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## Connecting the Past and Present through Sound: A Case Study from Elsinore

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and Stina Hasse Jørgensen

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## **Summary**

This paper examines how we can use sound to augment the present city of Elsinore with stories and atmospheres of ordinary life from the past. Based on a sonic design experiment in Elsinore exhibited in spring 2022, called LYDSPOR (*Sonic Traces*), the paper articulates important learnings across design research and museum stakeholders in the context of creating public cultural heritage dissemination using experimental sonic technologies. LYDSPOR took place along a street that connects the harbor with the medieval part of the city with buildings from the 16<sup>th</sup> century, churches and monastery. It consisted of three parts: two physical installations using transducers to play soundscapes that could be felt and listened to as vibrations through the body, and an app-based soundwalk along the street connecting the installations.

## Lydspor

in this paper we present LYDSPOR; an interactive listening installation which was developed in a collaboration between the Affective Interactions & Relations (AIR) Lab at the IT University of Copenhagen, CATCH – Centre for Art, Design and Technology in Elsinore, the Municipality and the City Museum of Elsinore in 2021-22. The outset of the project was the museum's wish to explore ways of moving the museum into the urban space, and how new technology could be used in the dissemination of historical knowledge through interactive experiences connecting the historical with the contemporary city. This resonated with the research agendas from ITU, namely to explore soma<sup>1</sup> and affective design perspectives in the creation of site-specific sonic cultural heritage experiences. LYDSPOR was exhibited in Elsinore in May and July 2022. Here, we will present insights from the process of creating the installation, how it was experienced by the public and the potential for future explorations.

Helsingør, Elsinore or Elsenaur. Elsinore is the only city in Denmark besides Copenhagen that has an English name. For the past 600 years, it has been an internationally known city, mainly because the payment of the Sound Toll was here, at the narrowest point between Denmark and Sweden for 400 years (1426-1857). It was a period that made Elsinore a rich city due to trade and international residents and visitors. The rich cultural heritage of those years, Kronborg, houses, churches and monastery are well preserved and visible throughout the contemporary city center and at the harbour. Since 2021, The Museum of Elsinore has had a vision to improve its dissemination of the city's visible (and invisible) cultural heritage in public space. The museum wishes to convey stories of the past events, people and aspects of everyday life that touch citizens and visitors in the present-day city in an emotional and enlightening way.

LYDSPOR is one result of this ambition; a site-specific sonic interactive experience that allows people to feel and sense narrative fragments of the past in the city of Elsinore. LYDSPOR uses sonic technologies and soundscapes to augment the existing space of the city with sounds and narratives as they might have appeared in the 16th and 17th century. The experience consists of three parts: two physical installations, one at the harbour, Sanden, and the other at Karmeliterhuset, and one app-based soundwalk through the street Hestemøllestræde, leading from the harbour to the medieval city around Karmeliterhuset, the monastery and several medieval churches.

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1 Here, some refers to the integration of body, movement, thought and emotion as expressed in Höök, K. *Designing with the Body: Somaesthetic Interaction Design*. MIT Press, 2018.

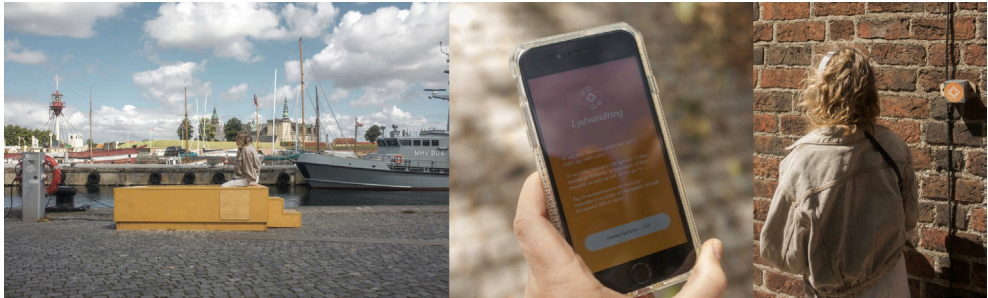


Fig. 1: The LYDSPOR sound experience: the transducer-based installation Sanden (left), screenshot from the LYDSPOR soundwalk app in Hestemøllestræde (middle) and close-up of a person listening to the Karmeliterhuset soundscape (right). Photos by Kasper Christian\$sen.

The soundscapes, sounds and narratives are based on historical sources describing life in Denmark and in Elsinore. A sound designer created the authentic soundscapes and sounds in all three parts, based on our instructions. Further, a playwright composed fragments of everyday stories and conversations that were dramatized by actors and integrated in the soundwalk through Hestemøllestræde. The first experience, Sanden, meaning the Sand, is a large physical installation formed so it invited you as a participant to step up and have a seat on a wooden bench-like edge (see Fig. 1, left). It was located in the harbour, and it used transducers to create a sonic bodily experience of the history of the area “Sanden”. Sanden was a diaspora community existing for a hundred years until 1658, where it was bombed and demolished in the second Karl Gustav War 1658-1660. In Sanden transducers emitted vibrations through the materials they were attached to; the wooden bench-construction. This meant that you as a participant needed to form a physical connection with the wooden material to get the full sonic experience. The sounds you both felt if you were sitting on the bench conveyed the story of the land on which the Sanden settlement was built. The soundscape moved from sounds of nature, over sounds related to creating the settlement, sounds from its lively heyday, the bombardments, to the return to nature. The second experience was a physical installation located at the wall of Karmeliterhuset, one of Elsinore’s oldest buildings from 1520. This installation also used transducers to convey the historical use of the building. Over time, the building has changed its function and use; as a hospital for foreign sailors, a horse mill, a noble residence, and a poor house. In this installation, the sounds you could hear as a participant came from three different sound boxes positioned in different levels at the wall of Karmeliterhuset (see fig. 2); one at head level, one around the waist and one near the ground. The sounds from the boxes represented both human and non-human sounds that

could have been heard in the house according to the position of the sound box; the sounds of latin words spoken and coughing, the sounds of clinking cutlery, the sounds of footsteps and mice. The third experience was an app-based soundwalk heard through headphones along Hestemøllestræde, a street stretching from the harbor to Karmeliterhuset, thus connecting the two physical installations. Here iBeacons, that use Bluetooth technology to track position and play content, and a custom designed app gave access to an aural experience of what it was like to walk the streets of Elsinore approximately 500 years ago. As a listener, you could hear the soundscape change as you moved away from the harbour with seagulls, the ocean, fish sellers, and walked closer to the church and monastery with the sounds of bells, chanting monks and vending women coming closer to you . As you walked along the way, you could hear parts of conversations voiced by actors, between historic characters e.g. scientist Sophie Brahe who lived in the street and her cousin Tycho Brahe, women gossiping about a woman accused for dark magic, prayers from inside the church and children playing.

## Creating LYDSPOR

When creating LYDSPOR, the researchers from AIR Lab explicitly aimed to explore if it was possible to design an interactive affective and somatic listening experience that would allow people to engage with past lives, environments and events in the present-day city. A key approach was to focus on the sensorial elements of the historical past, in order to give the present-day listener a sonic and bodily experience with an authentic situated everyday environment representing historical scenes that could have happened in the surroundings where LYDSPOR took place. When attempting to construct a soundscape<sup>2</sup> of the past, we drew on historical sources and descriptions of Elsinore in the past,<sup>3</sup> as well as broader studies of the soundscapes of the early modern Danish and European town.<sup>4</sup> The early modern soundscape was for instance characterized by animals living in domestic houses, noise from artisanal work and from clogs resounding against the cobbled surface of the streets.

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2 Schafer, R. M. *The Soundscape—The Tuning of the World* (2nd ed. Destiny Books, 1994).

3 Appel, L. and Linaa, J. 'The townscape of Elsinore: Reconstructing the street layout, plot structure and population profile of a demolished part of town'. In Linaa, J (ed.): *Urban Diaspora: The Rise and Fall of Diaspora Communities in Early Modern Denmark and Sweden*, Archaeology – History – Science (Jutland Archaeological Society Publications, 2020) 119-149.

4 Ørnbjerg, J. 'Byens Lyde' in Thelle, Mikkel og Toftgaard, Jens, red.: *Danmarks Byer under Renæssance og enevælde, 1550-1850*, Aarhus Universitetsforlag, 2023. Garrioch, D., 'Sounds of the city: The soundscape of early modern European towns' i *Urban History*, 30(1). doi:10.1017/S0963926803001019 (2003), 5-25.

The sonic explorations of the sound of everyday life in the 16th and 17th century city of Elsinore, was also carried out in order to map the “infra-ordinary” dimensions of past lives. Here, the work of French author Georges Perec,<sup>5</sup> who develops the notion of the infra-ordinary in opposition to the extra-ordinary, is a direct inspiration. Perec argues that we should direct our attention to the infra-ordinary defined as “(...) the banal, the quotidian . . . the background noise, the habitual”<sup>6</sup>. We wanted to explore the past through the infra-ordinary sounds, and give people an affective and bodily experience of some of the things that are not often the focus of attention; how the street and buildings sounded, often used languages, the wind, garbage in the street etc. Rather than only focusing on historical events and conversations between famous historical figures, these infra-ordinary sounds both connect and show differences between the contemporary and past city life. In the end, we included historical figures in the soundscape, but they were not the key drivers of the sonification of the past. To focus on the infra-ordinary stories was inspired by a previous project of one of the researchers, who developed a site-specific machine – *Ekkomaten* – for listening to echoes from the historical past in the contemporary city.<sup>7</sup> LYDSPOR, however, was more explicitly attuned to the more-than human and evocative, poetic nature of the soundscape as a means to create bodily and affective engagement.

## Experiencing LYDSPOR

Based on randomized observations by the project partners (AIR and the City Museum), we have calculated that several hundred users did interact with the Sanden installation during the operating months from May to August 2022. Fewer interacted with the Karmeliterhuset installation. Most only listened to or felt parts of the soundscape before moving along while others listened to the whole piece. A minimum of 200 children interacted with both the physical installations during the summer holidays in connection with a treasure hunt for Elsinore’s stories, finding a specific sound in each installation. 263 people downloaded the soundwalk app in Hestemøllestræde on their phone, which is an average of 5,8 per day in May, with a peak of 20 downloads the opening day and 4,5 per day in July.

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5 Perec, G. *Species of Space and Other Pieces*. London: Penguin. *Excerpts from L’infra-ordinaire*. Paris: Seuil, 1991, (1997), 206.

6 Perec, G. *Species of Space and Other Pieces*. (1997), 210.

7 Fritsch, J., Breinbjerg, M. & Basballe, D. ‘Ekkomaten: Exploring the Echo as a Design Fiction Concept. *Journal of Digital Creativity*, 24:1, (2013), 60-74.





Fig. 2: People interacting with the different parts of LYDSPOR. Photos by the authors.

We evaluated the LYDSPOR experience with participants conducting qualitative interviews and test sessions (9 as part of a focus group and 12 individual deep engagements, see Ryding et al. 2023 for more on this procedure, along with 10 answers from a quantitative survey). One of the key findings relate to how bodily engagement with historical fragments through sound led to new affective experiences of locations in the contemporary city with both emotional and intellectual affiliations. Several participants reported attention to the stomach and the chest area as they reacted emotionally to the installations. Clapping his stomach, Olle, a retired physician, said about his experience of Sanden: ‘I felt it in my stomach because I know a bit about the war at that time and that it was really, really ugly’.<sup>8</sup> Regarding the soundwalk through Hestemøllestræde, two users remarked that it gave them a strong sound experience, and that the soundscape and the voices worked well together to create an affective and authentic experience connecting past and present.

On a somewhat more practical but equally important note, we found that the sound volume at the installations affected people’s interactive experience. Both installations had transducers attached to the inside of their wooden containers, which acted as contact speakers, spreading the sound throughout the surface. By touching the surface with a body part, the sound could be felt as vibrations traveling through the body. When the volume were low, the participants needed to lean in and touch the surface with the ear in order to hear it clearly. When the volume was high, one could hear the sound through the wood, without touching the surface. The sound at Karmeliterhuset was low at first, with the intention to urge people to lean in and touch the boxes with the ear. However, we saw that most people stopped in front of the installation without interacting with it. Some people did not understand how to access the experience, or they felt uncomforta-

8 Ryding, K., Tsaknaki, V., Jørgensen S. M. H., and Fritsch, J. LYDSPOR: An urban sound experience weaving together past and present through vibrating bodies. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI ’23). Association for Computing Machinery, New York, NY, USA, Article 184, (2023) 12. <https://doi.org/10.1145/3544548.3581523>.

ble positioning their body in an unusual position in public space. When the volume was increased during the summer this changed. We could see a delicate balance between the intimate experience of listening to the materiality of the installations, and of using sound to attract attention in public space. In the case of LYDSPOR, this also led to a few noise complaints from people living in the city, which warrants more participatory considerations for future deployment.

## Understanding the historical meaning of LYDSPOR

When compared with other site-specific designs in the context of heritage dissemination, we used a different approach in LYDSPOR than the one taken for example by researchers Udsen and Halskov whose goal was to create an ‘authentic’ experience of the past soundscapes of a historical site.<sup>9</sup> In LYDSPOR we used a more poetic approach, focusing on an evocative rather than only strictly accurate historical accounts. One of the reasons for this was that we did not have the that many source materials to fully describe the sounds of the past, or the everyday people living there. Further, we were interested in creating a dramatization that would engage people, and not only inform them about the past. One might ask: how did this affect people’s perception of LYDSPOR as a museum dissemination piece?

All our respondents experienced a site-specific sense of the past in all three parts of LYDSPOR: ‘[at Sanden I] got the feeling that I was standing in a historically important place where there had been a war/bombing’, one user explained. The sounds at Karmeliterhuset were ‘interesting’ and ‘provided a peephole into the past’ others said, and of the soundwalk in Hestemøllestræde on participant e.g. noted ‘[I] got a sense of how this street has sounded in the past’.

In our data, we see a difference between the understanding of those who were guided before and during the experience and those who accessed the experience on their own. One of the guided persons said: ‘It was difficult to access the experience unguided, but with guidance it became a very atmospheric and sensuous experience of history, than more traditional forms of narrative dissemination.’ At the installation at Karmeliterhuset one found it ‘difficult to figure out the meaning with [the different discrete sounds in the boxes], and another found ‘it ‘a hassle’ to bent down and listen to the soundboxes. Although all our respondents listened to all three boxes, we observed other people stopping in front of the installation, looking at it and passing on. The soundwalk along Hestemøllestræde gave a good

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9 Udsen, A., and Halskov, K. Soundscape design for historical buildings as a sonic place-making process, in Lockton, D., et.al (eds.), DRS2022: Bilbao, 25 June - 3 July, Bilbao, Spain (2022). <https://doi.org/10.21606/drs.2022.178>.



sense of the past according to our respondents but also received comments like ‘It would have been nice if the content had been written down to guide me’ and ‘I gave up downloading the app as I couldn’t get it to work’. These comments present common problems between tradition and innovation, between making cultural heritage dissemination to be discovered rather than taught, and in the ambition of including differently motivated participants with different levels of technological literacy. At the same time the comments point to important thresholds and the need to experiment with different ways of disseminating the historical past when designing museum installations in public space for a diverse audience.

## Conclusion

Based on our observations and evaluation LYDSPOR offered people a site-specific, affectively engaging sonic experience of the past through poetic storytelling. It conveyed a sense of a historic atmosphere and people often related to the everyday and infra-ordinary stories from the places in which the installations were situated. The sound transducers and the physical shape of the installations seems to have given users a bodily experience that increased the value and intensity of the experience. Whereas the novel technologies can themselves become part of the experience, or actively enrich the experience, we also see examples of how they become thresholds for engaging with the content, for instance when having to download an app for the soundwalk. New and unusual forms of historical dissemination take time to decode and use to their fullest potential, but collecting the data on reception and use in this pioneer project can help us improve these types of on-site sonic dissemination of dramatized historical knowledge in the future.

One of the visions behind LYDSPOR was to move the museum dissemination out in public space to reach people who do not normally visit museums and thereby draw their attention to the history embedded in Elsinore’s contemporary city. In particular using the infra-ordinary sounds and the poetic soundscape to convey historic on-site atmosphere across time in the contemporary city, has a potential both the museum and the design researchers would like to follow in a further project. We also see the LYDSPOR project as a first, large-scale attempt in combining the different perspectives and agendas of both a museum and design researchers, and look forward to future collaborations.<sup>10</sup>

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10 We thank all our collaborators and stakeholders: Vasiliki Tsaknaki (IT University of Copenhagen), Majken Overgaard (CATCH, Elsinore), Laura Albeck Ibsen (Municipality of Elsinore), Halfdan Hauch Jensen and Thomas Kaufmann (AIR Lab, IT University of Copenhagen), Johan Gelinder (While Loops Interactive), Finn Markwardt (Mastermind Production), Sophie Bredal Zinckernagel, Ada Ada Ada and Rina de Place Bjørn. Finally, we thank all the people who participated in our evaluations. The project was generously supported by WS Audiology.

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