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Profile: Theory and History of Sound Art

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The *singing* stones of Lukas Kühne or how the stone creates a tone

German sound-sculptor Lukas Kühne designs resonating concrete chambers which are tuned to react to certain pitches. Standing in public spaces within the surrounding landscape, Kühne's sound-sculptures are linked by a common feature, acoustic resonance and his extensive research in space and frequency.

Lukas Kühne's work stems from a line of sound artists who have researched space and sound such as Iannis Xenakis and Bernhard Leitner. Regarding the inception of designing new space, Dr Kersten Glandien pinpoints the origin of new building for sound to the pioneering collaboration of architect Le Corbusier with Xenakis for the Phillips Pavilion in 1958.¹ Since the second half of the 20th century art shifted towards space: art practitioners oriented themselves towards a process and an experience rather than a quest of an object, a message or self-expression. The desire for an expansion outside of the traditional concert hall led to the creation of new spaces for these new emancipated sounds and for the rise of a new genre, *sound art*, a hybrid art form which emerged in the 1960s when "artists and musicians started to combine visual and auditive elements into sound sculptures".²

I will examine the natural amplification phenomenon as well as the physical and sculptural experience, focussing on the *Organum* (2014) and *Cromatico* (2011).

¹ K. Glandien, 'Sound in Space' in *Theory and History of Sound Art*, Digital Music and Sound Art, University of Brighton, UK, 21 February 2018.

² K. Glandien, 'Art on Air: a profile of new radio art' in *Music, Electronic Media and Culture*. ed. S. Emmerson. Ashgate, Aldershot a.o., 2000, p.172.

Built in a remote location on the island of Hailuoto in Finland, the *Organum* is a site-specific concrete sound-sculpture made of three interconnected round shaped domes of different sizes. Each dome has an individual resonance which corresponds to a note and acts as a natural amplifier.



Figure 1 The *Organum* by Lukas Kühne, picture by Veli-Pekka Lepistö

Based on a similar principle of resonance, Kühne previously designed *Cromatico*, in Tallin, Estonia. In this instance, each block of stones is emitting a natural resonance linked to the tones of the chromatic scale³. Kühne envisaged *Cromatico* as a journey to experience a “visual sensation” of the scale.⁴



Figure 2 *Cromatico* by Lukas Kühne

³ a musical scale with twelve pitches which is familiar in the Western world.

⁴ L. Kühne, *Cromatico*, Tallin, Estonia <http://www.lukaskuehne.com/CROMATICO.pdf>, p.3, (accessed 10 March 2018).

Lukas Kühne states that his territory is “pure acoustic”.⁵ His sculptures are based on principles of acoustic resonance: a phenomenon in which acoustic systems amplify sound waves whose frequency matches one of its own natural frequencies of vibration. From the vast field of acoustics, we need to turn to the sub discipline that is the study of “architectural and vibration acoustics: or how sound behaves in buildings and structures”⁶. Sound artists Anke Eckardt et al. introduce the notion of *sound field* as follows: “Sound measures space: a sound source generates a sound wave, which in turn constructs a sound field that reflects the dimensions and characteristics of the space”.⁷ Thus, the dimensions and characteristics (such as the density of the material) of the space determine the frequencies. Frequencies and pitch are related. The frequency is the tuning, the tone emitted from the surrounding stone which holds tremendous acoustic qualities, carrying sound waves. Sound artist Bernhard Leitner confirms that “even natural stone, a hard material, contains sound. Its secrets are crystal and number, and its sound can be evoked and awakened.”⁸ The sound is alive within the stone.

We must point out the invisible material crucial to Kühne’s practice: the air, his favourite material to sculpt. Lukas Kühne states that in his spatial works, if the concrete is the support, then the air is the content; his spaces are built for these masses of air to be sculpted.⁹ The air is a collaborative partner. Sound waves are indeed physical movements of air particles. Kühne operates a fine balance between support (concrete) and content (air). The air is the mediator that makes possible the physical and sculptural experience of pressure in space and sound.

As well as a mediator, a resonator is required. Acoustic instruments use resonators: for the violin, its surrounding board. In Kühne’s *Organum* the dome is the resonator. The title conveys its purpose: *organum* from Greek *organon*, a tool, an instrument. On describing the Taj Mahal’s gigantic dome, Bernhard Leitner underlines that “a simple melody played on a flute will interweave with itself, going on and on to become an almost timeless sound”¹⁰, as if the room never ends.

⁵ Artishock Revista ‘*Mi territorio es acústica pura*’ <http://artishockrevista.com/2015/12/02/lukas-kuhne-escultor-sonoro-territorio-acustica-pura/>, (accessed 17 March 2018).

⁶ A. Hugill, ‘Understanding sound’ in *The Digital Musician*, Routledge, 2010, p.34.

⁷ H. Klussmann, A. Eckardt, T. Klooster, ‘Aural-Sculptural Relations in Space’ in ‘*sweep: Symposium zur Klangforschung | Symposium on Sound Research*’, kassel university press GmbH, May 2016, p.12.

⁸ B. Leitner, ‘Acoustic Space. Experiences and Conjectures’ in *sound: space*, Cantz, Ostfildern, 1998, p.299.

⁹ skype interview with Lukas Kühne, 11 April 2018.

¹⁰ Leitner, op.cit., p.295.

How do we experience the sound in Kühne's chambers?

The main criteria in SoundArt as defined by Dr Kersten Glandien is that "sound art is relational"¹¹; here the sound relates to a body, the activity of people.

Our body is a resonant space. We experience sound through corporal listening as we navigate the space. When we enter an empty space, we inevitably feel the need to walk to sense it. As Bernhard Leitner puts it "man makes the room resound with his presence".¹² From our position in-motion, we are ourselves modifying the sound. Kühne affirms that the participant will sculpt the air as well as exploring the possibility of that space.¹³ Leitner underlines the importance of understanding the body as an autonomous acoustic instrument, "an integral acoustic sensorium" that is: "the way the sound is transmitted in the body, how it passes through the skin, and how it is transmitted on."¹⁴

Cromatico is tailored to the body: the measurements of the sculpture's chambers are scaled in proportion to the body of the visitor. The chamber's heights increase from the highest 164 Hz tone at 2.21 meters to the lowest 88 Hz tone which stands at 4.04 meters high.¹⁵

To apprehend the resonance of a space we also often use our voice. There is in Kühne's work a connection between the stone and the voice. In the *organum*, the three domes connect three singing cultures whereas *Tvisöngur*, a sculpture of "singing concrete", is made of five interconnected domes creating an interactive tribute to Iceland's tradition of five-tone harmony.¹⁶ Lukas Kühne does invite the audience to use their voice and *play* the space. The audience will engage with the surrounding space, as performance artist Allan Kaprow puts it "passively or actively according to (our) talents for engagement".¹⁷ Drawing from personal experience as children, as soon as we entered a resonant chamber, we felt the need to send our voice to echo.

¹¹ K. Glandien, 'Concept and Overview' in *Theory and History of Sound Art*, Digital Music and Sound Art, University of Brighton, UK, 7 February 2018.

¹² Leitner, 1998, op.cit., p.294.

¹³ skype interview with Lukas Kühne, 11 April 2018.

¹⁴ B. Leitner, 'Sound Cube, Bernhard Leitner interviewed by Wolfgang Pehnt' in *sound: space*, Cantz, Ostfildern, 1998, p.92.

¹⁵ Kühne, *Cromatico*, op.cit., p.3.

¹⁶ L. Kühne, *Tvisöngur*, Seydisfjörður, Iceland, <http://www.lukaskuehne.com/TVISONGUR-Construction.pdf>, p.2, (accessed 26 March 2018).

¹⁷A. Kaprow, 'Notes on the Creation of a Total Art' in *Allan Kaprow – Essays on the Blurring of Art and Life*. ed. J. Kelley. University of California Press, Berkeley/ Los Angeles/ London, 2003, p.11.

Kühne has been finding motivation in the sound emitted from his sculptures whilst carving and he concluded that he did not want to separate the audible from the visual.¹⁸ His interest not only lies in the idea of creating a sculpture that can be entered or seen from afar but also in researching the auditory and visual senses to produce a synaesthetic experience; “a space you can enter, touch and play with to better understand space in relation to the frequencies contained”.¹⁹

From the chambers’ openings to the outside, as seen in the *Organum* and *Cromatico*, we can also experience a filtration of the outside sound world at the resonant frequencies of the space we are in. The main sound source could be the wind. There is also a temporal element: the changing seasons and light can modify the space gradually in time and impact on the resulting sound. Bernhard Leitner states that “architecture is basically static; time is introduced through changes in daylight, periods of different intensity of noise and, above all, through the movement of people.”²⁰

Kühne’s sound-sculptures can be of many uses: in the *Organum*, one can “sing, speak, listen to silence or have a piano concert.”²¹ German-born sound artist Antye Greie, aka AGF²², led a sound art residency, *Sonic Wilderness*, on the island of Hailuoto. A collective improvised performance *prepared organum* took place in the *Organum*²³. The artists *prepared* the space, integrating earthy percussion, sound field kit and exploring voice; electronic devices had to be charged as there is no power in the *organum*.

This non-powered structure is offering a “new space(s) for new sound work” as envisioned by Karlheinz Stockhausen²⁴; an ideal space to perform a rendering of John Cage’s *4’33*. The *Organum* can become a space for organised environmental sounds and to explore our acoustic environment as envisaged by Raymond Murray Schafer. Kühne is embracing acoustic, natural phenomenon to create permanent art which can blend with nature.

¹⁸ Artishock Revista, ‘*Mi territorio es acústica pura*’, <http://artishockrevista.com/2015/12/02/lukas-kuhne-escultor-sonoro-territorio-acustica-pura/>, (accessed 17 March 2018).

¹⁹ L. Kühne, *Cromatico*, <http://www.lukaskuehne.com/CROMATICO.pdf>, p.3, (accessed 10 March 2018).

²⁰ B. Leitner, ‘Sound Architecture, space created through traveling sound’ in *sound: space*. Cantz, Ostfildern, 1998, p.44.

²¹ <https://www.hailuoto.fi/en/tourism/attractions/hailuoto-organum/>, (accessed 18 March 2018).

²² see Antye Greie <http://www.poemproducer.com> (accessed 10 April 2018).

²³ ‘*prepared organum*’ Hai Art, Hailuoto, Finland, 2016 <https://vimeo.com/185137244>, (accessed 26 March 2018).

²⁴ Glandien, 2000, op.cit., p.178.

The idea of stepping away from amplification is taking us back to an ancient resonant time. Murray Schafer argues that the West has been dominated by the idea of music as a vehicle of self-expression which led us to “neglect the sonic properties”.²⁵ In ancient times, we lived with reverberation of sounds, resonance of the caves. Over time, we have furnished our space, applying effects on the resonant space. Kühne’s sound-sculptures allow us to reengage with the properties of the stone as a sonic space and reconnect with the ancient practice of listening to our own reverberation in space, ‘*sitting in a room*’.²⁶

When sound was privileged to face our wild environment, the whole body was an ear. Murray Schafer underlines the shift in our perception of God, stating that God was initially conceived as a sound or vibration.²⁷ Kühne’s sound-sculptures can become a meditative chamber.

The resonant space can substitute itself to what the church offered for centuries, a space for voice and sounds to expand, though liberated from its religious semantic. Kühne adds that when you enter any space, you feel somehow the *souls* of that space.²⁸ We, humans need a connection with the live acoustic qualities of our space.

On stepping away from amplification, sound artist Joshua Clark-Legallienne highlights that the use of loudspeaker implicates the use of technology often manufactured in a non-ethical way.²⁹ The possibility of acoustic sounds made from Kühne’s domes without the use of power is liberating: the sound structure exists by itself, self-sufficient, sustainable and hopefully durable.

²⁵ R. Murray Schafer, ‘The Music of the Environment’ in *Audio Culture*. eds. C. Cox & D. Warner. Continuum, New York/London, 2004, p.31.

²⁶ Alvin Lucier, ‘*I am sitting in a room*’ (1969) illustrating the effect of room acoustic on a sound source.

²⁷ Murray Schafer, 2004, op.cit., p.31.

²⁸ skype interview, 11 April 2018.

²⁹ J. Clark-Legallienne, ‘Sonic/Visual relationship’ in *Sound Sculpture and Sound Objects*, Digital Music and Sound Art, University of Brighton, UK, 23 February 2018.

Lukas Kühne 's site-specific art such as the '*Organum*' and '*Cromatico*' both stimulate auditory and visual sense, creating a synaesthetic experience. Kühne's domain of research is pure acoustic with an emphasis on the physical and sculptural experience of pressure in space and sound through the sculpted air. His sound-sculptures can have many uses: meditation, acoustic ecology, voice exploration and performances. They allow us to reengage with the sonic properties of our space and reconnect with the ancient practice of listening to the sound of our body in space, our own reverberation.