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# *Between (Pseudo)Silence and Noise – the Perceptive Status of Music in the Lo-Fi Environment: The Case of Contemporary Shopping Malls*[*]

ABSTRACT: Modern shopping malls are interesting examples of lo-fi soundscapes where the recipients experience diverse auditory phenomena. One of the key factors organising the space is so called programmed music provided by audiomarketing companies. To what extent can this specific context change the perception of music, noise, and silence? Is the imposed music viewed from the perspective of the listeners as music or perhaps noise? These questions shape the discussion on the perceptive status of music in lo-fi environments. More than 200 participants (between 18–30) took a soundwalk in one of the shopping malls in Warsaw where audiomarketing strategy is implemented. They were asked to record the characteristic places, to fill in the questionnaire of observation and evaluation and to write a narrative essay once the soundwalk was finished. As a result, an extensive set of qualitative and quantitative data was obtained, which was then subjected to a multi-stage analysis: thematic (text data), statistical (quantitative data), auditory and spectral (audio files). The results show that in the case of shopping malls the line between silence, music and noise is blurred because imposed music can become both a part of cacophonic experience and "silence zones". During the soundwalks, 27% of the participants (n = 57, N = 208) declared they did not experience silence and 75% of the participants (n = 151) identified varied "silence zones", even with the programmed music in the background. These observations lead to the problems of desensitisation and habituation as possible long-term consequences of noise pollution.

KEYWORDS: lo-fi soundscape, programmed music, shopping malls, silence, noise, audiomarketing, auditory perception, noise pollution

## Introduction

Silence and noise are two extreme situations for the auditory system. The phenomenon of silence can be defined as: "[t]he state or condition when nothing is audible; complete quietness or stillness; an absence of all sound or noise" (*Oxford English Dictionary Online*, 2021). Noise, on the contrary, seems

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to be more difficult to define (Hainge, 2013; Keizer, 2010; Reybrouck et al., 2019). As claimed by an American writer and essayist, Garret Keizer, in his well-known book *The unwanted sound of everything we want: A book about noise*:

> Like Justice Potter Stewart, who famously said that although he could not define obscenity, he knew it when he saw it, most of us feel confident in our ability to identify noise. We know it when we hear it (Keizer, 2010, p. 24).

According to *Oxford English Dictionary Online* (2021), noise means: "[t]he aggregate of sounds occurring in a particular place or at a particular time; (also) disturbance caused by sounds". In that sense, noise evokes associations with sounds that are too loud, unpleasant, distracting, unwanted, irritating and usually harmful. Additionally, some definitions relate precisely to the physical characteristics of noise underlining another meaning of this term. Greg Hainge in *Introduction* to his book *Noise matters: Towards an ontology of noise* notes that:

> For the physicist, noise can be defined as a non-periodic complex sound, in other words, a sound that can be decomposed into a large number of sound waves all of different frequencies that (according to Fourier's theorem) are not multiples of one basic frequency and which do not therefore enter into harmonic relations with each other (Hainge, 2013, p. 3)

The definitions show that noise can be understood both as an acoustic fact or as a sensation. However, in the present paper the term noise will basically refer to psychological phenomena.

From the contemporary listener's perspective, the boundary between silence and noise seems to be ambiguous and blurred especially in the context of lo-fi acoustic environments, which are nowadays dominant in the urban space. Originally, in the soundscape studies the term low-fidelity (usually abbreviated to lo-fi) refers to the situation in which individual signals are overcrowded and obscured by too many sounds, which results in a lack of perceptive clarity and a loss of perspective understood as the loss of cues about sound location. It also stands in opposition to hi-fi (high-fidelity) soundscapes where all sounds may be heard clearly without being obscured by other sounds (Schaffer, 1993).

At present, one of the most interesting examples of lo-fi environments are contemporary shopping malls where listeners (and at the same time consumers) can experience diverse phenomena (Makomaska, 2019, 2021; Oakes et al., 2012; Sterne, 1997). It is quite common that a listener/consumer moves through different and very often extreme zones extending from the perceptive zones of noise to places where the subjectively perceived level of intensity and density of stimuli can be so low that the impression of silence may appear. In most cases during the entire stay at the shopping malls the auditory experience is also shaped by the imposed programmed music, designed and provided by professional audiomarketing companies within the sensory and experiential marketing strategies (Bitner, 1992; Krishna 2010, 2012; Makomaska, 2011, 2019; Sterne, 1997). This kind of activities becomes a very good example of acoustic engineering that involves designing, constructing and modifying the acoustic space of a given place by means of programmed music, with the use of scientific and technical knowledge. Its purpose is to modify or shape the recipients' responses

and behaviour consistently with the values and motivations of the sender. In this context, music functions in the framework of the social communication model, which assumes that the final result of the communication process is to control the recipients' responses and behaviour, usually without awareness of this control. (Makomaska, 2017). In audiomarketing strategy the sender introduces music as an acoustic background assuming that it should be located on the periphery of the recipient's auditory attention. Thus, the intentionally induced perceptual effect of "acoustic wallpaper" supports the marketing goals influencing consumers' responses on physiological, affective, cognitive and behavioural level (Makomaska, 2019, 2021). In the case of shopping malls, such an effect would not be possible if it were not for (omnipresent) sound apparatus. As Jonathan Sterne points out: "[t]he apparatus to disseminate music is built into the Mall's infrastructure", so "[m]usic flows through channels parallel to those providing air, electricity and information to all areas of the Mall" (Sterne, 1997, p. 22). As a result of the programming, music (similarly to conditioned air) is able to reach its addressees at any time and place. Such an observation is valid not only in the case of Mall of America, as described by Sterne, but, rather, in the majority of shopping malls. This specific context of music being omnipresent sheds new light on the issue of the relations between the sender, music, and listeners, who find themselves in an artificially constructed environment of a lo-fi type, aimed at realising the sender's aims. To what extent can this kind of space(s) change the perception of music, noise, and silence? Is imposed music viewed from the listeners' perspective as music or perhaps noise? These are the main questions that shape the discussion on the perceptive status of programmed music in lo-fi environments and its possible diversity at the intra- and interindividual level.

The objective of this article is to find answers to the questions raised above and to bridge the gap in studies on music used in commercial space that basically neglect this type of questions or locate them on the margin of discussion (e.g. North & Hargreaves, 2008; North et al., 2018; Oakes et al., 2012; Quiñones et al., 2013; Sterne, 1997). The methodological perspective used in the present research stems from the interdisciplinary area known as sound studies (Pinch & Bijsterveld, 2012; Sterne, 2012; Losiak & Tańczuk, 2014) that attempt to address the issues related to"auditory experience in its bio-psychological, socio-cultural, and anthropological dimension" (Hejmej, 2015, p. 93), acknowledging changes occuring in the area of culture and technology. However, this article contextualises auditory experience in a broader perspective of the so-called "experiential marketing" (Schmitt, 1999; Skowronek, 2012; Smilansky, 2017) since shopping malls are oriented around commercial goals. The listeners should also be treated as customers. In line with Iwona Skowronek's work, that represents marketing discipline, it is assumed that the on-premises auditory experience (viewed from the perspective of the customer) will be a result of:

> [...] a cognitive and emotion-based analysis of marketing stimuli, which, in conjunction with individual values and motivational factors on the part of the customer, leads to shaping specific approaches, beliefs, opinions, laying the foundation for the evaluation of the consumption situation in terms of categories like satisfaction – dissatisfaction, like – dislike, desire – avoidance, etc. (Skowronek, 2012, p. 107).

It is assumed that such an in-depth approach, that goes beyond classical understanding of sound studies, offers a chance to get a full insight into the functioning of programmed music in modern shopping malls. It helps to outline a complex and intricate network of relations that appear in the situation when the listeners/customers are located in a commercial environment with the imposed and programmed music in the background.

## Methods

The methodology of the present research was constructed around soundwalking rooted in acousting ecology and sound studies. It is worth mentioning that originally the soundwalking was defined by Raymond M. Schafer's student, Hidegard Westerkamp who claimed that it is: "any excursion whose main purpose is listening to the environment. It is exposing our ears to every sound around us no matter where we are" (Westerkamp, 1974). Such an "excursion" oriented towards the active listening to various environments has been used in various projects of a scientific and educational character. It was also a starting point in many diversely profiled urban studies treating soundwalking as an empirical method for identifying a soundscape and its components, collecting data and making an evaluation of soundscapes (e.g. Aletta et al., 2016; Herranz-Pascualet et al., 2019; Kang et al., 2016; Yonget et al., 2013; Losiak, 2014). At the same time the original conception has been modified and reinterpreted, pushing the notion's boundaries to its today's shape. Nowadays, soundwalking practice is "increasingly understood as a methodology capable of exploring our sensorial connection to the city and the meanings we derive within its soundscape" (Radicci et al., 2021). Such understanding is strictly connected with the currently used definition of soundscape treated substantially as a perceptual construct and being defined as an "acoustic environment as perceived or experienced and/or understood by a person or people, in context" (ISO 12913–1: 2014 after: Alletta et al., 2019).

In the present study five Warsaw-based shopping malls (Blue City, Dom Mody Klif, Galeria Mokotów, Westfield Arkadia, ZłoteTarasy) have been included. In all facilities, one professional company (dominant on the Polish market) has implemented an audiomarketing strategy (see Makomaska, 2019). Shopping malls included in the studies vary in terms of their size, location, commercial and service character, architectural solutions, yet, in line with the typology adopted by the European Committee of the International Council of Shopping Centers (ICSC Europe), all of them can be categorised as the so-called "traditional malls". According to MałgorzataTwardzik, these are:

> [...] multifunctional facilities, where the tenants offer a diverse selection of goods and services, with a wide range of prices. The mall serves customers of different degrees of affluence and caters for their needs. Therefore, the shops offer goods manufactured by internationally recognised companies, often exclusive and expensive ones, as well as goods targeted at an average customer. These shops are often complemented by a hypermarket offering a wide range of products at affordable prices (Twardzik, 2014, p. 133).

The shopping malls included in this study, in line with the criteria adopted by ISCE Europe, can be divided into three categories relating to their area. Dom Mody Klif is an example of a small shopping mall (the rental area within the range of 5 000–19 999 m²), Galeria Mokotów and Złote Tarasy are big shopping malls (40 000–79 999 m²), while Blue City and Westfield Arkadia are very big shopping malls (80 000 m² and more).

The participants of the study take the position of the active listener and "mystery/secret shopper" (Finn & Kayandé, 1999; Blessing & Natter, 2019), who goes, at a convenient time, to a given shopping mall (out of 5 included in the study) and carries out an *in situ* observation. A collection of data covers field recordings in the form of "sound postcards" in the shopping mall areas selected by the participants and the data coming from the observation-based and evaluation-based questionnaire made up of closed questions (yes/no questions, or those involving the semantic differentiation scale and Likert's scale) as well as open questions (inviting to provide comments and remarks). Additionally, once the soundwalk was over, the participants were supposed to prepare an essay of an introspective character (see Oakes et al., 2012; Silverman, 2015), focusing on a description of their perceptual observations. All the participants were asked to fill in a survey in order to collect basic demographic data (age, gender, education), which could help to provide a detailed assessment of the participants' formal musical education. It was assumed that this variable, neglected in the previous studies related to audiomarketing, could be a vital starting point for further comparative studies.

A soundwalk in the selected shopping malls was performed by 208 participants (N=208). Among these the biggest group (95%, n=198) were young (aged 19-26) people, mostly students, or those with a secondary education degree, a higher education degree, all belonging to the target groups of shopping malls (Skowron, 2014). The participants were recruited among the students of the University of Warsaw, representing various fields and years of study. Additionally, a small sample of participants above 27 years of age, mostly PhD students of the University of Warsaw (5%, n=10), was included in the study due to the fact that such a group also met the criteria of the target group for the shopping malls. On the basis of the data related to musical education of the participants, the participants were divided into two groups. The first group (n=107) was comprised of those with no formal musical education, no matter if they took some private music lessons (singing or playing an instrument) or not. The other group (n=101) had some formal musical education, in musical schools of either a first or second degree. The participants of the soundwalk represented various levels of musical education, ranging from musically untrained individuals to professional musicians. Most of the participants were women (69%), with men constituting less than a third of the studied group (31%).

The vast majority of the soundwalks (179) were carried out in the period of December 2017 till May 2019. Due to the dynamically changing pandemic situation in Poland in 2020 and due to a need to collect more data in order to obtain the results from two groups of a comparablesize yet with varying levels of musical education, a decision was made to include the data collected from

29 participants involved in a preliminary study in 2016 (May-December). As a result, a substantial set of quantitative and qualitative data was obtained. It was subjected to a thematic (textual data), statistical (quantitative data), auditory and spectral (sound recordings) analysis (Braun & Clarke, 2006; Guest, MacQeen, & Namey, 2012; Humięcka-Jakubowska, 2013; Lindstedt, 2010; McAdams, 2004; Nowell & Norris, 2017; Rogowski, 2008). According to the posulate put forward by Adams et al. (2008), the participants of the study did not analyse and interpret the data. At the same time, it was assumed that the triangulation of research methods would provide a unique insight into the specificity of the auditory phenomena in the context of the programmed music organising the space of the shopping malls.

## Results & Discussion

The obtained results show that, from the perspective of the recipients, the time spent in the shopping mall is a specific auditory experience. The participants experienced there various and sometimes even extreme phenomena while moving from the perceptive zones of noise to the zones where the subjectively perceived level of intensity and density of sound stimuli seemed to be so low that the impression of silence was experienced. The analysis of the data collected in the observation-based and evaluation-based questionnaire shows that during the soundwalks 27% of the participants (n=57, where N=208) claimed that they did not experience silence. The remaining participants (n=151) identified various commercial and service zones as "silence zones" including jewellery and watch shops (9 participants), pet shops (6 participants), bookshops (5 participants), shops with shoes and leather goods (4 participants), places in the open restaurant zone (12 participants), and various places located in the so-called common zone, e.g. corridors, lifts, escalators (20 participants). The respondents declared also that they found "silence" in the so-called relaxation zones near fountains (3 participants) or in wi-fi spots (3 participants), and in clothes shops (11 participants).

However, the question of defining what is and what is not a silence zone turned out to be quite equivocal. The thematic analysis (Braun & Clarke, 2006; Guest, MacQueen & Namey, 2012; Nowell & Norris, 2017) performed independently by two researchers revealed that, from the perspective of the respondents, "silence" was an ambiguous and multidimensional category. Most participants identified it with a lack of imposed music, but this was usually accompanied by the observation that in the case of a shopping mall we can only talk about "pseudo silence". This seems to be confirmed by the excerpts of the participants' essays:

> The silence in the store [New Yorker in Westfield Arkadia – S. M.] was only illusive, as there was a lot of noise in the place caused by the accumulated sounds coming from all over the mall (conversations, music) (MZ_A_K_30).

> Against all appearances, there was no silence in the store as some animal sounds and water splash could be heard (in the water zone). The racket coming from the alleys of the mall was not very audible. It was one of the most quiet places in the mall. The rustle of the hamster bedding was in opposition to the hustle and bustle of other stores. I get the impression that such

an observation helped to focus on animals, their lives, and offered a feeling of relaxation and calm (OG_A_K_28).

"Autorska" bookshop was a place in the mall with no background music audible. It was located at the very end of the between-store zone, squeezed between two other stores (inlcuding one of a considerable size, offering electronic goods). The bookshop interior was predominantly black and grey (with good lighting). The floor (with floor coverings) and the walls muffled the sounds. Bookshelves were fitted in such a way that they provided some separation from the main space, often with comfortable sofas. Unfortunately, noise came inside through the open door, and the transparent glass did not separate the store from the hastiness observed in the corridors, which did not help to concentrate. The store, to some extent, looked static, modern, designed for everyone, somewhat quiet and empty, comfortable and encouraging to step inside, which only confirmed what I expected (MZ_ZT_M_45).

Some interesting data was provided by a two-step analysis of the sound files classified by the participants as the examples representing "silence zones". At the first stage, 58 "sound postcards" were analysed independently by two researchers. At this stage, classification of the recorded sound events was made, with the use of the typology proposed by Mateusz Rogowski (2008), a geographer dealing with acoustic ecology. He made a distinction between two major types of the phenomena, i.e. the one of an anthropogenic origin and the one of a nature origin. In the former, the source of a sound event is a human being and his/her activity (e.g. human voice, the sound of footsteps, the sound of mechanical tools), while in the latter the source is attributed to biotic phenomena (of a zoogenic origin, e.g. sound chirping, other animal sounds, or of a phytogenic origin, e.g. rustling of trees and bushes) as well as abiotic phenomena (e.g. rippling of water, whistling of wind) separated as another category. At the next stage, the sound postcards selected on the basis of the auditory analysis were subject to a spectral analysis (see Lindstedt, 2010; McAdams, 2004; Humięcka-Jakubowska, 2013), with Cubase pro 11 software, used to edit and analyse sound files. It allows the user to visualise recordings in the form of a spectrogram, i.e. "a three-dimensional chart presenting the time (horizontal axis, argument of the function), frequency (vertical axis, function), and amplitude (marked by a different colour or a varyfing level of light)" (Humięcka-Jakubowska, 2013, p. 649).

It turned out that the recordings classified by respondents as the examples representing "silence zones" as expected reflect the category of "pseudo silence", which can take various forms and is far from absolute silence understood as the absence of any acoustic stimuli. A complete analysis of the sound postcards indicates that the subjectively perceived silence seem to be arranged in a *crescendo* pattern reflected by the increase of sound density and intensity. It turned out that the pet shops are the least acoustically dense areas. They seem to be most similar to hi-fi soundscapes, which are characterised by clarity of perceived sound. The distinctiveness of sounds in this case refers not only to the phenomena of a natural origin: zoogenic (birdsong, sounds of moving birds) and abiotic (water noise associated with the presence of aquaria), but also to the easily identified anthropogenic events (e.g. individual voices of people, sounds of footsteps or any other movement). These are also places where, by definition, there is no programmed music. The exemplary spectrogram (Figure 1), which is a visualisation

of a recording made in one of the pet shops, illustrates these features very well. It contains sound events of different provenance and of quite low intensity (hence the dominant shades of blue).

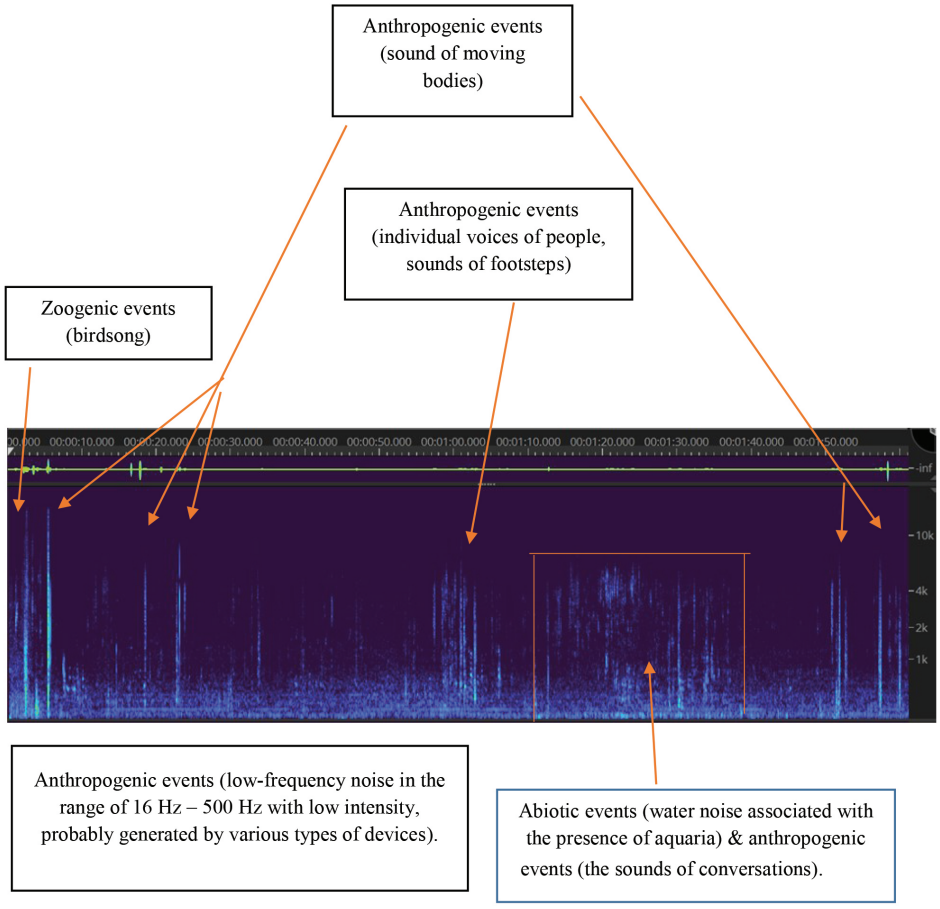


Figure 1. The exemplary spectrogram representing the zone of (pseudo)silence – a pet shop. The visualisation of a sound postcard recorded in Westfield Arkadia by OG_A_K_28[1]

The most surprising examples of places classified as "silence zones" were recordings with programmed music. On the basis of an audio analysis as many as 11 such sound postcards were identified. The analysis of the text data shows that the participants were usually not aware that they had identified a "silence zone" in a place where music could be heard. Interestingly, most of these types of

[1] All spectrograms were generated by AnastasiyaNiakrasava with the usage of Cubase Pro 11 software.

recordings (i.e. 9 out of 11) were made by people with no formal musical training. Only one research participant (who was in the group of participants with formal musical training) admitted in the essay that the music in the selected shop was "initially virtually unnoticeable" (MZ_A_K_33). Since the amount of data is quite limited, it is difficult to draw definite conclusions, yet such an observation should contribute to further research into the phenomenon of habituation and the possible influence of formal education on this process.

In all the analysed examples, the music blends into omnipresent noise (treated as an acoustic category), which seems more like a cacophonic experience than silence. An excellent example is the sound postcard recorded in the vicinity of the escalator (Figure 2). The noise generated by the escalator, footsteps, human voices is accompanied by hardly distinguishable, calm, instrumental music (probably ambient music), which becomes a background for the sounds of falling and moving objects. In such a context music will be located on the periphery of auditory attention, and the listener may not be aware of its existence.

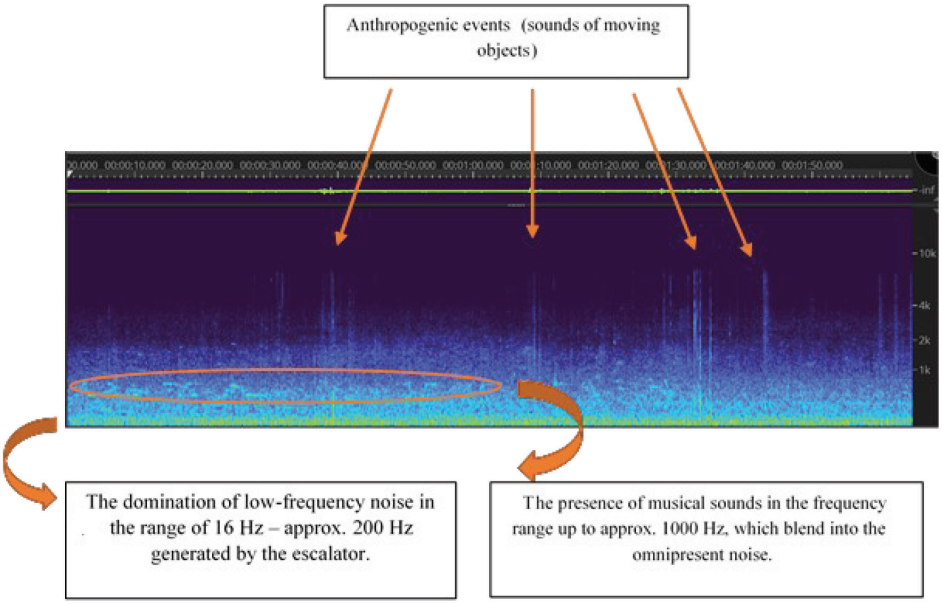


Figure 2.The exemplary spectrogram representing a zone of (pseudo)silence – the place around the escalator. The visualisation of a sound postcard recorded in Westfield Arkadia by OG_A_M_12

On the other hand, the analysis shows that music can become a crucial element of cacophonic and schizophonic experience. Originally the term "schizophonia"was coined by Schafer to describe the splitting of an original sound and its electroacoustic reproduction. As he notices: "Sounds have been torn from their natural sockets and given an amplified and independent existence" (Schafer, 1994, p. 90). In the case of shopping malls, the term "schizophonia" can be used to refer to an auditory experience and a situation whereby the listeners

find themselves in a cacophonic trap. Numerous audio stimuli (including music) overlap and create an unpleasant melange. The listener has difficulty identifying the source of the sound since the acoustic stimuli come from different (difficult to determine) directions. The data collected during the soundwalks suggest that such an auditory experience is characteristic of the so-called common zone of shopping malls, especially the alleys. Programmed music, which (theoretically) is supposed to shape the experience of acoustic space of a given alley is blended with the in-store music. Additionally, there are other sounds such as the sounds of conversations, footsteps, cash registers, anti-theft gates, etc. Here is a description of the soundscape of the common zone in Blue City, as made by one of the participants:

> [...] market stall chatter reverberates through the building's floors. From the very first moments spent inside the shopping mall, the customers are engulfed by the sounds made by passers-by, anti-theft gates, escalators, water fountains. Such a rich soundbase is topped by the imposed background music. What is conspicuous is sound distortion through a limitation of low- frequency sounds and exposure of high tones. Due to a random location of the loudspeakers, the tracks played in the alleys are hardly audible, and so are the lyrics. Music is occasionally interrupted by the advertisements of the stores located in the shopping malls, which are louder than the standard background music in order to modify the stimuli and catch the attention of passive listeners (MZ_BC_K_71).

It is not an exceptional observation, which is confirmed by other descriptions referring to the phenomenon of schizophonia and cacophony:

> [w]hen I entered the shopping mall and started walking around, I felt like I jumped on a **huge roundabout of sounds** [bold font used by S.M.], where various types of random sounds create more and less colourful slime, which revolves around the listeners' minds and confuses them. Such an impression can be strengthened by the circularly designed interiors of ZłoteTarasy. It is not a place for everyone. The general sound image is composed mostly of noise, pervading the place, and of mixed sounds of songs played by particular stores, human conversation, sounds of various readers, coins clinking, children crying, sounds of escalators, sounds coming from cafés and restaurants (MZP_ZT_K_10).

> An interesting phenomenon was a cacophony of the sounds coming from the stores located along the alley. Small distances between their entrances are conducive to the music being jumbled into one. Additionally, there is distinct music played in the alley, the by-product of which is a cacophony of sounds. At some point one track can be heard, then another one, or a couple of them simultaneously.
> (MZ_KL_M_110).

> What disturbed me most were the **mishmash zones** [bold font used by S.M.], with overlapping tracks leading to a creation of a buzzing sound, unpleasant to the customers. [...] I would have changed the settings of the loudspeakers so that the sounds did not overlap and a smooth transition from one sound space to another could be made. In the places where sound homogeneity is difficult to provide, e.g. with small stores located next to each other, I would opt for a single source of music or no music at all (OG_A_K_42).

> What could be heard in the alleys of the shopping mall [...] were the sounds coming from particular stores, all jumbled, leading to **an unpleasant magma of sounds** [bold font used by S.M.], creating a feeling of chaos and burdensome for the customers (MZ_A_M_15).

Descriptions of subjective auditory experiences are reflected by the sound postcards realised in the common zone of the shopping malls (e.g. in the alleys or in the restaurant zone). The audio-based analysis reveals the dominance of acoustic events of an anthropogenic origin, e.g. blended voices, the sound of footsteps, sounds of machines (cash registers, anti-theft gates) and programmed music. The dividing line between music and noise is blurred in the places generating cacophonic and schizophonic auditory experiences, which is evidenced in a spectrogram visualising one of the sound postcards recorded in Westfield Arkadia (Figure 3). It presents a specific feature of the lo-fi soundscape, dominated by the broadband noise (understood as a physical phenomenon) of low and medium frequencies (ranging from 16 Hz to about 800 Hz). It is comprised of sounds of a different origin, density and intensity. In such a context music is practically inaudible. A thorough auditory analysis gives a chance to identify a smooth cantilena melody played on the saxophone. The sound of the instrument makes the music distinct and allows it (through an act of analytical listening) to be fished out of the noise into the foreground. The accompaniment (the piano) is totally absorbed and masked by the dominant noise. It is impossible to distinguish between particular music-related elements on the level of a general spectrographic analysis. It reflects a specific perception of music by those who are not research participants (focused on active listening) but customers for whom, due to the specificity of the soundscape of shopping malls, music is located on the periphery of auditory attention and is perceived in a random, non-linear manner. The spectogram analysis points to yet another tendency, also demonstrated by the pioneer of acoustic ecology. The only sound events which can be easily identified are the sounds produced by anti-theft gates. It is due to their 4,000 Hz frequency, which stands out from the general noise.

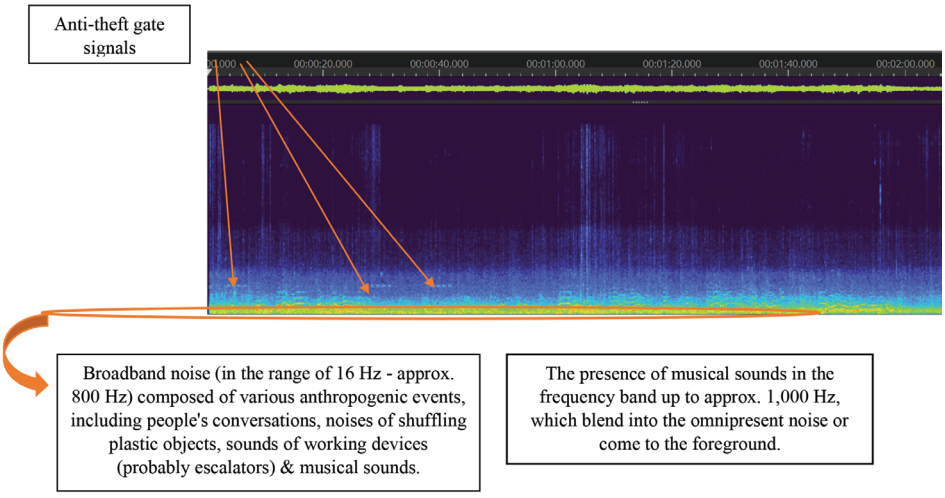


Figure 3. The exemplary spectrogram representing a cacophonic experience. The visualisation of a sound postcard recorded in Westfield Arkadia by OG_A_K_26

The collected data show that the customers of the shopping malls usually deal with two major types of acoustic zones, which are made distinct by the presence or absence of broadband noise (ranging from 16 Hz to about 1,000 Hz). As expected, at no point is absolute silence observed. The change in dynamics experienced by the customers is illustrated in the relevant spectrograms. They offer visualisations of the recordings made as a result of the compilation of sound postcards recorded during the soundwalks in Złote Tarasy (Figure 4) and Galeria Mokotów (Figure 5).

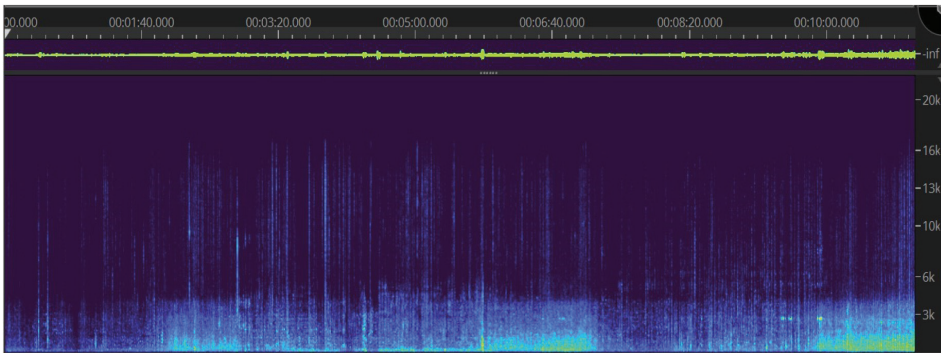


Figure 4. The exemplary spectrogram representing a differentiation of the acoustic zones. The visualisation of recordings made in Złote Tarasy by P_ZT_M_14

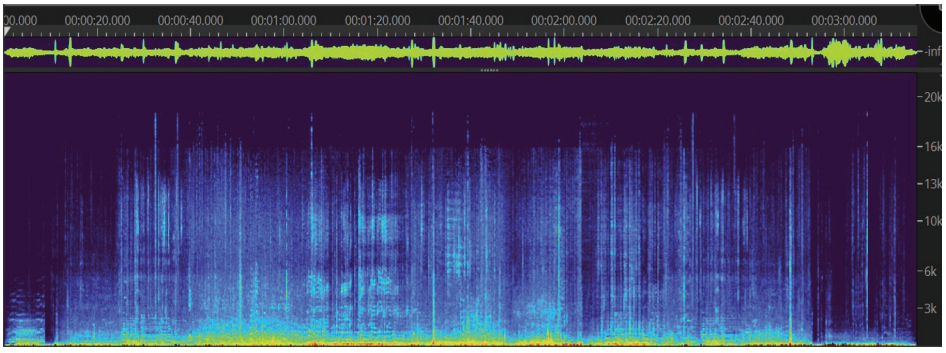


Figure 5. The exemplary spectrogram representing a differentiation of the acoustic zones. The visualisation of recordings made in Galeria Mokotów by P_GM_M_29

Both figures show that the dominant space in the shopping malls is the one where the whole audible band (ranging from 16 Hz to about 20 Hz) is filled with various sound stimulti. They appear with a lower or greater frequency. What is also interesting is the broadband noise of low and medium frequencies. Such an observation can be a starting point for further discussions on acoustic overstimulation experienced in shopping malls, which consequently results in a feeling of fatigue and tiredness in customers, signalled by the majority of the essays.

Interestingly, the thematic analysis revealed a significant discrepancy in the evaluation of places classified as “silence zones”. Research participants almost

always tried to assess the reason for "silence" in an environment where sound is normally expected. In many cases silence was perceived as an undesirable element. The respondents felt strange and uncomfortable. Some thought that they were being watched and should interact with the shop assistants. The lack of music was therefore a key element in shaping a negative experience of the sales venue (more in Makomaska, 2021). The presented results shows that managing the "silence zones" in shopping malls is one of the most difficult tasks that an audiomarketing company should face (see Beverland et al., 2006; Makomaska, 2019; Oakes S. et al., 2012), which is confirmed by some selected opinions:

> I believe that a silence zone can offer some relaxation, distance, and the time to recharge the batteries for further shopping. There should be more such zones than there are right now, they make the time go by slowly, yet the customers are thrown off their shopping spree, they dispense with unnecessary products, so it is not a good solution for the marketers (OG_A_K_07).

> Silence in a store can have positive and negative sides. It is useful in places such as bookstores, bank offices, and all the places which require some concentration. However, in places where other sounds can be heard, e.g. clinking of crockery, it is not welcome (OG_ZT_K_27).

## Conclusions & Implications

The complex context of contemporary shopping malls makes it very difficult to find a clear answer to the question of whether music, from the listener's point of view is still music or rather noise. Among researchers perceiving in-store music in terms of pollution (e.g. Bradshaw & Holbrook, 2008), the dominant view is that music becomes something transitional between noise and music. In the case of typical background music, e.g. Muzak, it is even treated as the "shadow of music" (Radano, 1989) that loses its distinction and belonging. Thus, music becomes similar to noise, from which, after all, it was by definition differentiated (Frith, 2002, 2004). As a result, the dividing line between silence, music and noise is increasingly blurred. This conclusion provokes further discussion on the long-term consequences of noise pollution (Frith, 2002; Peters, 2019; Wolak et al., 2016), especially in the context of attentional processes. It seems that two processes: habituation and desensitisation play a role here. The former refers not only to a habit of gradual elimination of useless actions through the process of learning, but also to a general kind of adaptation, even though they are not identical. According to David Huron, the process of habituation:

> should not be confused with sensory fatigue or sensory adaptation. It is not that certain neurons in the cochlea, for example, reduce their rate of firing because of repeated stimulation [...]. Habituation is an attentional process; it is the brain simply ignoring particular sensory inputs (Huron, 2013, p. 9).

The latest studies conducted in a group of animals show that habituation is a process which predominantly helps "to ignore unimportant repetitive stimuli. However, it is now recognized that habituation can also occur to aversive stimuli" (Wong & Rankin, 2019). This process can lead to desensitisation, which

diminishes reactivity and sensitivity. In the context of omnipresent music in public places, both processes manifest themselves in a perceptive status of music in lo-fi environments, which involves blurring the line between silence, music, and noise. This tendency is also reflected by latest discussion on the category of quietness analysed in the context of interdisciplinary urban studies. According to the latest definition: "urban quietness regards a balanced public acoustic environment where complex sounds prevail regardless of intensity and source, created or preserved in the context of environmental sustainability and environmental equity" (Tsaligopoulos et. al., 2021).

The concept of quietness draws attention to a need of "acoustic design" which was originally perceived as "attempts to discover principles and to develop techniques by which the social, psychological and aesthetic quality of the acoustic environment or SOUNDSCAPE may be improved" (Truax, 1999). According to acoustic ecologists, active listening is the simplest and most effective strategy to reduce the negative influence of noise, leading to the improvement of the acoustic environment in which people live. It is listening (not hearing) that should be the basis for proper "acoustic design" (e.g. Truax, 2001). Such an issue was also observed in the present studies in the groups with no musical education. The participants pointed to educational value of this research. They stressed that their participation helped them raise awareness of the form and role of acoustic space in commercial environments:

> It seems to me that from this moment on I will be more sensitive to various multisensory experiences and I will be more aware of them (OG_ZT_K_1).

> It is worth taking the headphones off and listening to the environment instead. You can rediscover silence in some places (it was the greatest shock for me!) Previously, I didn't pay much attention to the fact that background music could vary from place to place (OG_ZT_K_11).

> I learnt to respect my sense of hearing – it is worth taking the headphones off, even though ecaping from the surronding world can be tempting (OG_GM_K_2).

As a result, the primary assumptions behind the soundwalks have been realised. It was possible for some of the participants "to rediscover and reactivate [...] [the] sense of hearing" (Westerkamp, 1974). Active listening in a novel way becomes a tool enabling to perceive, evaluate and understand such phenomenon as audiomarketing (Makomaska, 2021). It also offers a chance to shape acoustic environments while respecting others' right to silence and to raise the awareness of negative consequences of being subject to excessive noise on a regular basis.

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