme of sound since 1966 (Cluett, 2013)
  - Renewal and development of **interpretative environmental technologies** against a background of cultural democratisation (Salmet dir., 2016)
- **Listener's engagement** : How do we look at a work of art ? To : what does art do to us ? (Michaud, 2003)



Exhibition « Noises » - Museum of ethnography of Neuchatel  
©Musée d'ethnographie de Neuchâtel

# SOUND SYSTEM FOR MUSEUM SPACES

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Expositions et parcours de visite accessibles (2016), p. 199.

- Why sound in a museum space ? (Salmet dir., 2016)
  - Delineate the different thematic areas of the tour route
  - Improve the accessibility of the exhibition : accompany the visitor in the perception of a universe, double the textual information, reinforce the comfort of use of interactive and audiovisual devices)
  - Promoting immersive cognitive environments
  - Helping visitors find their way (fixed devices along the route or on-board devices)

# SONOGRAPHY

- Sonography (Leboeuf, 1999) : development of sensitive environments where emotions become the keys to a more intuitive and immediate understanding of collections
  - Writing : narration, atmosphere, soundscape, fiction...
  - Materials : in situ sound recording, field recording, composition, archives...
  - Production : stereophonic or binaural processing...
  - Dissemination : audioguide, headphone listening, dynamic binaural, quadraphonic...
- Sound as a document : « The instrument carries within it the music it generates » (Bruguière) ; « an audience that is curious about an instrument will necessarily also be curious about its music » (Gétreau & Aubert, 2002, 7)



Saam drum – Ringve Music Museum – Trondheim ©Mélissa Mathieu



View of the exhibition « Bob Dylan L'explosion rock 61-66 – introduction » ©William Beaucardet – Cité de la musique



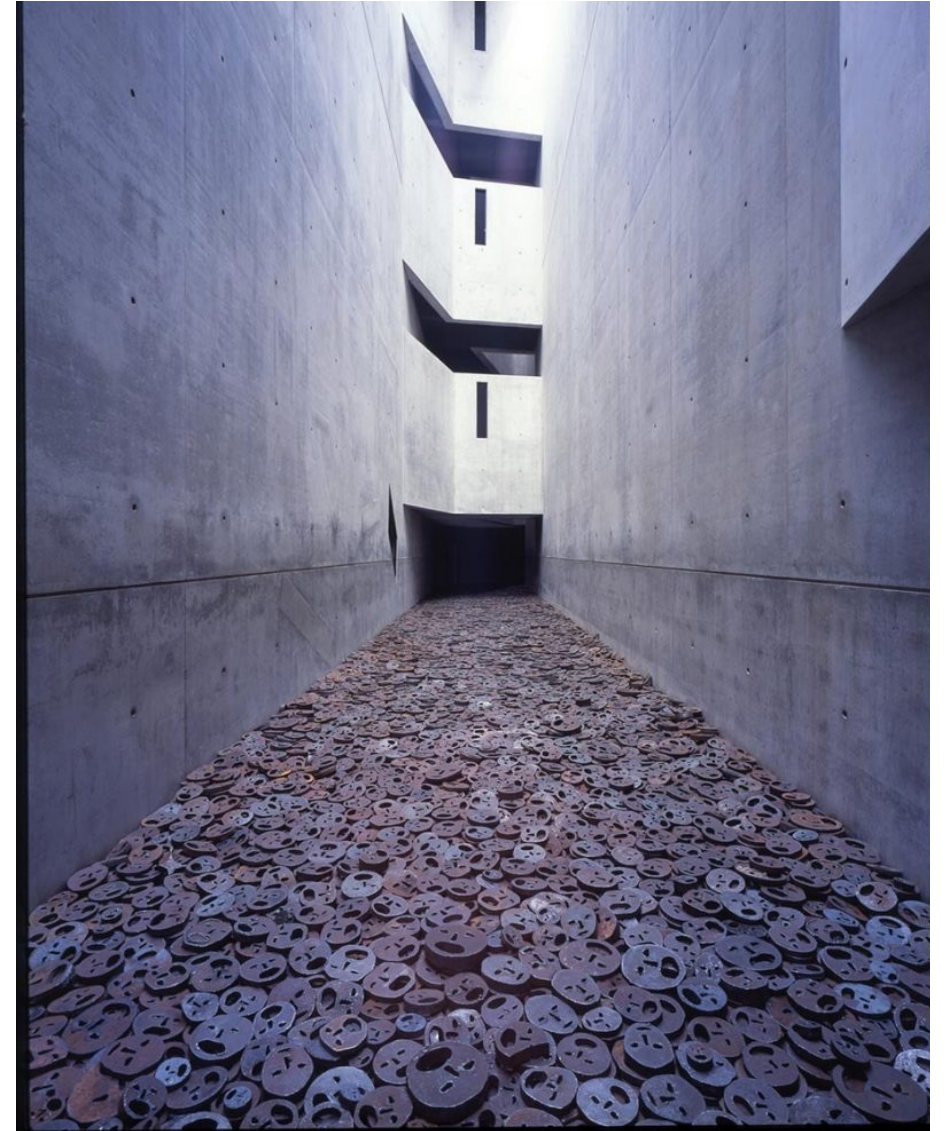
AN IDENTIFIED PROBLEM



# MUSEUM POLICIES

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- Maximisation of the experience in a positivist logic
  - Devices inspired by expertise in cultural marketing and design : « wow » effect, sensationalism, to increase museum attendance...
  - External service providers relying solely on empirical expertise
  - Innovations close to cultural consumption habits (networks, interfaces, headphone listening, applications, etc.)
  - Only quantitative studies : surveys, satisfaction surveys, statistics, etc.
- How effective are these proposals in transmitting knowledge and learning ? What do we mean by « immersive », « participative » or « interactive » ?



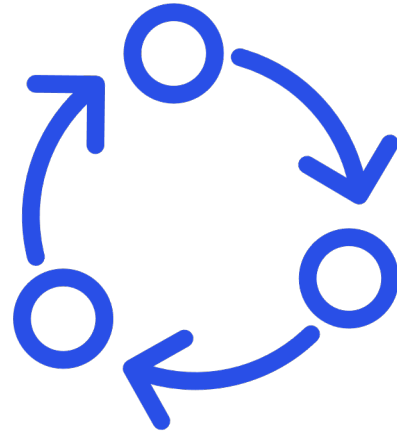
Jewish Museum Berlin ©La Terre est un Jardin

There are few or no links between museums, service companies and academic research



Artists, researchers and museum professionals carry out research in their own way but no joint research work

AN OBSERVATION



# THE CHALLENGES OF MY RESEARCH





# THE OBJECTIVES

To measure the effects of sound mediation devices in the appropriation of knowledge



Measuring the *efficiency* of these systems would make it possible to :

avoid going down a path defined by industrial logic

avoid instrumentalisation of listening

towards a *sensitive* mediation

# WHY IS THIS IMPORTANT ?

A knowledge institution with a role for democratic society

There is a need to better understand the effectiveness of these schemes because nobody really knows what "immersive" means and these technologies are

- expensive
- environmentally problematic (manufacturing, consumption, storage, maintenance, etc.)
- not always effective

# AN EXAMPLE OF AN EXPERIMENTAL PROTOCOL

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Measuring the efficiency of the audio tour for young people at the new Museum of Navy (Paris)



Press Kit – National Museum of the Navy

# THE DEVICE

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- Audio-guided tour for children (7-12 years)
  - Sound creation by Unendliche Studio / writing by Leïla Kaddour
  - 1 hour tour / 39 minutes listening time
  - 15 audio tracks: 13 selected works, an introduction + a conclusion
  - Distribution on a web-app (Livdéo)



Track 10. Works 9 and 10. Illustration by Gaëlle Hersent according to the « Renommée de la Réale » (1694) and the « Figurehead of the Iéna » (ca. 1846)



Press Kit – National Museum of the Navy

# MUSEUM OBJECTIVES

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- Accompany the child in his or her observation and understanding of the work
- To encourage the child to form an emotional bond with the work
- To allow the child to experience a real immersion in sound (soundscape + fiction)

# THE PROTOCOL

Objective : check the soundness of the media proposal

- Does the child actually become more interested in the work when accompanied by a scripted immersive audio device ?
- Do they learn and retain more information ?
- Do they experience more emotions during their visit ?

Description

- Quantitative methods / qualitative methods
- Sound fiction VS traditional commentary (audioguide)
- 20 subjects per device

# THREE STAGES

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## Quantitative methods

- Position in space, proximity to the artifacts, orientation of the head and gaze thanks a global behavioural measurement (Bougenies et al., 2016)
- Video sensors with facial recognition / machine learning processing for symptomatic expressions (Tisseron & Bass, 2011)

## Qualitative method

- Mediation exercise between children and parents : verbal clarification / study of reception (*Guide méthodologique sur les études des publics, 9*)



Thank you for listening !



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