Curatorial > INTERRUPTIONS

This section proposes a line of programmes devoted to exploring the complex map of sound art from different points of view organised in curatorial series.

With INTERRUPTIONS we make the most of the vast musical knowledge of the artists and curators involved in the Ràdio Web MACBA project, to create a series of 'breaks' or 'interruptions' in our Curatorial programming. In à-la-carte-music format, our regular curators have carte blanche to create a purely musical experience with only one guiding parameter: the thread that runs through each session must be original and surprising. In *Playing phenomena as a compositional material* Ben Vida shows the listener how pleasurable it is to experience complexity and phenomena in the sonic realm, applying both to sonic compositions.

Curated by Ben Vida

PDF Contents:

Ben Vida is a Brooklyn based artist, composer and improviser. His sound work embraces many modalities and forms of production, often utilizing analog and digital synthesizing technologies and focusing on aural phenomena and auditory illusions. Ben has released records on such labels as PAN, ALKU, Thrill Jockey, Drag City, Bottrop-Boy, Hapna and Kranky. As both a solo artist and in collaboration he has presented his work in the United States, Canada, the United Kingdom, Australia, South Korea and Japan. benvida.blogspot.com.es

INTERRUPTIONS #11

Playing phenomena as a compositional material

This mix explores how the use of aural phenomena can manifest in its many forms to become the key element in a compositional practice. By engaging in the use of such expanded sonic techniques the composer can act to create a recalibration of the listeners sense of hearing and by so doing, allow for a reconsideration of what constitutes sonic composition.

01. Summary

In the late seventies sound artist Max Neuhaus began experimenting with constructing a set of sound signals to be used in emergency vehicles. Historically the sound of a siren was determined by the device used to shape and project it (such as the cranked mechanical klaxon with its rising and falling pitch), but by the sixties, with the ability to amplify loud sounds electronically, the quality of a siren no longer needed to be linked to the physical shape of the device by which it was being produced. This opened up the possibility for creating a much wider set of sound signals, but this was not something being considered by siren manufactures. Applying his understanding of how humans experience sound, Neuhaus would spend the next decade and a half designing what he felt would be a more effective siren. He knew sound localization was the key component: 'Our mental processes for locating sound depend on a rather delicate (though automatic) comparison of the differences in the onset of the sound between the two ears. This mechanism works very well for the sound of a twig snapping, but is quite useless with either continuous sounds or those without clear beginnings'.[1]

In New York police cruisers are now equipped with a newly designed siren known as the Rumbler. The Rumbler produces a low ascending tone that sweeps from 180 to 360 hertz, and is usually used in short bursts, giving it a very physical presence. These sweeping tone bursts are coupled with a traditional keening and varied high-pitched siren and the combination of the two creates an almost dimensional, highly localized sonic event – sort of more like experiencing an object than a sound; a sonic object that feels as if it is almost on the verge of being made visible. In the complex topography of the urban landscape, where a sound is reflected from building to building, surface to surface, the hyper-physical sound of the Rumbler creates intense and fantastic psychoacoustic events. It is little wonder that Neuhaus would be attracted to such a functional and public form of sound delivery.

Throughout the twentieth century composers introduced new sonic materials as a way of producing increasingly complex timbres. Whether by adding auxiliary percussion sections and non-pitched acoustic sound devices to traditional orchestras or by utilizing the new production techniques made available through electronic synthesis and musique concrète, this expanded sonic universe helped to create a creative space where compositional forms could be reconsidered and the parameters of what constitutes legitimate musical materials redefined. A contemporary analog to this is the practice of using sonic phenomena as a compositional element and the use of sound itself in space as a medium. And so now we have a new 'new expanded sonic universe', one that pushes past the boundaries of timbre and form, where the meticulous control of a sound object's trajectory within a performance space becomes both a compositional element and musical gesture. This practice complicates both the spatial audio field as well as compositional form, and acts to obscure the temporal nature of sonic composition – now space and time are fused, the architectural and the acoustic. Thus by engaging with the use of psychoacoustic producing sound objects as a compositional material the composer creates work that can act to recalibrate the listeners sense of hearing, illuminating not only what we hear but how we hear.


[Max Neuhaus, 'Public Supply I', 1966]

00:00 – 08:30 Headphonics

Headphones create a unique listening experience that allows for a focused investigation into a phenomenology of interiority. The resulting 'in head' acoustic imaging means the listener must conceive of a space that is not exterior to themselves. 'Starting with the skull and playing upon the neurons by way of headphones, a sound field can be virtually located within the head. More accurately, space is created within the mass of the body where sound masses float in an impossible space. The contemporary listener must face the creative necessity of generating his or her own intersubjectivity—a task that is fundamentally a spatial activity.'[2] The place of audition for these works becomes one that is specific to each listener, their own unique physiology helping to determine how they perceive and experience the piece.

08:07 – 17:25 Otoacoustic Emissions

Certain pitch combinations are capable of turning the inner ear membrane into a little speaker from which sound emanates. These pitches, known as distortion products or otoacoustic emissions, cause the ears to act as neurophonic instrument that emits sound that seems to be issuing directly from the listeners head.[3]

When there is an input stimulus with two sinusoidal components called 'primary tones' our ear not only perceives these tones, but also hears many other distortion products, especially when the intensity level of the input is high. These distortion products, called 'combination tones', are due to nonlinear behavior in our auditory system.[4] They are a natural and very physical aspect of auditory perception, similar to the fusing of two images resulting in a third three dimensional image in binocular perception.[5]

As early as 1856 Hermann von Helmholtz reported a theory of combination tones resulting from nonlinearity in the ear,[6] though it is through the refinement of DSP systems used to create controlled pitched materials, and the greater amplitude available through advanced audio playback technologies, that we can actually 'play' this phenomena. These absent but audible tones created by the sonic activation of the inner ear can complicate our sense of sound localization and reveal another sonic dimension, one that can transcend the traditional stereo field and encourage a practice of expanded sonic composition.

16:38 – 29:56 Sonic Spaces

For the 1628 consecration of the newly rebuilt Salzburg cathedral, musicians were distributed throughout the entire structure with the intention of activating the resonance of the space.[7] For centuries this level of intentionality and consideration in regards to the activation of a space through sonic means seemed all but forgotten. In the past several decades a reemergence of interest in the activation of architectural spaces has led to new methods of sonic interaction. The use of transducers attached to walls takes the place of speakers and acts to complicate the spatial audio field and illuminate unheard melodies and timbres. This use of 'structure borne' sound (sound traveling through walls, floors, rooms, corridors) which acousticians distinguish from the 'airborne' sound experienced with conventional loudspeaker placements allows entire buildings or series of rooms to provide a stage for sonic installations.[8]

If we consider the possibility of a vertical music made available through sound installations and structure borne audio works, the temporal nature and set forms of musical composition begin to dissolve. Le Monte Young's 'Dream House' is an example of a sonic space/vertical composition that is 'played' by the audience. By creating a phenomena-rich environment, built of just intoned standing waves, the 'Dream House' is a sonic space where each individual experiences their own version of the piece by the path they take while walking through the space. This notion of space could be thought of as emerging out of Heidegger's phenomenology, according space a universal power to connect things as places and giving the subject (audience) the agency to perform these spatializations.[9] Because the room unites all of the sonic events within it, it in a sense becomes an embodiment of the composition, waiting to be performed by the visiting audience.

[The Rumbler]

29:56 – 45:17 Sound Object Projection

'Some but not all aspects of the auditory perception can be explained by reference to the anatomy or physiology of the auditory system. We may not always be able to specify the physiological mechanisms that are involved in creating certain sonic phenomena but it is often these phenomena that act to determine our sense of sound localization.'[10] That psychoacoustics produce sonic phenomena that is experienced but not completely understood creates an interesting place of discovery where the imagination can revel in the mechanistic and mathematical qualities of phenomena.

The process of creating articulated aural images that act to describe physical form through sound representation can perhaps be one such place of discovery, all be it a rather abstract and speculative one. Returning to the Rumbler siren we can consider this method of sound production through a less abstracted realization. The Rumbler exists as a purely functional device, one that is outside the realm of composition/music/art, but it is by witnessing its effect that the kernel of a compositional practice is exposed, one where the main intention and focal point of a work can be the creation of projected sonic spaces. This is a compositional space where phenomena and auditory illusion liberates sound from prescribed forms and traditional musical functions. The sound object can now be experienced both as material and as a representation of a process.

By 1991 bureaucratic roadblocks and an industry's unwillingness to invest in new ideas (let alone shift their perspective on what constitutes a workable model for sound signal production) had brought Neuhaus' investigations to an end. 'New ideas that require a fundamental change in the way we think – that zapping something as intangible as a sound can actually do something, for example – go against the grain. It takes a long time for them to find acceptance, if they ever do.'[11] We all bring with us our own personalized history of listening. Our ears are calibrated by a lifetime of listening and this calibration dictates how we experience and understand what we hear. The quarry for new methods of sound production and the resulting compositions allow for a space of recalibration and discovery. By disrupting our history of listening we can begin to understand and enjoy greater complexity in sound works as well as become more attuned to the dense and rich sound environments that make up our contemporary surroundings.

Ben Vida, November 2012

[1] Max Neuhaus, in *Kunst + Museum Journaal* (Amsterdam), vol. 4, no. 6. 1993.

[2] Charles Stankievech, 'Stethoscopes to Headphones: An Acoustic Spatialization of Subjectivity', in *Leonardo Music Journal*, vol. 17, 2007, MIT Press.

[3] Maryanne Amacher, *Sound Characters (Making the Third Ear)*, Tzadik, 1999.

[4] Kyogu Lee and Minjong Kim, 'Estimating the Amplitude of the Cubic Difference Tone Using a Third-Order Adaptive Volterra Filter', in *Proceedings of International Conference on Digital Audio Effects* (DAFx'05), Madrid, Spain, 2005.

[5] Maryanne Amacher, *Sound Characters (Making the Third Ear)*, Tzadik, 1999.

[6] Kyogu Lee and Minjong Kim, 'Estimating the Amplitude of the Cubic Difference Tone Using a Third-Order Adaptive Volterra Filter', in *Proceedings of International Conference on Digital Audio Effects* (DAFx'05), Madrid, Spain, 2005.

[7] Eugen Blume in conversation with Bernhard Leitner, "Sound as building material", in publication for the exhibition *TonRaumSkulpture (SoundSpaceSculpture),* Hamburger Bahnhof, Berlin, 2008.

[8] Maryanne Amecher, *Sound Characters (Making the Third Ear),* Tzadik, 1999.

[9] Salomé Voegelin, *Listening to Noise and Silence: Towards a Philosophy of Sound Art*, Continuum, 2010.

[10] Brian C. J. Moore, *The Psychology of Hearing*, Academic Press, 1982.

[11] Max Neuhaus, 1991 (with addenda in 1993).

02. Playlist

Bernhard Leitner, **'**Lf_C38', 2003**.** From the record *Kopfräume – Headscapes.*


[Alvin Lucier]

Bernhard Leitner, 'Pspk', 2003. From the record *Kopfräume – Headscapes.*

Bernhard Leitner, 'Var_10b', 2003. From the record *Kopfräume – Headscapes*

Bernhard Leitner, 'WLB', 2003. From the record *Kopfräume – Headscapes.*

Ryoji Ikeda, 'Headphonics 1/0', 1996. From the record *+/-.*

Maryanne Amacher, 'Synpatic Island', 1999. From the record *Sound Characters.*

Sergei Tcherepnin, 'Praying GOGO Dance', 2011. Courtesy of the composer.

Alvin Lucier, 'I Am Sitting in a Room', 1981. From the record *I Am Sitting in a Room.*

Alvin Lucier, 'Nothing Is Real... (Strawberry Fields Forever)', 2003. From the record *Nothing is real...*

Maryanne Amacher, 'A Step into It', 1999. From the record *Sound Characters.*

Iannis Xenakis, 'Dispersion', 1997. From the record *Electronic Music.*

Florian Hecker, 'Acid in the Style of David Tudor', 2009. From the record *Acid in the Style of David Tudor.*

Martin Neukom, '18.7', 2007. From the record *Studie 18.*

Bernard Parmegiani, 'Aquatisme', 1996. From the record *La création du Monde.*

Kevin Drumm, 'Gutsynth 2000 (Version 2)', 2010. From the record *The Obstacles of Romantic Exaggeration.*

Martin Neukom, '18.11', 2007. From the record *Studie 18.*

04. Credits

Curated and produced by Ben Vida. Mixed in Protools.

05. Acknowledgments

Thanks to Greg Davis, Marina Rosenfeld and Anna Ramos as well as all of the artists represented in the mix.

06. Copyright note