Exposed to an Invisible Nature

Tim Otto Roth and Marit Zöcklein in conversation with the advanced course in music of the C.P.E. Bach grammar school

von Lola Atkinson

Lola: Hello, Tim Otto Roth! Many thanks for taking the time for an interview with our class. Your practice is unusual: one doesn't often meet composers combining art, music and science in a project openly accessible to visitors. What is the trajectory that led to your current work?

TOR: I began by studying, entirely conventionally, politics and philosophy in Tübingen. For a long time, I wasn't interested in art at all, but very much so in music. I grew up in the countryside, where I received classical training on the clarinet and played in a music club. In fact, when I was still going to school I thought it would be great to become a professional musician. But then I heard a magnificent clarinettist play live and said to myself: "No way, you'll never get to that point." And I left it at that. That I could have gone into the direction of composition or conducting was something no one had told me.

Lola: You then went into a completely different direction.

TOR: Out of interest for the technological medium of photography, I began to study at the art college in Kassel. Via the detour of the course in Visual Communication I ended up in the visual arts after all. Until 2007/2008 I carried out a number of visually orientated projects. It was then, after a long time, that sound re-emerged as a concern, in the context of a conceptual reflection on how objects in space could be made to communicate with one another. What I had in mind couldn't be carried out with light.

The idea I had, to be more precise, was what it would be like if you placed sinus generators and microphones into a room. The microphones would be able to register whether a generator had played a tone specific to them. On the basis of this feedback principle I was able to construct an interactive network of acoustic neurons functioning similarly to our brain cells, only that they don't communicate via currents, but via sounds moving in space. This project – the Sonapticon – I was able to realise as visiting artist at the Center for Art and Media (ZKM) Karlsruhe, working together with neuro-mathematician Benjamin Staude. In their large studio, they have a sound dome providing 43 hemispherically arranged speakers. This was a decisive moment in terms of my increasing engagement with sound. I worked with sine tones for the first time, and for the first time came into contact with micro-tonal and entirely non-harmonic scales. These came into view from a technical reflection: I needed to find a way to detect specific frequencies. But typical frequency tracking processes are calibrated to the natural overtone rows. As a result, such a system has difficulties distinguishing between fundamental tones and their octave. So I had to veer around octavation and ideally even fifths to make sure that the sine tones, oscillating on one frequency only, could be tracked. So when you shift to micro-tonal systems working with different intervals, you elegantly escape the traps of frequency tracking. This is how I came to micro-tonality, occupying myself with all kinds of different scales, such as the Indian Shruti scale comprising five fundamental notes around which the other tones are grouped cloud-like in micro-tonal intervals.

shifting to sine tones and micro-tonality came into view more from a technical reflection

At the ZKM sound dome, I had at my disposal 43 speakers, a great sonic hemisphere. I noticed, however, that due to the distance between the speakers and the audience members, the sounds always seem slightly removed. So while sound travels through the room wonderfully, it always remains slightly distanced – which results from the lack of the local acoustic pressure a physical sound-emitting body would provide. And this triggered the idea of working with much denser systems of sound bodies physically distributed in space. When you play sine tones in such an environment, space itself turns into synthesizer and instrument, with the tones overlapping to form locally specific sounds.

The Sonapticon in the Sound Dome at Center for Arts and Media (ZKM) Karlsruhe in 2012. Das Sonapticon im Klangdom am Zentrum für Kunst und Medientechnologie (ZKM) Karlsruhe.
Image: imachination projects

Lola: So it wasn't from start that you worked with music. Nevertheless you were fascinated by it. What do you think – beyond your own work with music – is the purpose of music?

TOR: (brief silence) I've always had some difficulty with the idea of a mission. While I primarily consider myself a conceptual artist, for sound in particular providing an emotional access is also important, through the production of something like resonance – that is, by allowing a certain string in the listener to resonate. An extreme example occurred on Sunday a week ago: a woman stood in the entrance area with tears in her eyes and said: "I can't go in" – in some way, the installation had evidently caused an inner string to respond. This seemed like an achievement to me, even if I was sad for this visitor not to be able to stay in the church.

allowing a certain string in the listener to resonate

As this piece works both optically and acoustically, I've noticed that the barriers for sound are much lower. Something purely visual often feels intimidating. By contrast, even children frequently visit the church space in the afternoon, in spite of the sounds not following classical harmonies at all. Really everything sounds off in some way. There is clearly a charge in the work that stirs curiosity and attracts visitors. Reaching this point is something I am interested in.

Lola: So what you're saying is that music or sound as such exert a greater gravitational pull on humans than, for example, a picture or light?

TOR: Yes, and I mean especially the immersive aspect. Of course, you also see images, lights whirring about, there is something to these, too. But a sonic sphere has a completely different constitution, as a medium, than the visual domain. I think maybe this was also the impetus that made you experiment with it.

MZ: I think in the course of their lives, human beings as such acquire more optical filters than acoustic ones. Sonic perception is less influenced by learning processes, which is why there is such a low threshold to engaging with sounds. Every person feels something when hearing sounds. I mean, when being shouted at they might be scared or at least feel discomfort, while with a beautiful melody you might relax.

as you leave you suddenly see the world a little bit differently

TOR: Though there isn't much of a "beautiful" melody here – but that's something engaging about the work. Not what suggests beauty in the traditional sense, but something interesting and stimulating, an interplay between attraction and distance. Of course, I also pointedly make use of silence. There are always fifteen seconds of silence, with nothing happening, in between the pieces. One of the physicists in our team anxiously raised this with me: "Tim, there are 15 seconds of silence! The audience will become really nervous!" And I replied: "Yes exactly, that's great!"

Lola: It's really a revolutionary idea to relate sound and light in this manner. And the light and sound frequencies, of course, emerge from neutrino data. Do you think the connection established between art and science allows audiences to find an easier way in to the scientific aspect, that is, does the audience reach a different kind of insights into science?

MZ: I would definitely say so, for with **aiskju:b** and other experiments, we're obliged to make accessible to the public some of our data as we're part-sponsored by public funding. But which person notS involved in science looks at such data?

Lola: So you would say we've learnt something about the physics and the experiment without having looked at the data?

MZ: Certainly. You know what IceCube looks like, and you know what happens inside in terms of the physics. And what feeds into our measurements.

TOR: It is even more fundamental than that: you're left with the impression of forming part of a nature continuously present, but invisible. This nature rushes through you without you noticing at all. I'm convinced that really it's sufficient to take this knowledge home with you. You don't have to know whether it was a neutrino, a muon or another particle – even if a physicist must hurt inside hearing this…. For me as an artist, it is a learning process in steps, with the emotional experience coming first. But we don't need to rest there. If you're open to it, there is also the conceptual level. It is this additional cognitive level that is really thrilling. You don't just leave the church with an experience, rather if you want to, as you leave you suddenly see the world a little bit differently.

MZ: Exactly, now you know: something is happening at the South Pole. And it is not simply mad scientists sitting there and doing something or other, but there is meaning to it in relation to your lives.

Lola: Many thanks for the fascinating answers to our questions, and for this impressive artwork. I hope you continue to find pleasure and reach new insights in your work!

slightly edited interview from 11.09.2018