



NATURE SOUNDS IN A HYPERMARKET

A case study on the modified soundscape of commercial spaces in Finland

You're only in the parking lot when you can already hear the music, and it gets somewhat louder when you approach the sliding doors of the hypermarket. After crossing the hallway, you enter the interior goods section through the automatic swing gate, which clatters when the gate collides with the pole. Suddenly, the music mixes with another piece playing from the car stereo aisle, and only a few metres away, there is a loud digital display unit playing music and dialogue, advertising a lawnmower. At one point, you hear all the three different pieces of music concurrently. Leaving the cacophony behind and strolling ahead towards the produce section, you unexpectedly hear the familiar sound of a bird singing cuc-koo, cuc-koo, cuc-koo. As you are walking towards the fruit and vegetables section, you are suddenly surrounded by the sounds of a humming forest. (Recorded listening walks 16.9.2016.)

This study examines the use of nature sounds and sound design in a semi-public commercial space. The hypermarket experience narrated above represents one of the experiences of the participants of our study. Music can be heard in most semi-public commercial spaces – coffee shops, malls, at the hairdresser's, airports, buses et cetera. Sound researcher Jonathan Sterne (1997: 23) argues that

commoditised music has become “a form of architecture [...] a way of organizing space in commercial settings”. He continues, “Americans take for granted that almost every commercial establishment they enter will offer them an endless serenade during their stay.” This statement from the 1990s holds true in most of today’s retail context as well.

In Finland, background music is usually chosen by a radio station’s head of music; it is most likely that customers sitting in a taxi or a hairdresser’s seat are listening to a commercial radio broadcast. Radio is the most common source of music in restaurants (44 per cent) and stores (65 per cent) as well, although music streaming services are beginning to take over some of this share. In 2017, 26 per cent of music played in restaurants and 18 per cent of music played in stores came from domestic and international streaming services. (Teosto 2017.) However, music is just one option for the acoustic design of commercial spaces. This article presents a case study of people’s perceptions of nature sounds in a hypermarket.

The aim of the case study was to examine people’s perceptions and meaning making of sounds in a semi-public commercial environment. It also intended to evaluate how listening walks and group interviews as research methods can inform acoustic designing and how this information can be used to enhance the everyday experiences and the personal and collective meaning-making in commercial environments. Since the data gathering methods of this case study include soundscape modifications, it can be considered as an empirical experiment. Here, the nature sounds are part of a breaching experiment (Garfinkel 1984), which aims to make the study’s participants conscious of the hypermarket’s sonic environment by using unexpected sounds. The nature soundscape recording was approximately five minutes long and consisted of typical natural sounds from Finland such as that of forests, lakes and birds.

This case study is part of a larger research project called *Värinä, Health supporting multisensory food environment*, funded by the Finnish Funding Agency for Technology Tekes (since 2018 Business Finland). *Värinä’s* multidisciplinary research team has studied how the built environment and the visual and aural characteristics of space affect consumer behaviour (for example, food choices) and feelings of aesthetic pleasure. The main research question of the project is whether environmental factors such as sound can guide people to make healthier

food choices. The project aims to contribute to the principles used to design food-related environments that support healthy choices. It consisted of several case studies that were conducted in lunch restaurants, the fruit and vegetable section of a hypermarket and fine dining pop up-restaurants in the cities of Seinäjoki and Tampere as well as in the sense laboratory at the Functional Foods Forum (University of Turku).

This article presents the results of the case study conducted in the fruit and vegetable section of a hypermarket, while the results of the other case studies have been previously published (see, Aaltojärvi et al. 2018; Aaltojärvi et al. 2017; Kontukoski & Uimonen 2016; Kontukoski & Pitkäkoski 2016). Securing financing from Tekes also required funding from the project beneficiaries (see the final project report Hynynen et al. 2018). Minimani Yhtiöt Oy (Minimani Companies Ltd.) was one of the project's commercial partners, and the case study was conducted in one of their hypermarkets. In the retail sector, the term "hypermarket" signifies a market that combines a large grocery store and a department store into a single entity (with a sales area of over 2500 square meters), where customers can buy both food and goods. Minimani with its expansive parking lot is located near the Seinäjoki city centre. It is a typical example of a Finnish hypermarket that also includes postal services, restaurants, and specialized shops.

The interests of both parties were discussed at a joint meeting including the research group members and Minimani's managing and sales directors. Minimani's interest in selling more quantities of diverse fruits and vegetables was in line with the Värinä project's interest in supporting healthy food choices. However, the case study was conducted strictly from the research point of view, while Minimani provided the physical context for the fieldwork.

The theoretical approach of the study derives from cultural musicology and soundscape studies. The case study contributes to the aesthetic qualities of acoustic design by aiming to understand the affective potential of ubiquitous music and sound ambiances. From a methodological point of view, the study is also rooted in the field of applied ethnomusicology as it engages different parties in the process of producing and utilising knowledge (Harrison 2016; Harrison and Pettan 2010). While researching people's perceptions of sounds in a hypermarket, it was also possible to examine another concrete problem—customers' tendency

to spend only a short amount of time in the fruit and vegetable section and their preference for always buying the same, familiar products. At a joint meeting with the sales manager, a common vision was formed: if customers spend more time in and/or have a unique experience in the fruit and vegetable section, they might make more purchases. Although this hypothesis was not an actual research question, we were able to focus on it during the implementation of the research design. Such solutions to both research problems and concrete problems via practical interventions are essential in the field of applied ethnomusicology.

This article is divided into four sections. I begin by explaining the study's key concepts of *acoustic design* and *ubiquitous listening*, which will be positioned in the context of the study's theoretical framework. Second, I describe the collecting of research material and methods used. The third part of the study presents the research data and analysis, followed by the conclusions.

Acoustic design and ubiquitous listening in semi-public commercial spaces

The term *acoustic design* can be traced back to the Simon Fraser University, Vancouver, Canada, and the professor and composer R. Murray Schafer who introduced the concept of soundscape studies in the late 1960s. The term *acoustic design*, inspired by the Bauhausian concept of *industrial design* from the 1920–1930s art school in Weimar, Germany, served as an umbrella term for a multidisciplinary approach to studying sonic environments. Its focus was on sound in its different forms and environments, and at its centre was the responsible listener who was interested in the qualities of his or her living area's environmental sounds. The goal was to contribute to environmental planning from the perspective of acoustic design. (Uimonen 2013, 2002; Schafer 1994 [1977]: 205–206, 237–245.) Schafer (1994 [1977]: 271) defines acoustic design as an interdisciplinary subject that seeks out the “principles by which the aesthetic quality of the acoustic environment or soundscape may be improved”.

The researchers adapted methods from musicology, the social sciences, psychology and architecture. The methods of the early soundscape studies included sound preference tests and interviews to map residents' sonic

experiences, which well suited the researchers' strong aspiration to raise people's awareness of the sonic environment. (Schafer 1994.) Researchers have also drawn attention to sounds and soundscapes that are disappearing. In Finland, for example, there have been several large-scale projects that have collected soundscape memories (Uimonen, Kytö and Ruohonen 2017; Järviluoma et al. 2006). Soundscape researchers have also studied changes in the acoustic environments of European villages (Järviluoma et al. 2009) and raised awareness about Europe's acoustic heritage (Kytö, Remy and Uimonen 2012). For instance, some recent Finnish case studies on soundscapes have been conducted in public libraries (Sahavirta and Kytö 2017) and ancient sacred places (Rainio et al. 2017; 2014). Apart from music research, sonic environments have also been studied in the fields of history, sociology, social psychology, media studies and consumer behaviour research (Aiello et al. 2016; Aletta et al. 2016; Blesser and Salter 2009; Bull 2002; Hargreaves and North 2000; Hynes and Manson 2016; Liu and Kang 2016; Michel et al. 2017; de Nora 2000; North and Hargreaves 2009; Sterne 1997).

In this study, customers at a hypermarket were asked to ponder the meanings of acoustic design in everyday environments and to practically compare two alternative soundscapes on consecutive days. It is common to assume that most people do not pay much attention to music and sounds that do not demand our attention but that simply surround us during our everyday life routines in commercial environments. Anahid Kassabian (2016: 201) notes that because of the development of digital technologies for listening (not to forget the history of commercial radio and Muzak), we have become used to doing other things while listening.

However, in her book *Ubiquitous Listening*, Kassabian (2013) argues that ubiquitous music is actually not as much about being heard as about being sensed. When entering a hypermarket, the music that fills the aisles does not invite us to analyse it and unravel its meaning. Rather, it is there to make us feel something. Kassabian calls this *ubiquitous listening*, which in turn creates non-individual distributed subjectivity that is "a form of subjectivity that does not engage individuals as individuals, but rather both human and nonhuman, part objects and part subjects, in fields of activity that create ebbs and flows of subjectivities without discrete individuals as specific subjects" (Kassabian 2016: 201; see also Kassabian 2013: xxiv). Moreover, ubiquitous music creates

space: “They articulate what we think of as internal and external to each other, creating [a] dynamic relationship that takes place without regard to any discrete, individual subject”. One of the features of ubiquitous listening is that it “reshape[s] our relationship to space itself” (Kassabian 2013: 106, 112; see also Uimonen 2015).

Sound artist and writer Brandon LaBelle (2012: 4) goes a bit further by arguing that “sound is always already space itself” instead of being solely “an addition to architecture, lending a particular openness”. LaBelle defines his interests as acoustic spatiality and diverse experiences of auditory phenomena. His viewpoint on sound seems to come somewhat close to Kassabian’s concept of distributed subjectivity. He says:

[S]ound operates as an emergent community, stitching together bodies that do not necessarily search for each other, and forcing them into proximity, for a moment, or longer. Such movements bring forward a spatiality that is coherent and inhabitable, that opens up spaces for sharing, as well as being immediately divergent and diffuse, that is, temporal and multiple, noisy. Acoustic spatiality in other words forces negotiation by being constituted with the feverish energies of so many interruptions. (LaBelle 2012: 1.)

These temporal, spatial and social dimensions of sound are also present in music theorist Ola Stockfelt’s writings about different listening practices. Stockfelt (1997) rejects Theodor Adorno’s (1976) idea that focused listening is the only critical mode of listening to music. Instead, he argues that listening practices, circumstances and musical genres actually affect and produce each other. Sounds are always spatial and temporal and shaped by the listener’s attitude, ability to hear, and personal and cultural experiences (Augoyard and Torgue 2008: 3–4). As a result, the musical or aural ambiance is always variable in nature.

Keeping these definitions in mind, we wanted to study how a carefully designed sound environment affects people’s perceptions of space, what kind of emotions the transition from a musical ambiance to a nature ambiance evokes and how they verbalise their experiences. The nature sounds, as removed from their original context and imported into the context of a hypermarket, were

experienced and analysed by the study participants to examine everyday listening situations in which ubiquitous listening takes place.

A case study in a hypermarket: Research questions, data and methodology

In this case study, our main aim was to examine people's perceptions and meaning making of the sounds of a commercial semi-public environment. In addition to the customary hypermarket soundscape that includes music, the study participants were also exposed to alternative and unexpected soundscapes of nature sounds in the fruit and vegetable section. As we had the opportunity to conduct the research in an actual hypermarket, we could also examine whether the alternative soundscape had an effect on the sale of the fruit and vegetables.

The research data was collected in the fall of 2016. The study aimed to answer the following four research questions:

- 1) How did people experience the hypermarket's overall soundscape?
- 2) How did people experience the nature soundscape of the fruit and vegetable section
- 3) What kind of information can listening walks and group interviews as research methods provide for acoustic designing, and how can this information be used to enhance everyday experiences?
- 4) Can nature soundscapes in the fruit and vegetable section have an impact on the sales figures?

The methodology of the study is multidisciplinary as it includes several qualitative fieldwork methods typically used in cultural musicology, soundscape studies and sociology. The methods used were frame analysis, a breaching experiment, recorded listening walks and focus group interviews. These are explained in more detail in the following chapters.

Framing theory and analysis

The focus group interviews were subjected to frame analysis (Goffman 1974) to get information on people's experiences, actions and understanding of the soundscapes of a commercial space. Framing theory and analysis is widely used in the social sciences and in communication studies. For example, in news production, framing occurs in two ways: First, journalists edit a news article within familiar frames of reference. Second, readers adapt these frames and see the world from the journalist's perspective. This being said, we are aware that critical readers do not just passively adapt frames, instead, a critical reader can also see and recognise the frames used in a news article. Accordingly, in this study, the basis of the framing theory lies in social constructionism. As communications researcher Baldwin Van Gorp (2007: 62) puts it, social constructionism's approach in the context of media studies "emphasizes the role of an active, interpreting, meaning-constructing audience". Also, the meaning of culture is embedded in the framing process. Frames are part of culture and are therefore rather stable. As Goffman (1981: 63) writes, "frames are a central part of a culture and are institutionalized in various ways" (see also, Van Gorp 2007: 63).

Frames consist of *framing and reasoning devices*, the former referring to word choice, metaphors and arguments, and the latter referring to the statements that deal with justifications and causes. In the analysis of the group interviews, I identified various framing and reasoning devices and have represented them in the form of a matrix. I have further constructed the frames by identifying logical chains of framing and reasoning devices. (Van Gorp 2007: 72.) These frames are discussed in relation to cultural phenomena regarding acoustic design.

When applying framing theory to music production in a commercial space, the hypothesis is that between background music producers and customers, there are also culturally shared repertoires of frames. However, frames are rather stable and, as such, we do not generally notice them in our everyday lives. Moreover, since we are unaware of the frames, it is hard to talk about them. In this study, we wanted to challenge these familiar frames by adding nature sounds to a space and place where they are not usually heard. This modification of the familiar soundscape comes close to sociologist Harold Garfinkel's (1984: 37) method of breaching experiments in which "the unnoticed backgrounds of everyday activities" are made visible and, in this case, heard. The theoretical ground of

Garfinkel's method lies in Erwing Goffman's work on the everyday behavioural norms and construction of social meanings (Goffman 1963; 1971).

Modified soundscape in the fruit and vegetable section

Here, the aim of the breaching method was to use unexpected sounds to make the participants of the listening walks conscious of the hypermarket's sonic environment. However, nature sounds were not chosen in order to use simply anything unexpected that would help to break the familiar soundscape of the hypermarket. *The Värinä* research group expressly wanted to use nature sounds for several reasons. First, nature sounds can evoke cultural and personal images associated with the hypermarket's fresh produce (see, for example, Verhoog et al. 2003). These sounds were also chosen to represent an alternative soundscape instead of the familiar musical ambiance, and, lastly, they were chosen for the alleged positive impact of nature sounds on people's general sense of wellbeing. Previous studies in the field of medicine and psychology argue that listening to nature sounds can help people relax and also reduces stress (see, for example, Alvarsson et al. 2010; Arai et al. 2008). However, from a cultural viewpoint, the stress-reducing effect of nature sounds is not self-evident. The experience of nature is always rooted in a particular cultural context, involving articulations and associations that may not always be relaxing. For example, nature sounds may be associated with heavy forestry work or unpleasant encounters with wildlife. Although the traditional definitions of Finnishness often emphasise an intimate relationship with nature, in fact, Finns spend less and less time in nature and forests (Vikman 2006).

Finally, we were inclined to use nature sounds because, from a general viewpoint, it is the most obvious choice when aiming to create a relaxing sound environment, and it has not yet been empirically studied in the context of a hypermarket. Indeed, very little has been written on the affect of nature sounds in commercial spaces in general. Consumer behaviour researchers Spendrup, Hunter and Isgren (2016) examined the relationship between nature sounds, connectedness to nature, mood and willingness to buy organic food. Their study results indicate that nature sounds had a positive effect on the willingness to buy organic food in a group whose initial intentions to buy were low. However, the

researchers did not find any evidence that nature sounds could influence mood or connectedness to nature.

Our aim was to create a peaceful soundscape, creating a pleasant atmosphere for the customers. First, the two researchers Maija Kontukoski and Heikki Uimonen, along with sound designer Sami Silén, carefully listened to and selected a variety of nature and animal sounds that can be heard in Finland and South Ostrobothnia to identify the most pleasant sounds. We did not want to use sounds that were associated with agriculture and domestic animals or related to farm work as we wanted people to feel relaxed. We also pondered the rhythm and sound level dynamics of the nature soundscape.

Finally, we selected the sounds of forests, birds and lakes that represent typical sounds of natural environments in Finland (for example, the bird sounds included those of a cuckoo, a blackbird, a curlew, an arctic loon and several other small birds). We were aware that the choices might also be interpreted as stereotyped sounds of Finnish natural environments. These sounds were arranged in a narrative form so that the listener felt as if he or she was being led from a forest to a grain field and then to a lakeshore. By doing so, instead of using a simpler soundscape consisting of, for example, sounds of forests and small birds, we were able to provide more stimuli for the listeners that they could later discuss in their group interviews. The nature soundscape was approximately five minutes long and was played on loop in the fruit and vegetable section. The sound level of the recording was carefully adjusted to fit the hypermarket's general soundscape. Both groups of study participants heard the entire nature soundscape during the listening walks on the second day.

Listening walks in the hypermarket

A *listening walk* refers to an act of walking and listening to the environmental sounds and paying attention to the thoughts they evoke. During a recorded listening walk (Uimonen 2011), interviewees are encouraged to share their opinions and sensations with the researcher. In this study, the listening walks were recorded, but the participants were asked questions about their experience only later in the group interviews.

Four listening walks and two group interviews were conducted in a hypermarket in Seinäjoki, Finland, in September 2016. I examined how the two groups – one consisting of females and another of males – perceived two different kinds of soundscape settings in the hypermarket. The first was the ordinary soundscape of streamed background music provided by the hypermarket, and the second was the designed nature soundscape played in the fruit and vegetable section. As both groups were exposed to both settings, they could compare their experiences of the two different listening walks.

The listening walks were recorded so that it would be possible to return to the sound environments later. The participants walked in a queue, led by the researcher, along a pre-planned route through the hypermarket. Each listening walk lasted approximately ten minutes, including three short stops on the way. The first stop was in the auto electronics section, the second in the fruit and vegetable section and the third stop in the dairy section.

Focus group interviews after the listening walks

Focus group interviews were conducted to gather data about the study participants' experiences and meaning making of the listening walks. Typically, focus group interviews are more like group discussions of five to eight people, discussing a pre-defined and limited topic guided by the researcher (Robinson 1999, 905). The subjects were divided into two homogenous focus groups in order to facilitate the discussion. Typically, this involves forming groups based on features like gender, educational background, profession, shared experiences, et cetera (Mäntyranta and Kaila 2008: 1509). In this case, the focus groups were formed based on age group and gender. This is because past research in Finland involving focus groups has shown that the tempo of conversation varies greatly between different age groups (Pötsönen and Välimaa 1998). Also, studies in consumer behaviour show that there are major differences in consumer behaviour among women and men in the retail context (see, for example, Fischer and Arnold 1994). Twelve people were recruited for the study – six women and six men – via mailing lists of the University Consortium of Seinäjoki. Ultimately, only ten participants – five women (38–50 years old) and five men (32–49 years old) – showed up and participated in the listening walks and group interviews.

After the second listening walk, both groups had an interview lasting 45 minutes (women) and 60 minutes (men). The interviews were conducted in a meeting room at the hypermarket. At the beginning of the interviews, the participants were asked to read a short excerpt from a news item on the subject of how background music is being used in shopping malls to influence customers (*Taloussanommat* 30.1.1999). The text was used as an icebreaker to facilitate interaction between the participants (see, for example, Barbour 2007: 84–88; Stewart et al. 2007: 92). Also, by first reading the text about the effects of background music on customers, the participants could articulate their own standpoints about whether they agreed or disagreed, which made it easier for them to share their own personal experience of the subject. I then asked them questions about the sounds of the hypermarket and especially its fruit and vegetable section, which sounds they liked and disliked, previous sound experiences in public and commercial places and their idea of an ideal soundscape. After the focus group interviews, each participant received a token gift as a surprise reward for their participation. The interviews were transcribed for analysis.

Framing the hypermarket soundscape experience

A frame analysis of the group interviews resulted in the identification of four frames of interpretation: 1) valuing background music; 2) typical sounds of a hypermarket; 3) the sonic coherence of space; 4) soundscape as an enhancer of interaction. In the following chapters, these frames will be discussed and examined more carefully.

Valuing background music

In both group interviews, after reading the news item described earlier, the participants started to talk about their own experiences with background music in commercial environments. They discussed their experiences of background music in clothing stores, at the hairdresser's, in restaurants, flea markets and at pubs. They had both positive and negative experiences.

[P]robably over ten years ago, I was in a clothing shop where Sting's music was playing, and I remember thinking, 'it is wonderful to be here'. There was nothing special about that day, but I remember it very well [...]. I had a good feeling [laughing] at the clothing store! It wasn't even my favourite music. (F40b.) (Interviews were conducted in Finnish. English translations by the author.)

I've had experiences where I'm having such a contradictory feeling that I need something from here [store], but I just can't stand being here. (M49)

The interviewees also discussed the hypermarket's background music. The music was produced by Mood Media Finland Oy, part of the multinational Mood Media Corporation, which acquired several multisensory branding and background music companies in the 2010s, including American background music company Muzak Holdings in 2011. During the study's listening walks, the hypermarket's background music consisted of mid-tempo, soft vocal pop music sung in English. The interviewees expressed their opinions on the music and compared its various aspects. One interviewee (F40) wondered if the background music was more pleasant because of the vocals compared with instrumental music, while another interviewee (F41) wondered if "real background music" was "real music".

I didn't like the background music on either day. I just kept thinking [...] can this really exist? What is this—is this real music? And if this is some kind of real background music, then maybe it's not music at all. (F41)

Yesterday the music annoyed me, I would not have wanted to listen to it. Today it felt nicer. (F50)

The classification of "real music" and "real background music" reveals how the interviewee values music and is aware of musical categorisations. She doubts whether "real background music" should be called music at all. At a more general

level, her thoughts tell us how people are used to the presence of background music in public and commercial spaces. In being asked to listen to it attentively, the interviewees were asked to notice and give meaning to something that was previously perhaps an unobserved part of their everyday lives. In both groups, the content of the background music was critically discussed, for example, the music was described as “improvised, generic gruel” (M32), but it was also understood as something that fits the hypermarket context.

Usually, the music is quite generic gruel, a little bit like somebody was improvising something with a synthesiser in the eighties–nineties style, just for fun. (M32)

If you want your customers to enjoy and stay in place, then I understand this, like in here, this kind of chilling, basic music is already starting from the parking lot, so now I’ve just become aware of it, for the first time. (M46)

The interviewees also discussed the technical aspects of the music. One of the interviewees said he would feel irritated if the music was too loud or too quiet (M34b). Loud background music was associated especially with youth clothing stores (M32, M34b).

In some youth shops, the music is usually pretty loud, the beat is much more energetic and its purpose is to create an energetic atmosphere. But then again... what if you just don’t feel like dancing when you are buying jeans? (M32)

And if you don’t feel like that, it only creates this inconsistent feeling, that they are trying to force me to dance. (M34a)

On the contrary, public spaces' music choices can feel right when the personal music preferences of the people present there match those of the space, such as at a restaurant, for example.

Typical sounds of a hypermarket

The interviewees critically discussed commercial radio music and the way clothing stores and especially restaurants use music to attract customers. Many of the interviewees felt that they had never before thought of or attentively listened to a hypermarket's sound environment. Nonetheless, after the listening walks, they verbalised and rationalised without hesitation which sounds they thought belonged or did not belong – in their opinion – to the hypermarket.

According to the interviewees, sounds that relate to or originate from the personnel's work belong in a hypermarket and are perceived as pleasant, such as the sound of cardboard packaging being torn and shelves being stacked.

The sounds of work that could be heard in the background when the shelves were filled – those sounds are good ones somehow and they belong to that environment. It is nice if there are not many people and it is silent, but if the tearing and clatter couldn't be heard, it would feel a bit too desolate in the shop.
(F40b)

The sounds I liked the most were of packages being opened with a carpet knife or a roller moving. (F41)

The interviewees also liked it when the personnel were talking to each other or with customers. However, not all the typical sounds were liked, especially the sound of the cooler units. The responses to the coolers' buzzing sounds varied from irritation to neutral and even to a sense of pleasantness.

Those sounds of the coolers were just awful. I have never heard them so loud in any other store. (M49)

I'm surprised how loud those machines were. To me it was somehow very disturbing. I felt like that on both days. Really irritating. (F40b)

Whether loud or silent, those sounds of machines are so general that you don't really... they are neutral sounds to me anyway. (M34a)

Yesterday I felt that it was nice to go to next to the coolers – after I became aware of the music and contradictions – so it was nice when the whirr covered all the other sounds, and I felt that now I can concentrate on seeing what's on offer here. (M46)

They [coolers] didn't bother me really. I just started to think, how can they be so loud nowadays? (F41)

The interviewees also discussed how they felt about the nature sounds in the fruit and vegetable section. One of the interviewees (F40) felt that the bird sounds broke her “grocery-state of mind”, but she “couldn't decide if it was a good or a bad thing”. This kind of experience implies that the act of shopping for groceries is a routine task during which we usually do not expect anything extraordinary to happen. For her, hearing birds singing in the fruit and vegetable section was a surprise, which, she later felt, might interfere with her concentration on her shopping.

Usually when I'm in the shop, I think very hard and long about what I should buy and cook, so I think those very different kinds of sounds would interrupt my thinking, even though they are pretty pleasing sounds. (F40a)

One of the interviewees, a 46-year-old man, commented on how the listening walk experience made him aware of the hypermarket's sound environment in general.

It was really nice to become aware, like yesterday, when I went to Citymarket [another hypermarket] later and I listened to the sounds and I noticed how many more people there were and how it created something so natural [sound]. So, maybe it made me more relaxed too, because yesterday there were very few people here [in Minimani hypermarket]. Normally, that would have been a positive thing, but when you listen attentively, it changes things. (M46)

This comment is a good example of how listening walks affect one's perceptions of the sonic environment; once you begin to listen to attentively, suddenly the everyday environment bursts into a mosaic of sounds.

The sonic coherence of space

The interviewees then talked about sounds that they found irritating. These were described as clichés, as discordant or as discrete. For example, the sound of a cuckoo was perceived as a cliché, and they commented how a curlew could be heard only during the spring and not in the fall, which is when the listening walks took place. Also, the sounds of a cuckoo, a curlew and an arctic loon were described as too distinguishable compared with the other bird sounds heard in the fruit and vegetable section. These sounds can also be described as sound signals. Schafer (1994 [1977]: 275) describes a sound signal as “any sound to which the attention is particularly directed”. In addition, Schafer distinguishes between sound signals and keynote sounds, which “are heard by a particular society continuously or frequently enough to form a background against which other sounds are perceived”. For example, in this case, the buzzing sound of the coolers and the background music can be interpreted as keynote sounds of the hypermarket as they can be heard continuously.

Based on the interviews, it can be interpreted that the clear, individual bird sounds were perceived as signals, but the humming sound of wind in the forest and the chirping of a flock of birds were perceived as keynote sounds. Two interviewees from both groups (M34a, M32, F40a, F40b) reported that these signals and keynote sounds managed to get their full attention so that they did not hear the coolers at all during their time in the fruit and vegetable section.

Well, first the cuckoo sound confused me, I had a feeling like... somebody is trying to fool a monkey; this [cuckoo sound] wasn't here yesterday. [...] But when the basic bird chirps came from the forest, it was really nice and you didn't pay attention anymore to those coolers even though the sound was audible. Still, you wanted to listen to the bird song. (M34a)

For me, the most pleasant and peaceful sound was the forest sound, absolutely. It was clearly the sounds of a forest, the leaves... and the echo is different from the rest, so it really made you feel like you were in a different space. (M34a)

When discussing the nature soundscape, the interviewees made observations concerning the continuity of the nature sounds. As described earlier, the nature soundscape consisted of several different kinds of nature ambiances (a forest, a field, a lake). However, some of the interviewees preferred only one nature ambience instead of a constantly changing soundtrack. On the other hand, some of the interviewees began to develop the content of the nature soundtrack even further.

Perhaps the variability in that tape was the peculiar part of it. There was a field, a lake and a forest. I walk a lot in the woods and I have studied birds since childhood, so... and during school years I've done the sound for short films, so I have thought about sound and... maybe there should be a uniform sonic world. (M34a)

And when you come next to the exotic fruits, the soundscape should change a bit, like that of the Amazon. You should hear something like... monkeys rustling and even something like the music of the indigenous tribes living in the rainforests. (M46)

Even though the two examples above show different preferences, they both in fact point towards the same result. Both viewpoints include the aspiration towards coherence *either* between different sounds in the nature soundtrack or

between the sonic content of the nature soundtrack and the visual environment. This was discussed in both groups. Some of the interviewees described their controversial experience as a cognitive contradiction of what they heard and saw (F40a, M46, M32).

Another aspect of this frame of sonic coherence of space was the volume levels and their variations. Some of the interviewees were a bit annoyed because of the changing volume during the listening walk. The perceived changes in volume were primarily due to the features and position of the speakers on the ceiling, as the volume in fact stayed at the same level for the entire duration of the walk.

[The volume of the music] changed all the time, or was it the locations of the speakers that drew my attention? (F41)

Does [music] need to be heard from the ceiling, or could it be heard in different departments at ear height? Then it would stay between the shelves instead of echoing through the whole hall. (M32)

The aspiration for the coherence of space was also evident when the interviewees talked about how different spaces could be divided into thematic sections by using sound and other elements. This was especially discussed in the men's group. When asked about personal sound preferences in a hypermarket, one of the interviewees wished the echo could be eliminated (M32).

It would be interesting if the soundscape could be softer. And then the [sonic] variation by section could also be interesting. At least I would like to experience changing moods. (M32)

Yes, exactly, the softness, the softness of the space. That space was so hard that even if it makes it very serene and sterile, it also makes it kind of hospital-like.

[...] If you compare it with some small-town shop, a real small-town shop, the kind with only two shelves and no conveyer belt at the cash desk. (M34B)

Those sounds of a small-town shop... [...] ... nice chatting ... it brings such a good feeling. (F40b)

These nostalgic comparisons to small-town shops indicate how the interviewees believed sonic comfort to be an important aspect of a pleasant customer experience. The considered whole of the environmental sounds of the hypermarket can bring to mind positive images and associations while browsing the goods.

Soundscape as an enhancer of interaction

The fourth frame of interpretation among the interviewees was related to the interaction between people and space and between people in the hypermarket. This frame was particularly interesting because it was brought up when the interviewees scrutinised the nature soundscape in the fruit and vegetable section.

I liked that there was a separate department, that the soundscape changed. It woke me up, both when I entered it and when I left. I noticed it was nice. [...] At least I would like to experience it when some feeling is clearly changing. It's like you wake up again, every time. (M46)

And then those birds, I felt that... if you are lost in your thoughts and then you enter that space, like, oh, where does this sound come from? Maybe that's a good thing, like [noticing], okay, I'm here. (F40b)

Two female interviewees pondered how the nature soundscape could serve as a trigger for interaction with other customers.

I think it [the nature soundscape] is a nice thing... to awaken people a little bit. And who knows, there could be someone next to you saying, "where's that coming from?" and an encounter happens. (F40b)

I got a smile on my face when I heard the cuckoo singing, and I felt really good being there. And I think that it [the nature soundscape] could easily lead people to see and confront each other. (F50)

A hypermarket employee who had been working in the fruit and vegetable department during the week the nature soundscape was played wrote in her feedback about the increased interaction between the staff and customers: "The customers generally liked it, and many of them commented and asked about the birds" (F47, written feedback). All of these incidents suggest that a carefully created soundscape could enhance social interaction in our everyday lives.

The impact of nature soundscape on sales

Was it the *nature* sound per se that led to awakening, or could it have been *any* unexpected sound? This question gets even more interesting when examining the sales figures. Interestingly enough, the sales figures show that during the week in which the nature soundscape was played, the store saw higher sales compared with the week before and after. In the preceding week, the sales were 20 per cent lower, while in the following week they were 13 per cent lower than during the week in which the nature sounds were played. According to the sales manager of the hypermarket, he could not find any other explanation for the rise in sales other than the nature soundscape. Notwithstanding, the research data on the sales is too narrow to make far-reaching conclusions. In order to ensure this result, we would need to examine the impact over a longer period of time than one week. However, as such, it is an interesting result that deserves to be

reported here but should be examined and tested more thoroughly in future research.

Discussion

This study focused on everyday listening in commercial spaces. First, people's perceptions and meaning making of environmental sounds in the context of a hypermarket were examined. Second, an alternative soundscape was tested by playing nature sounds in the fruit and vegetable section of a hypermarket. Finally, the sales figures of three weeks were compared to determine whether the changing soundscape affected consumer behaviour. We can conclude from the results that sound plays a major role in how people experience a routine visit to the hypermarket.

From the frame analysis, several conclusions can be drawn. First, the interviewees were critical of the hypermarket's background music in general (frame 1). Nevertheless, they also considered music in general to be a suitable sonic element in the context of a hypermarket. Second, the typical sounds of the hypermarket (frame 2) were identified, named and critically discussed. The buzzing sounds of the coolers were discussed the most, with reactions ranging from negative and neutral to positive. Third, the interviewees expressed their aspirations for the sonic and visual coherence of the hypermarket space and presented their ideas on different ways in which music and/or sound could be used to divide the hypermarket space into different spatial and sonic sections (frame 3). Finally, the nature soundscape was perceived as a potential trigger for social interaction and an enhanced feeling of being present (frame 4).

However, these results seem to contrast those of Spendrup, Hunter and Isgren (2016) who in their study did not find any evidence that nature sounds influence mood or connectedness to nature. The participants of our study clearly discussed and named their feelings that were evoked by the nature sounds. This contrast is interesting, but due to the differences in the research methods, design and research questions of these two case studies, it is quite difficult and even somewhat awkward to compare and unravel why the results are so conflicting. Spendrup et al.'s experiment was based on a two (no sound v/s nature sounds)

by three (types of information: organic, climate friendly, control) between-subject factorial design. In total, 627 customers (16–78 years old) in a supermarket in Lund, Sweden, participated in the experiment and filled out the questionnaire after being exposed to the stimulus (carrots in a wooden barrel, signs with messages like “Eat more organic carrots!”, and nature sounds). To measure their connectedness to nature, customers were asked to estimate whether they felt that “they were a part of nature, [felt] kinship with plants and animal life, and oneness with the natural world” (Spendrup et al. 2016: 136).

Interestingly enough, the frame analysis demonstrated how we, as consumers browsing and shopping in a hypermarket, are usually surrounded by music that aims to be relatively unnoticed but, in fact, does not go unnoticed and does not at all stay in the background. The results of this study suggest that when adding music or sound to commercial spaces, it is not about how to produce a pleasant soundtrack or make music choices for non-listening customers. Instead, it is about understanding that the overall sonic ambience is always being sensed, and that the spatial and sonic dimensions of a space can create affective experiences. It is not about trying to play customers’ favourite music either; it is about how sound and space are perceived and experienced at that moment. The results are consistent with Kassabian’s and LaBelle’s arguments about how ubiquitous music and sound create space and collectively bind us, if only momentarily, through their affective potential.

Acoustic design also involves ethical contradictions. As can be interpreted from the interviews, acoustic designing for commercial contexts could be perceived as a negative phenomenon when it is believed to serve as an attempt to affect consumer behaviour so as to increase sales. However, at the same time, the interviewees felt that they became aware of the hypermarket’s sound environment and got interested in discussing what kind of sonic environments they would prefer. Their preferences varied greatly, including both a preference for hypermarkets with themed sections by sound as well as hypermarkets without any sounds at all.

The individual bird sounds or signals played in the fruit and vegetable section were perceived as somewhat odd by some of the interviewees, but, at the same time, the humming forest was able to create a feeling of open space, which was perceived positively. By bringing an unexpected soundscape into a commercial

space, we were able to break through the conventional background music frame and identify those sonic elements that evoke feelings and to which people have a reaction. This could have been much harder to achieve if the interviewees had listened solely to the ordinary hypermarket soundscape. Although the sonic differences between the soft vocal pop music and the bird sounds in a forest are obvious, the way people react to these two soundscapes in a hypermarket has some similarities: a pop singer's nasal voice and a bird's monotonic *cuc-koo* can be perceived as equally irritating, or a soft piano melody and the soft echo in a humming forest can be perceived as equally pleasant. These are all sonic phenomena that can create different emotional experiences, regardless of whether they are sounds created by humans or sounds of nature. Both create cultural, social, and personal meanings that can be actualised in different listening situations. Future research should examine more closely, for example, the actual elements of the forest soundscape that created the widened sensation of space. Indeed, there is still much to explore on how acoustic design intertwines and interacts with our senses and affects our behaviour.

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References

Research data

Interviews

Group interview 1:

F40a, female, b. 1976, high school / vocational education and training

F40b, female, b. 1976, high school / vocational education and training

F41, female, b. 1975, academic degree

F50, female, b. 1966, high school / vocational education and training

F38, female, b. 1978, academic degree

Group interview 2:

M34a, male, b. 1982, academic degree

M34b, male, b. 1982, high school / vocational education and training

M49, male, b. 1967, high school / vocational education and training

M32, male, b. 1984, academic degree

M46, male, b. 1970, academic degree

Both interviews were conducted by the author 16.9.2016 in Seinäjoki, Finland.

Feedback

Written feedback form from 47-year-old female-employee, working at the fruit and vegetable department at hypermarket Minimani, Seinäjoki during the research period 16.–23.9.2016.

Recorded listening walks, hypermarket Minimani, Seinäjoki, Finland.

Listening walks were conducted and recorded at the hypermarket Minimani, Seinäjoki, Finland.

Two recorded listening walks with female group, 15.–16.9.2016.

Two recorded listening walks with male group, 15.–16.9.2016.

Literature

Aaltojärvi, Inari; Paakki, Maija and Kontukoski, Maija (2018, forthcoming) "‘We come here just because of lunches’: Analyzing the talk about workday lunch environment”.

- Aaltojärvi, Inari; Kontukoski, Maija and Hopia, Anu (2017) "Framing local food experience: A case study of Finnish pop-up restaurant". *British Food Journal*, 120 (1), 133–145.
- Adorno, Theodor W. (1976) Introduction to *the Sociology of Music*. New York: The Seabury Press.
- Aiello, Luca Maria; Schifanella, Rossano; Quercia, Daniela and Aletta, Francesco (2016) "Chatty maps: constructing sound maps of urban areas from social media data". *Royal Society Open Science*, 3, 1–19. (<http://dx.doi.org/10.1098/rsos.150690>)
- Aletta, Francesco; Lepore, Federica; Kostara-Konstantinou, Eirini; Kang, Jian and Astolfi, Arianna (2016) "An experimental study on the influence of soundscapes on people's behavior in an open public space". *Applied Sciences*, 6 (10): 276, 1–12. (<http://dx.doi:10.3390/app6100276>)
- Alvarsson, Jesper J.; Wiens, Stefan, and Nilsson, Mats E. (2010) "Stress recovery during exposure to nature sound and environmental noise". *International Journal of Environmental Research and Public Health*, 7, 1036–1046.
- Arai, Y. C., Sakakibara, S., Ito, A., Ohshima, K., Sakakibara, T., Nishi, T., et al. (2008) "Intra-operative natural sound decreases salivary amylase activity of patients undergoing inguinal hernia repair under epidural anesthesia". *Acta Anaesthesiologica Scandinavica*, 52 (7), 987–990.
- Augoyard, Jean- François and Torgue, Henry (Ed.) (2008) *Sonic Experience. A Guide to Everyday Sounds*. Translated by Andra McCartney and David Paquette. Ithaca: McGill-Queen's University Press.
- Barbour, R. (2007). *Doing focus groups*. London: Sage Publications.
- Blessner, Barry and Salter, Linda-Ruth (2009) *Spaces speak, are you listening? Experiencing aural architecture*. Cambridge and London: MIT Press.
- Bull, Michael (2002) "The Seduction of Sound in Consumer Culture. Investigating Walkman Desires". *Journal of Consumer Culture*, 2 (1), 81–101.
- Cavicchi, Daniel (2014) "Ubiquitous Listening: Affect, Attention, and Distributed Subjectivity by Anahid Kassabian – review." *Reception: Texts, Readers, Audiences, History*, 6, 91–93.
- DeNora, Tia (2000) *Music and Everyday Life*. Cambridge: Cambridge University Press.
- Fischer, Eileen and Arnold, Stephen J. (1994) "Sex, gender identity, gender roles attitudes, and consumer behaviour". *Psychology & Marketing*, 11 (2), 163–182.
- Garfinkel, Harold (1984[1967]) *Studies in Ethnomethodology*. Cambridge: Polity Press.
- Goffman, Erving (1963) *Behavior in Public Places. Notes on the Social Organization of Gatherings*. New York: The Free Press.
- Goffman, Erving (1971) *Relations in Public. Microstudies of the Public Order*. New York: Basic Books.

- Goffman, Erving (1974) *Frame analysis: An essay on the organization of experience*. Cambridge: Harvard University Press.
- Goffman, Erving (1981) "A reply to Denzin and Keller". *Contemporary Sociology* Vol. 10, No. 1, 60–68.
- Harrison, Klisala (2016) Why Applied Ethnomusicology? *COLLeGIUM: Studies across disciplines in the humanities and social sciences*, 21, 1–21. (<https://helda.helsinki.fi/bitstream/handle/10138/167843/Collegium%20Vol%2021%20Introduction.pdf?sequence=1>) (accessed 2.7.2018).
- Harrison, Klisala and Pettan, Svanibor (2010) "Introduction". *Applied Ethnomusicology: Historical and Contemporary Approaches*. Ed. Klisala Harrison, Elizabeth Mackinlay and Svanibor Pettan. Newcastle upon Tyne: Cambridge.
- Hargreaves, David J. and North, Adrian C. (Ed.) (2000) *Social Psychology of Music*. Oxford: Oxford University Press.
- Hynes, Niki and Manson, Struan (2016) "The sound of silence: Why music in supermarkets is just a distraction". *Journal of Retailing and Consumer Services* 28, 171–178.
- Hynynen, Ari; Hopia, Anu; Uimonen, Heikki; Pitkääkoski, Tuija; Aaltojärvi, Inari; Paakki, Maija and Kontukoski, Maija (2018) *Ei ainoastaan leivästä. Ruoka, kokemus ja moniaistisuus*. Tampere: Tampereen teknillinen yliopisto, Arkkitehtuurin laboratorio.
- Järviluoma, Helmi; Kytö, Meri; Truax, Barry; Uimonen, Heikki; Vikman, Noora (Ed.) / Schafer, R. Murray (Ed.) (2009) *Acoustic Environments in Change. Five Village Soundscapes*. Tampere and Joensuu: TAMK University of Applied Sciences and University of Joensuu.
- Järviluoma, Helmi; Koivumäki, Ari; Kytö, Meri and Uimonen, Heikki (Ed.) (2006) *Sata suomalaista äänimaisemaa*. Helsinki: Suomalaisen Kirjallisuuden Seura.
- Kassabian, Anahid (2016) "Listening and digital technologies". *Sound as Popular Culture. A Research Companion*. Eds. Jean Gerrit Papenburg and Holger Schulze. 197–203.
- Kassabian, Anahid (2013) *Ubiquitous listening: Affect, attention, and distributed subjectivity*. Berkeley, Los Angeles & London: University of California Press.
- Kontukoski, Maija and Pitkääkoski, Tuija (2016) "The Multimodal Dining Experience. A Case Study of Space, Sound and Locality". Article in *Proceedings of 3rd International Congress on Ambiances, University of Thessaly, Volos, Greece*. Eds. Nicolas Rémy & Nicolas Tixier. 183–188.
- Kontukoski, Maija & Uimonen, Heikki (2016) "Akustinen suunnittelu: tila, ääni ja affekti pop up -ravintolassa". *Etnomusikologian vuosikirja* 28. Ed. Meri Kytö, Saijaleena Rantanen & Kim Ramstedt. 118–149.

- Kytö, Meri; Remy, Nicolas and Uimonen, Heikki (Ed.) (2012) *European Acoustic Heritage*. Tampere and Grenoble: Tampere University of Applied Sciences and CRESSON.
- LaBelle, Brandon (2012) "Acoustic Spatiality". *Journal of literature, culture and literary translation*, 2 (6), 1–13.
- LaBelle, Brandon (2010) *Acoustic territories. Sound culture and everyday life*. New York & London: Bloomsbury Academic.
- Liu, Fangfang and Kang, Jian (2016) "A grounded theory approach to the subjective understanding of urban soundscape in Sheffield". *Cities* 50, 28–39.
- Michel, Anne; Baumann, Chris and Gayer, Leonie (2017) "Thank you for the music – or not? The effects of in-store music in service settings". *Journal of Retailing and Consumer Services* 36, 21–32.
- Mäntyranta, Taina and Kaila, Minna (2008) "Focusryhmähaastattelu laadullisen tutkimuksen menetelmänä lääketieteessä". *Duodecim (Tutkimus ja opetus)* 124, 1507–1513.
- North, Adrian C. and Hargreaves, David J. (2009) "Music and marketing". *Handbook of music and emotion: Theory, research and applications*. Ed. P. N. Juslin. Oxford: Oxford University Press. 909–930.
- Pötsönen, Riikka ja Välimaa, Raili (1998) *Ryhmähaastattelu laadullisen tutkimuksen menetelmänä*. Terveystieteen laitoksen julkaisusarja 9/1998, Jyväskylän yliopisto.
- Rainio, Riitta; Äikäs, Tiina; Lahelma, Antti and Lassfolk, Kai (2017) "Nauravat kalliot: Pohjois-Suomen pyhien paikkojen kaikututkimus". *Muuttuvat suomalaiset äänimaisemat*. Ed. Heikki Uimonen, Meri Kytö and Kaisa Ruohonen. Tampere: Tampere University Press. 167–199.
- Rainio, Riitta; Lahelma, Antti; Äikäs, Tiina; Lassfolk, Kai and Okkonen, Jari (2014) "Acoustic measurements at the rock painting of Värrikallio, Northern Finland". *The Archaeology of Sound*. Ed. Linda C. Eneix. Myakka City (FL): The OTS Foundation. 141–152.
- Robinson, Nicola (1999) "The use of focus group methodology – with selected examples from sexual health research". *Journal of Advanced Nursing*, 29, 905–913.
- Sahavirta, Harri and Kytö, Meri (2017) "Yleisten kirjastojen muuttuva äänimaisema". Article in *Muuttuvat suomalaiset äänimaisemat*. Ed. Heikki Uimonen, Meri Kytö and Kaisa Ruohonen. Tampere: Tampere University Press, 81–104.
- Schafer, R. Murray (1994 [1977]) *The soundscape: our sonic environment and the tuning of the world*. Rochester: R. Murray Schafer & Alfred Knopf, Inc.
- Spendrup, Sara; Hunter, Erik and Isgren, Ellinor (2016) "Exploring the relationship between nature sounds, connectedness to nature, mood and willingness to buy sustainable food: A retail field experiment." *Appetite*, 100, 133–141.

- Sterne, Jonathan (1997) "Sounds like the Mall of America. Programmed Music and the Architectonics of Commercial Space". *Ethnomusicology*, 41 (1), 22–50.
- Stewart, D., Shamdasani, P., and Rook, D. (2007). *Focus groups. Theory and practice*. Second edition. Thousand Oaks (CA): Sage Publications.
- Stockfelt, Ola (1997) "Adequate Modes of Listening". *Keeping Score: Music, Disciplinary, Culture*. Ed. David Schwartz, Anahid Kassabian and Lawrence Siegel. University Press of Virginia, Charlottesville & London, 129–146.
- Teosto (2017) *Radiokanavat taustamusiikkikäytössä. Teoston taustamusiikkitutkimus 2017*. Helsinki: Teosto.
- Uimonen, Heikki; Kytö, Meri and Ruohonen, Kaisa (Ed.) (2017) *Muuttuvat suomalaiset äänimaisemat*. Tampere: Tampere University Press.
- Uimonen, Heikki (2015) "Transphonic Sounds: Commercial radio music in a shared urban environment". *Etnomusikologian vuosikirja*, 27, 28–46.
- Uimonen, Heikki (2011) "Tarkkaile ympäristöäsi! Kuuntelukävelyt ja äänittäminen äänimaiseman laadullisen arvioinnin välineinä." *Yhdyskuntasuunnittelu*, 49 (1), 44–58.
- Van Gorp, Baldwin (2007) "The Constructionist Approach to Framing: Bringing Culture Back In", *Journal of Communication*, 57, 60–78.
- Verhoog, Henk; Matze, Mirjam; Van Bueren, Edith L. and Baars, Ton (2003) "The role of the concept of the natural (naturalness) in organic farming". *Journal of Agricultural and Environmental Ethics*, 16, 29–49.
- Vikman, Noora (2006) "Suomalaisuuden sydänääniä luonnon helmassa". *Sata suomalaista äänimaisemaa*. Ed. Helmi Järviluoma, Ari Koivumäki, Meri Kytö and Heikki Uimonen. Helsinki: Suomalaisen Kirjallisuuden Seura. 12–22.