

Hearing Perspective – Thinking with one’s Ears

Sam Auinger

When I first met American composer and sound artist Bruce Odland at Ars Electronica in 1987 – I was invited by the festival director to assist Bruce with his installation – it became clear very quickly in our initial conversations that our respective approaches to the world were auditory ones. We were both firm believers that our everyday listening habits determined how we perceive music and sound. Focusing on sound installations/compositions in public spaces was therefore a logical next step for us. Two years later we founded O+A, using the term “hearing perspective” to describe our common starting point for our artistic explorations and in order to produce auditory art together.

In 1989 we formulated it like this:

Since the Renaissance we have had an agreed visual perspective and language to speak accurately about images. This we still lack in the world of sound, where words fail us to even describe for instance the complex waveforms of an urban environment, much less what those sounds do to us and how they make us feel. We are lost in a storm of noise with no language for discussion.

Odland and Auinger are learning to make sense of the sound environment we live in by listening with attention, hearing, exploring, and attempting to understand the cultural waveform as a language. In a primarily visual culture where decisions and budgets are often arrived at through visual logic, we must note that thinking with your ears tells a very different story. Why does the MOMA sculpture garden, bastion of High Art, sound like any taxi stand in midtown NYC? Why is an expensive ‘quiet’ car quiet only when riding on the inside? (O+A 1989)

Reading this programmatic text today more than 30 years later, I am amazed by the extent to which these things and descriptions still apply. Despite many efforts, a broader social awareness of these issues is only developing very slowly.

I was born in Upper Austria in 1956. A large part of my early childhood was spent on my grandparents’ farm at the edge of the city of Linz. A vital practice in my living environment at that time was listening to the surroundings. Sounds and noises were important sources of information for coping with everyday tasks, and music served as an instigator for social interactions. The living conditions and sound in this habitat produced a natural/tacit “thinking

with the ears” (and a world in which people constantly communicated with their environment through their senses). Natural conditions such as weather, seasons, day and night cycles and strict cultural traditions acted as a kind of musical conductor who temporally structured economic and social actions, processes, and events.

The most remarkable thing for me, in contrast to today, was that most of the things that were discussed, proposed or worked on together had a direct, immediate and tangible impact or produced a result that could be experienced by all involved. A vivid memory for me that comes to mind is a barn story. The hours before a cow gave birth was always associated with extra attention devoted to sounds and voices in the cow barn. Any fears my grandmother voiced concerning uncharacteristic breathing of a cow about to give birth and the precautionary measure to summon the veterinarian immediately turned out to be a necessary and good decision in the hours that followed.

This all sounds like like centuries ago, but I think what I experienced (almost 60 years ago) was a kind of general condition in the everyday life of a Central European farming community. In fact, even then, life in a city like Linz was much less bound to these natural as well as rigid cultural cycles, and city dwellers did not have the need to organize their daily lives through sensually acquired information. Today, in 2021, our everyday lives in general seem infinitely far removed from that. An overwhelming visual orientation in all our social interactions is undeniable. Almost everything we do is interspersed with a screen or interface, and direct, conscious sensory experiences are increasingly reduced to the very personal space of directly experiencing our bodily functions – in doing so, the urban-rural dichotomy has softened a great deal (I continue to speak here of Central Europe only).

At the same time, a multitude of machines, traffic and media sounds that intrude on us – without a direct reference to us or the location – entice and force us not to take notice. We lend “no ear” to the space in which we find ourselves.

For more than 30 years now, my artistic research and practice and my role within O+A has been about understanding the sound environment in which we live and investigating and deciphering its atmospheric and sonic qualities and the resulting causal relationships.

Slowing down and developing a practice of pausing and attentive listening brings about a general change in the way we perceive the world in which we live. This changes not only the

manner in which we hear the world, we also begin to smell (more) and see and perceive other things. In doing so, we experience things where and when they really happen, perceiving space and time as a coherent whole rather than through mediated representations. For example, when we walk along an urban street with heavy traffic noise, or experience how motorized traffic dominates the sound sphere in that location, we hear the energy consumption. Yet we also hear a car-friendly environment, or, in other words, at this moment in time we hear a way of living, and on the side we experience very concretely that large loudness necessitates a small auditory space and that the loud masks the quiet. On the other hand, enjoying a certain peace in nature can be pleasurable or disconcerting and we might ask ourselves: “Shouldn’t I also hear insects?”

We thus begin to “read” atmospheres and are given an impression of what makes a place a place, what characterizes it and what limits it. Time and again, great artists and thinkers have reflected on power, strength and the magic of hearing and listening, writing texts and works with the aim of gaining a deeper understanding of their inherent physiological and psychological aspects. Yet what really interests me and what it’s all about today more than ever, is to invite people to do the necessary work, to become active, to get out there, to go out and to stop and listen again and again. We call this thinking with the ears, accidentally giving rise to a language for our auditory habitats – a “hearing perspective”.

In fact, our get-together here, and this text, arose from the wish to reflect on the *bonn hoeren* project ten years later and to discuss and comment on it from a participatory or thematically connected angle.

For me, my six-month residency in Bonn in 2010, my artistic research there and the in-depth exchange with Bonn residents and their city was an important station on my further artistic path, and the text here is drawn from this.

During the first two months as *bonn hoeren*’s first city sound artist, my wife, the artist *katrinem*, and I literally explored the entire city on foot. My topic was urban planning and the resulting designs and conditions for a city sound. The interesting thing about getting to know a city on foot is that you never leave the large, perceptible space and the slowness of locomotion enables a high degree of attentiveness for sensual impressions – ideal prerequisites for discovering a city aurally (Auinger, 2010, *Listening Sites in Bonn* – see below).

During many of these Bonn rambles I chatted with interested locals who, for example, wanted to know what I was doing, what particularly interested me in a particular site or why I was clapping there, for example. Sometimes long conversations ensued about urban sounds and urban planning, about the meaning of auditory qualities in the urban setting in general or about specific places and their intrinsic atmospheres. What struck me in particular was, on the one hand, a recurring initial difficulty to discuss these things together – the non-existent language for doing so – and at the same time a real desire to participate in the discourse. A recurring theme in these conversations were traffic noise and noise in general.

Without a doubt, acoustic emissions in cities are on the rise, and noise – purely for quantitative reasons – has become a prevailing public topic. Briefly, an unbelievable statistic: On 1 January 2021, 66.9 million motor vehicles were registered in Germany, resulting in a motor vehicle density of 710 per 1000 inhabitants.

At the beginning of the 2000s (18 July 2002), the EU Directive on Environmental Noise came into force, requiring European cities to issue noise maps and follow these guidelines. In doing so, noise was recognized as a health risk at a broad level. This development, while certainly welcome, was very one-dimensional from the beginning on and more or less only focused on noise in the sense of being “too loud” (loudness). This restriction made it possible to calculate urban noise rather than measuring it. Public health was at the forefront of the public discourse, but this too was understood in a very narrow context as the discussion was far removed from a general ecological approach, the sole addressees being humans and their well-being. This has given rise to a number of misconceptions in public opinion, for example that electric vehicles are noise-free – i.e. soundless – in contrast to the internal combustion engine. On closer examination it quickly becomes evident, for example, how much urban sound is an expression of cultural and socio-political practices – in a dominant economy – and to which extent its perceptibility as well as its genesis are contextualized. In the prevailing discussions about noise, this was and is only conditionally, if at all, perceptible.

During my artistic explorations and work as Bonn’s first city sound artist, it became clear to me during these many conversations with citizens on the topic of auditory habitats that an important part of my future work should consist in creating procedures, accesses and services that would give interested individuals the opportunity to become competent participants in the urban sound discourse on the basis of their self-reflected experiences. My first concrete work

in this direction was my *Listening Sites in Bonn* map. It had and has significant educational potential. Fed by my artistic research in Bonn, it became a separate project without being planned that way, a project that had nothing to do with my commission as an urban sound artist to develop an installation for the public space. I am grateful to Carsten Seiffarth for making it possible to actually realize this idea at the time. He supported me from the beginning and immediately saw its value in promoting a wider urban sound discourse.

The conviction gained in Bonn that concrete personal and bodily experiences are essential in a real space in order to competently participate in a discourse, and my desire to create works that invite people to participate has only become stronger over the past years. To pause and listen, this essential practice in developing a “hearing perspective”, took on a new meaning for me. There is no activity without sound, every movement creates acoustic emissions, at the same time there is (in the real world) no sound that reaches us unfiltered, almost everything is audible, the world speaks to us.

Visual cognition is a familiar concept: We can think by observing, by imagining something and by relating our senses and ideas to each other. In contrast, the thought of thinking with one’s ears sounds very obscure, if not totally bizarre and strange: How could one possibly think with these auricles/earlobes to the right and left of one’s head? In order to make the emotional and atmospheric qualities and information embedded in a sound environment audible and comprehensible we need to begin to pause and listen. The interpretation of this auditory information requires practice, time and attentiveness. In doing so, we dive into an auditory environment that is based on an active and reflective practice of listening. By placing our bodily and individual perceptions at the forefront, we use these to reflect on the causal relationships of auditory experiences, actors and the built environment.

In the following, I attempt to outline a possible access to a “hearing perspective” for everyone who can hear. In doing so, auditory qualities of a setting or a place can be recognized, a given atmosphere can be read and interdependencies that manifest themselves in the audible can be detected. A very simple, and unbelievably memorable, personal experience related to this was an emphatic piece of advice given by a friend in India (in the mid-1990s) to listen to the sound of the brakes when the bus stopped at the station and only then to decide if I really wanted to board it. Shortly thereafter, the poorly secured winding mountain road and the ever-present wrecks of crashed buses underscored this warning in the most urgent manner.

Let's start by differentiating between acoustic and auditory phenomena: Their main difference lies in the manner in which acoustic noise is described in terms and concepts in physics – and how sounds are heard, experienced and embodied by listeners, pedestrians and city dwellers. We speak of acoustics when we describe the physical characteristics of acoustics and their dispersion in a space. These characteristics can be measured, quantified and modelled. On the other hand, auditory phenomena relate to a sensuous experience of sound by living creatures; here the focus is on the qualities of sound events, which we can neither clearly define nor objectively measure.

In order to think with one's ears, it is helpful to understand a few fundamental things about acoustics. For example, that sound occurs in wave form and propagates at a certain speed. It is also useful to be clear about the fact that the manner in which a person processes and perceives a sound event is dependent on a series of personal physiological and psychological factors. And that we process the auditory in an ear-brain system (EBS). How can we imagine what that looks like?

Let's find an access based on two approaches. First via the so-called auditory modalities. In this case we observe various settings/modalities that our EBS has access to, in order to enable us to navigate complex sound environments. In the second case we pursue the question of which feedback systems interact when we are aware of a sound event and try to make sense of it.

Modalities:

Building on the categories developed by Pierre Schaeffer, composer Michel Chion recognized that our sensory system processes auditory input in at least three different modes (Chion 1991, p. 25). The first two are causal and semantic listening, and these are more or less applied automatically in everyday life.

Causal listening refers to the recognition of sound patterns, creating connections and contexts: we recognize that a certain noise or a certain sound – whose source we may not be able to see – is produced by a car or a bicycle, a horn or a bird. A certain sound or a certain noise is linked here to a meaning, which is often accompanied by a pattern of action as a response.

One could even claim that the sense of hearing controls the sense of sight in this mode – the ear leads the eye – and we direct our gaze quite automatically towards whatever we just heard.

Semantic listening, on the other hand, enables us to follow a conversation, to understand words and contents despite different dialects and linguistic peculiarities. Here, our ear-brain system is able to process auditory patterns and character sequences without necessarily connecting them with a certain sonic pattern.

The third mode, which Michel Chion refers to as reduced listening, differs from the two previous ones in that it has to be consciously learned. Reduced listening requires paying attention to the genuine, material characteristics of a specific sound or noise, and in doing so ignores its meaning. This type of attentive listening was first discussed by Pierre Schaeffer when he developed the musical practice of “musique concrete”. To a certain degree, we are very familiar with reduced listening in our individual daily routines, such as when we tune the strings of a guitar. Tuning and pitch are fundamental characteristics of a sound that can be explored and listened to regardless of their cause and meaning. It is important to note that these three listening modes never appear in pure form in everyday settings.

In addition to Bruce Odland, I have also engaged in artistic research on the topic of “urban music” with urbanist and information architect Dietmar Offenhuber over many years. Our starting position is that architecture is a sound body, that it forms a space in which all sounds surrounding us reverberate. An outcome of this artistic research is that, in addition to the three named listening modalities – causal, semantic and reduced listening – there is a fourth one – affective listening.

This is reflected in the affective and emotional reactions, which are elicited through settings, spaces and places (their psychotropic qualities). As philosopher Gernot Böhme has noted, our sense of direction and our sense of atmosphere and mood is based on this modality (Böhme 2000). Compared to the other three modes, it is the most complicated and difficult to find a conscious access to. As affective listening is not restricted to the ear but includes the whole body, it is composed of an unstable and dynamic amalgamation of the other three modalities. Since sounds are vibrations we do not only perceive them with our ears but with our entire bodies. The human body is full of hollow spaces that reverberate or resonate. We can feel basses in our stomachs and high frequencies on the top of our skull. Our brain is good at

filtering out undesired sounds and noises, with us no longer consciously perceiving them but still noticing a bodily reaction.

For each of us there are places and acoustic settings (with their respective moods) that make us nervous or calm us down, that discipline or free us. The mode of affective listening connects us with the now – the situation right here and with the presence of activities and actors we might otherwise perceive unconsciously. Through this affective element and its relationality, a sensory perception of this kind determines an emotional connection with the world we live in (Offenhuber/Auinger 2020).

This fourth modality, affective or emotional listening, is a significant factor in determining how we actually carry out our social and economic interactions. We can practice it, and in doing so develop the ability to recognize whether the atmosphere of a place is beneficial, confusing or inhibiting for our needs and plans. This may help us in avoiding a series of stressful daily situations. Trying to hold a serious conversation in a loud club or a full restaurant might not be an expedient idea. This ability allows us to judge atmospheres and, if necessary, to articulate our need for another environment and make practical suggestions for it.

Interacting Systems:

When we hear a sound event and decode it – i.e. recognize a meaning or an aesthetic quality in it – four systems are at play:

- acoustics
- physiological disposition and psychoacoustics
- cultural frameworks
- personal history

When we hear a sound event, we primarily perceive vibrations in the air. In the process, sound propagates in waves – at a speed of 343 meters per second at 20 degrees Celsius. Temperature has a significant effect on the speed of sound. It increases or slows down by 0.6 meters per second per degree. So it is possible to hear whether it is getting colder or warmer. To understand why and how certain acoustic phenomena and sound effects occur in everyday

life, we only need to know the speed of sound and that sound oscillates and propagate in waves. Everything else unfolds from this. This knowledge also has very practical applications: in my childhood a common method to measure the distance of a thunderstorm was to count the seconds between lightning and thunder: "... 21, 22, 23, 24, 25, 26, thunder ... it's two kilometres away."

When we hear the song of a blackbird or the soft roar of a passing motorcycle, we perceive different sound waves (pitches) described as vibrations or oscillations per second or hertz (Hz). We are able to perceive frequencies from 16 to 20,000 Hz. This is the hearing range of the human ear. Based on the speed of sound, this means that the lowest frequency we can hear (16 Hz) has a wavelength of 21 m, and the highest frequency we can hear (20 kHz) has a length of 1.7 cm. This difference in wavelengths has practical implications for how sounds of different frequencies propagate and are reflected from solid objects and surfaces. As a rule of thumb, low-frequency sounds propagate like water because of their relatively long wavelengths; almost nothing stops them. The higher the frequency, the shorter the wavelength, so sound behaves much like light: every object and surface has a reflective effect.

In everyday life, however, we almost never experience a sound event as a singular frequency. Instead, we are mostly confronted with a spectrum – composed of many frequencies. As a result, the different material conditions of an environment in which a sound event takes place are also encoded in the auditory. We hear nothing without reflections – sound bouncing off materials and objects. The world speaks to us. These primary conditions give rise to several effects that shape our listening space. The most important and ubiquitous are: filtering, colouration, reverberation, echo and Doppler effect.

Note that any object, any space, built or grown, reflects sound events either as a whole or in parts of its frequency spectrum, depending on the size, shape, surface and materiality of the object, of the space. This amplification or weakening of certain frequencies of a sound is referred to as filtering and also as colouration. It is referred to as the auditory colour of the space (Blessner and Salter 2009). An acoustic space can have a light or a dark auditory colour; it can be sharp or dull. Think about how different your voice sounds in the bathroom compared to the living room.

We experience reverberation, for example, as continuous reflections of sound waves in an enclosed space or naturally enclosed area. This makes a sound event last longer. The larger a room, the more reverberation we experience. Just think of sounds and noises in cathedrals, in an underpass, or in a forest with old and tall trees. But when the reflections of a sound wave are delayed so much that they are perceived as an independent auditory event we call them echoes. We experience this when shouting or clapping in front of distant large objects in free space. The famous multiple echo in the mountains comes to mind.

When we walk or stand next to a moving sound source, such as a busy road, we perceive the pitch of a sound signal moving toward us as higher than it actually is. In contrast, the same signal moving away from us is perceived as lower. Listen carefully the next time you hear the sirens of emergency vehicles: This is where the so-called Doppler effect is best demonstrated.

If we practice conscious listening to these interactions an auditory memory will develop over time, as well as an understanding of everyday acoustics – the laws of physics themselves do not change.

Our hearing is neither physiologically nor psychoacoustically stable. It changes according to age, life circumstances and experiences. Unfortunately, our ability to decode auditory information diminishes with age. The older we get, the narrower our auditory range becomes. In the process, our ability to hear high-pitched sounds decreases more and more. Spatial orientation and speech intelligibility become increasingly difficult. This is because spoken language consists of vowels and consonants, and the latter are high frequency. Something similar happens with localization in space. This depends on our ability to detect the reflections of the high frequency components of a sound or sound event, and this becomes more challenging for older people.

In addition, our hearing uses several tricks, shortcuts, and shields that allow us to navigate complex sound environments. For example, our hearing always adjusts to the average loudness of the environment. Listening to music in a quiet room requires less volume than listening through headphones on a bus or subway. Another perceptual trick is to focus on a particular frequency spectrum. The infamous cocktail party effect is one such example: We have no difficulty focusing our attention on the speech of a particular speaker by blocking out irrelevant information from the surrounding environment (Augoyard and Torgue 2006).

It is beyond our scope to go deeper into this physiological and psychoacoustic level, but there is great literature about it. What seems important, however – to start thinking with the ears – is to understand that we all hear differently and therefore we evaluate and decode the same acoustic situation differently, if only because of physiological differences.

Culture shapes what dominates the acoustic environment. It shapes how we use public space, how and when someone perceives a quiet environment as respectful or as dangerous, how individual signals and sounds are perceived and understood, for instance whether honking is understood as a sign of aggression or as a friendly message.

The physical space is only an empty shell as long as no actors fill it with life. They transform the physical place into a cultural space. Moreover, the cultural practices and historical frameworks of how people act, interact, perceive and interpret a given environment are charged with affects and desires, wishes and dreams, fears and also rejections. The quickest way to develop an understanding of this is to begin with an awareness of one's own immediate culture.

There is no action without sound. What we hear and how we hear is conditioned by repetition, a listening habit. What we hear consciously and unconsciously is part of our socialization and influences our taste. If you come from a proud steelworker family, you have a different attitude towards industrial sounds than someone who grew up in a rural environment. An exciting way to better understand this is to develop a keen interest in sound events and sound environments that you prefer or dislike, and then reflect on why and how these personal preferences have developed.

Everything I have just presented is only brought to fruition when we actually begin to pause and listen. If we succeed in developing a practice for this, a memory for sounds, acoustic spaces and situations will inevitably develop. Our conscious listening experiences and the questions and understandings that arise will form a language for what we hear. Places and spaces will begin to speak and our habitats will begin to tell other stories. We will develop a "hearing perspective" and think with our ears.

Translated from the German by Julia Schweitzer

Literature

Jean-François Augoyard/Henry Torgue (Hg.), *Sonic Experience: A Guide to Everyday Sounds*, Montréal 2006

Sam Auinger, *Listening Sites in Bonn*, Bonn 2010

Sam Auinger/Dietmar Offenhuber: "The Plaza", in Holger Schulze (ed.), *The Bloomsbury Handbook of the Anthropology of Sound*, London 2020, p. 191-209,
<https://doi.org/10.5040/9781501335402>

Barry Blesser/Linda-Ruth Salter, *Spaces Speak, Are You Listening? Experiencing Aural Architecture*, Cambridge, MA 2006.

Gernot Böhme, *Atmosphäre. Essays zur neuen Ästhetik*, Frankfurt/M 32000

Michael Chion, *L'Art des sons fixés ou La musique concrètement*, Fontaine 1991

O+A (d. s. Bruce Odland und Sam Auinger), "Hearing Perspective (Think with your ears)",
<http://www.o-a.info/background/hearperspec.htm>