

[Excerpted from Steve Goodman, *Sonic Warfare: Sound, Affect, and the Ecology of Fear* (Cambridge, MA: The MIT Press, 2010). Reprinted courtesy of the author and The MIT Press.]

13.7 Billion B.C.: The Ontology of Vibrational Force

Steve Goodman

That humming background sound is ancient—the ringing of a huge bell. Exploding into a mass of intensely hot matter, pulsing out vast sound waves, contracting and expanding the matter, heating where compressed, cooling where it was less dense. This descending tone parallels the heat death of the universe, connecting all the discrete atoms into a vibrational wave. This cosmic background radiation is the echo of the big bang.

Outlining the affective micropolitics of sonic warfare demands a specifically tuned methodology. Drawing from philosophy, cultural studies, physics, biology, fiction, and military and musical history, an ontology of vibrational force can be pieced together that traverses disciplines.¹ An ontology of vibrational force delves below a philosophy of sound and the physics of acoustics toward the basic processes of entities affecting other entities. Sound is merely a thin slice, the vibrations audible to humans or animals. Such an orientation therefore should be differentiated from a phenomenology of sonic effects centered on the perceptions of a human subject, as a ready-made, interiorized human center of being and feeling. While an ontology of vibrational force exceeds a philosophy of sound, it can assume the temporary guise of a sonic philosophy, a sonic intervention into thought, deploying concepts that resonate strongest with sound/noise/music culture, and inserting them at weak spots in the history of Western philosophy, chinks in its character armor where its dualism has been bruised, its ocularcentrism blinded.

The theoretical objective here resonates with Kodwo Eshun in *More Brilliant Than the Sun* when he objects to cultural studies approaches in which “theory always comes to Music’s rescue. The organization of sound interpreted historically, politically, socially. Like a headmaster, theory teaches today’s music a thing or 2 about life. It subdues music’s ambition, reins it in, restores it to its proper place.”² Instead, if they are not already, we place theory under the dominion of sonic affect, encouraging a conceptual mutation. Sound comes to the rescue of thought rather than the inverse, forcing it to vibrate, loosening up its organized or petrified body. As Eshun prophetically wrote at the end of the twentieth century, “Far from needing theory’s help, music today is already *more*

¹ It attempts to retain the exactness of concepts while leaving them vulnerable, open enough to resonate in unpredictable fashion outside of their home discipline. As Brian Massumi has argued, such an approach, for example, forces cultural studies to become vulnerable to the effects of scientific concepts, compelling change to the degree that culture is (as if it ever was not) subject to the forces of nature. He calls such a method, following Deleuze and Guattari, *machinic materialism*. *Machinic* designates not a technological fetishism but rather a preoccupation with rhythmic relation, process, connection, and trade. But it is also inflected by Baruch Spinoza’s ethology, Alfred North Whitehead’s process philosophy, and William James’s pragmatist radical empiricism.

² Kodwo Eshun, *More Brilliant Than the Sun* (London: Quartet, 1998), p. 004.

conceptual than at any point this century, pregnant with thought probes waiting to be activated, switched on, misused.”³

An ontology of vibrational force objects to a number of theoretical orientations. First, the linguistic imperialism that subordinates the sonic to semiotic registers is rejected for forcing sonic media to merely communicate meaning, losing sight of the more fundamental expressions of their material potential as vibrational surfaces, or oscillators.

Despite being endlessly inspired by intensive confrontation with bass frequencies, neither should an ontology of vibrational force be misconceived as either a naive physicalism in which all vibrational affect can be reduced scientifically. Such a reductionist materialism that merely reduces the sonic to a quantifiable objectivity is inadequate in that it neglects incorporeal affects. A concern for elementary vibrations must go beyond their quantification in physics into primary frequencies. On the other hand, the phenomenological anthropocentrism of almost all musical and sonic analysis, obsessed with individualized, subjective feeling, denigrates the vibrational nexus at the altar of human audition, thereby neglecting the agency distributed around a vibrational encounter and ignoring the nonhuman participants of the nexus of experience.

Rather, it is a concern for potential vibration and the abstract rhythmic relation of oscillation, which is key. What is prioritized here is the in-between of oscillation, the vibration of vibration, the virtuality of the tremble. Vibrations always exceed the actual entities that emit them. Vibrating entities are always entities out of phase with themselves. A vibratory nexus exceeds and precedes the distinction between subject and object, constituting a mesh of relation in which discreet entities prehend each other’s vibrations. Not just amodal, this vibrational anarchitecture, it will be suggested, produces the very division between subjective and objective, time and space.

If this ontology of vibrational force can help construct a conception of a politics of frequency, then it must go beyond the opposition between a celebration of the jouissance of sonic physicality and the semiotic significance of its symbolic composition or content. But enough negative definitions.

If affect describes the ability of one entity to change another from a distance, then here the mode of affection will be understood as vibrational. In *The Ethics*, Spinoza describes an ecology of movements and rest, speeds and slownesses, and the potential of entities to affect and be affected.⁴ This ecology will be constructed as a vectorial field of “affectiles” (affect + projectile), or what William James refers to as pulsed vectors of feeling. As an initiation of a politics of frequency, it resonates with the ballistics of the battlefield as acoustic force field described by the futurists. This vectorial field of sonic affectiles is aerodynamic, but it can also be illuminated by rhythmic models of liquid instability that constitute a kind of abstract vorticism.

This vibrational ontology begins with some simple premises. If we subtract human perception, everything moves. Anything static is so only at the level of perceptibility. At the molecular or quantum level, everything is in motion, is vibrating. Equally, objecthood, that which gives an entity duration in time, makes it endure, is an event irrelevant of human perception. All that is required is that an entity be felt as an object by another entity. All

³ Ibid., p. 003.

⁴ B. Spinoza, *The Ethics* (Indianapolis, Ind.: Hackett, 1992.)

entities are potential media that can feel or whose vibrations can be felt by other entities. This is a realism, albeit a weird, agitated, and nervous one. An ontology of vibrational force forms the backdrop to the affective agency of sound systems (the sonic nexus), their vibrational ontology (rhythmanalysis), and their modes of contagious propagation (audio virology). In its primary amodality and secondary affinity to the sonic, a discussion of vibrational ecologies also helps counter ocularcentric (modeled on vision as dominant sensory modality) conceptions of cyberspace, contributing to a notion of virtual space that cuts across analog and digital domains.

Philosophically, the question of vibrational rhythm shoots right to the core of an ontology of things and processes and the status of (dis)continuities between them. In physics, the status of the rhythms of change, the oscillation between movement and rest, plays out in the volatile, far-from-equilibrium zones of turbulent dynamics. While the modeling of turbulence has become the computational engineering problem par excellence for control, within the domain of digital sound design, the generation of microsonic turbulence by the manipulation of molecular rhythms accessible only through the mesh of the digital has become a key aesthetic and textural concern. Each of these fields will be mined to construct a transdisciplinary foundation to the concept of sonic warfare and its deployments of vibrational force.

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Sounding Chaos

Nabil Ahmed

CHAOS

I listen for the din and clamour of chaos, its sonorous multiplicity. I want to sound the depths of the dynamic forces of the earth. Under the rocks flows a liquid sea of magma. Chaos is not absolute disorder but rather the unpredictable, whirling vibration of nonhuman forces that bind the universe. But as life and nonlife forms from this buzzing, cosmic carcass, chaos remains a creative force for futures yet to come. It is in this emergent virtual that organisms act creatively in a hostile, wondrous world. I invite you to listen to the multiple agents of chaos, in the catastrophes of wind, the sea and the earth. As I move, I cross lines of difference, I am at war with fixity, proceeding rather by layers, cuts and sudden sweeps, like a ‘wild track’, non-synchronous, recorded without pictures.

In *Genesis*, Michel Serres offers the multiple as ‘a new object for philosophy’. Like the hydrography of the Ganges delta that continuously bifurcates, the multiple rejects bringing the world under the sway of the metaphysics of the unitary. The multiple is chaos, or noise. Serres asks, ‘can I possibly speak of multiplicity itself without ever availing myself of the *concept*?’ This multiple is different from unitary concepts and binary structures. In this immersive background swell, the epistemic gap between not knowing whether the world is a unitary system or bathed in multiplicity draws knowledge to its outside. Reason is islands of negentropy in a chaotic sea. To think without the concept is ‘a multiplicity of thought’ despite a world in thrall to reason.

Fortunately chaos is not only to be found somewhere far out. Chaos is bodily (earthly) experiences interring signs of language for sensation. To approach writing about chaos or noise is to move through multiplications, transformations and translations of the body, voice, speech but also the earth’s dynamic forces. Foregoing the tyranny of language as reason, Serres favours the aesthetics of song:

One writes initially through a wave of music, a groundswell that comes from the background noise, from the whole body, maybe, and maybe from the depths of the world or through the front door, or from our latest loves, carrying its complicated rhythm, its simple beat, its melodic line, a swift, wafting, a broken fall.

It is this sensation that speeds or slows down my fingers in the very act of writing. I write in spite of myself. Poverty of language distrusts the paradox of writing. A Serrean invention of song liberates the writer from the detritus of inspiration. While we can close our eyes, we cannot stop hearing the noise swirling around us. Like the sea, noise is there to remind us of a constant, if minute, proximity to chaos, of a sinking back into the void. The poet's viscous alchemy, it resides between call and response, questioning and answer. Which is noise, the sea or the snails, or the sea moving through the snails? The aggregate, the multiple, noise can be described but not defined. As the ground swells up, it collapses a figure-ground relationship. It is the sea in which order seems fleeting. No longer the message that is in the bottle, it is the milieu, ruckus of the sea in motion. Earth's duplicitous energy is the veritable space of transmission, however faint, or a rising, roaring din. For Serres, noise is this parasite, the third party, present in any communication between the sender and the receiver. Noise poisons the poison. What is being excluded never leaves the stage but transforms the state of play through its presence. That interference, is rather, a productive force. The more we claim to know, the wider is that circle's circumference, pushing out to the unknown, and the further we are from its so-called centre.

EARTHBOUND

Earth moves through violent upheavals resulting from the meetings of the boundaries of tectonic plates. This process of violent transformations is an effect of nonhuman forces that are eruptive, rapturous and contingent. Yet the time-scale in which some of these events occur is so long, compared to human history, that we experience life on earth as relatively stable. However, anyone who has experienced an earthquake knows how, in a matter of seconds, a feeling of terror arises; as the ground is shaken up our bodies are transformed into delirious seismographs. Whether audible or inaudible, earthquakes leave their acoustic imprint. Whether heard or felt, the sound waves of the earth travel through rocks. As Douglas Kahn has observed, Ernst Von Rebeur-Paschwitz's detection of an earthquake in Tokyo thousands of miles away from his laboratory in Potsdam in 1889 was a 'whole earth' reporting long before earth photography.

Arthur Conan Doyle's Professor Challenger, the egotist scientist impersonated by Deleuze and Guattari in 'The geology of morals: Who does the earth think it is?' – the third plateau of *A Thousand Plateaus* – compared the earth to a mollusc, with a hard outer shell and a soft, fleshy interior. Challenger, the rational man of science, is not far from coming up with an explanation of earth other than planetary myths. However, Challenger is not content with metaphor; he intends to demonstrate that earth is an organism that, up until then, has been totally unaware of human existence on its outer shell. In the lecture Deleuze and Guattari have him deliver, like an ear worm, Challenger drills into the centre of the earth with a pole eight miles long at the press of a button in order to prove his point. The earth responds with a horrible yell: 'For a full minute it lasted, a

thousand sirens in one, paralyzing all the great multitude with its fierce insistence... no sound in history has ever equaled the cry of the injured earth.'

The earth, it seemed, made itself heard in this moment of violence to the audience present; indeed, humans and animals listened to the cry. While the earth spewed out a localised tarlike noxious substance in response, I imagine the sound travelled far and wide. How did those who were far away hear the sound of the injured earth? The earth's chthonic scream was planetary. Challenger's boring into the earth was tantamount to sounding a collective ecocide. Hillel Schwartz reminds us that trauma is acoustic. It's strange, he tells us, how we turn again to noise to 'warn of impending crisis', dissonance and onomatopoeia, filling the air with our clamour. We press our poisoned ears to the ground for the long sound of the long emergency, the rabble of rubble.

Before human history, what made the loudest sound on earth and what fed its destructive power in earth's contingent history? The Big Bang? As geologists note, written history only goes back a mere 5,000 years. *Ex libro lapidum historia mundi* – earth's history is written in its rocks. The abyssal time that stretched before folds between erosion and accumulation. When the sonic terror of the Krakatoa eruption in 1883, the largest explosion heard in recorded history, spread across the Indonesian archipelago as far as Diego Garcia, its sound was understood as the distant thunder of cannons. We can go back further to a strangely familiar time and place to imagine listening to the earth scream again, to a final tale of catastrophe, a cosmic morality play where all its actors are indifferent, if you would like.

From the sky to the ground transversal, from the wind and the noisy sea, the seashell and the hollow of our bodies, we dance destruction's dance. Like the old salt who lives to tell tales of shipwreck that hide the possibility of survival, here I have tried to sketch out a few sensations of that aggregate, the multiple, the planetary noise from within and without, the universe unbound. What can we do but listen in that feeling of darkness?

[Excerpted from Lendl Barcelos, “The Nuclear Sonic: Listening to Millennial Matter,” in *Aesthetics After Finitude*, ed., Amy Ireland, Baylee Brits, and Prudence Gibson (Sydney: Re.press, forthcoming).]

The Nuclear Sonic: Listening to Millennial Matter

Lendl Barcelos

MEDI(T)ATIONS

Ultrasound is used to inspect welds, establish the uniformity and quality of poured concrete, and monitor metal fatigue. Partially as a result of the Three Mile Island nuclear reactor accident in 1979, an increased number of ultrasonic inspection procedures are now performed on the structural components in nuclear reactors.

—Richard E. Berg and David G. Stork¹

A soft, multi-layered drone resonates in your ear. Partially occluded, foggy machine pulses occupy intensities at the threshold. The sound is not threatening. Actually, it is quite soothing. There is little movement here, save sound waves cycling against each other. Over time a shift occurs and a throbbing tone pronounces itself, mimicking the machine pulses still faintly heard. We read that this hypnotic sound is an audio portrait of an old church now abandoned. The congregation must assemble elsewhere, for its place of worship rests in a *zone of exclusion*. Danish artist Jacob Kirkegaard’s sound and video installation *AION* features four sites that lie within the compass of this zone. For the accompanying CD release *4 Rooms*², the track titles simply name the function of the locations: ‘Church’, ‘Auditorium’, ‘Swimming Pool’, ‘Gymnasium’. Proper names are silenced. Since no one remains to occupy these rooms—nearly all having been evacuated following the accident—it is possible these names rest ineffable. For who can articulate this space, if not those who me(e)t there?

In a sense, Kirkegaard is attempting this articulation with minimal intervention. By recording the room and feeding its audio back into the space, the room begins to respond. Over time what emerges, as he states on his website, is ‘the voice of the room itself’.³ The architecture (re)sounds. The space articulates itself mediated by a microphone, recording equipment and speakers. The process echoes Alvin Lucier’s *I am sitting in a room* (1969) except in a more immediately de-humanized form. ‘[Kirkegaard] put up a microphone and a speaker, started the recording and left. After ten minutes, he returned, stopped the

¹ Richard E. Berg and David G. Stork, *The Physics of Sound*, 3rd ed, Upper Saddle River, Pearson Prentice-Hall, 2005, p. 63.

² Jacob Kirkegaard, *4 Rooms*, Touch, Tone 26, 2006, CD.

³ Jacob Kirkegaard, *AION*, available at: <http://fonik.dk/works/aion.html> (accessed 16 November 2014).

recording and played it back into the same space'.⁴ Kirkegaard leaves the room to meditate. The empty room begins to make audible what could not be heard prior: its structural mantra. No longer a dormant, internal potential, the space awakens and is voiced. Yet, other inaudible processes radiate invisible. In the words of Nietzsche scholar and sound theorist Christoph Cox,

the drones that emerge from these rooms are, presumably, inflected by the radioactive particles and electromagnetic waves that still invisibly move within them. They are also haunted by the human beings that once inhabited them. Like sound, radiation doesn't die but only dissipates, dilates, or loses energy.⁵

Human voices could be heard echoing in each of these four rooms prior to the 26th of April 1986. On this day in Chernobyl, Ukraine a catastrophic nuclear accident occurred. Afterward, so as to reduce the spread of contamination, a *zone of exclusion* was built, forcing the evacuation of tens of thousands. These are the absent voices of Kirkegaard's *AION* and *4 Rooms*, released twenty years after the catastrophe. The *zone of exclusion*, also sometimes pronounced as the more ominous sounding *zone of alienation*, 'will remain uninhabitable for thousands of years'.⁶ Uninhabitable, for the human security system cannot cope with the speed of decay the level of radiation in this zone provokes. The *zone of alienation* excludes human life as the remaindered millennial material endures. 'Kirkegaard's recordings, then, can be seen as an effort ... to rescue sonic emissions that outlive those who produced them'.⁷ But who is it that produced these sonic emissions? Is it the rooms themselves, these nonhuman, decomposing architectures? Or, perhaps, it is Kirkegaard and his technological apparatuses?

Kirkegaard's attempt to erase traces of himself and his cursory remarks of the people excised from the area form part of his self-consciously de-humanized process. Yet, each of the four rooms continue to point to their human architects, to human builders, and to their now-displaced human inhabitants—all of whom we do not directly hear. In a passage from Seth Kim-Cohen's *In the Blink of an Ear: Towards a Non-Cochlear Sonic Art*, he writes of Kirkegaard's *Four Rooms*: 'What we hear is haunted not by the actuality of the human beings who once inhabited the rooms but by their histories and by history'.⁸ What is required for this aural haunting to take place is what he names 'the radioactive, electromagnetic *text*'.⁹ If when listening to Kirkegaard's recordings we are *alienated* from the radiant text illuminating these histories or if we are *excluded* from gaining access to

⁴ Ibid.

⁵ Christoph Cox, 'Sound Art and the Sonic Unconscious', *Organised Sound* 14.01, 2009, p. 25.

⁶ Kirkegaard, *AION*.

⁷ Cox, 'Sound Art and the Sonic Unconscious', p. 25.

⁸ Seth Kim-Cohen, *In the Blink of an Ear: Towards a Non-Cochlear Sonic Art*, New York, Continuum, 2009, p. 132.

⁹ Ibid.

them, it is unlikely that human traces will be heard, even in the form of a ghost.¹⁰ Without the accompanying radioactive, electromagnetic text, these apparitions fail to appear. For us to aurally meditate on these expelled voices and the inaudible radioactivity of the rooms they once inhabited, a textual (non-cochlear) mediation is required.

¹⁰ Electronic voice phenomena (EVP) is the perception of sounds resembling speech in audio recordings that are purported to have been made in situations without the intentional physical presence of someone speaking. The voices that emerge in recordings via EVP have been typically associated with ghosts. The audio of Kirkegaard's *4 Rooms* and *AION* is such that one could perhaps hear—in a pareidolic fashion—voices singing, yet to hear the traces of speech would be very unlikely. For two divergent accounts of EVP see Konstantin Raudive's *Breakthrough: An Amazing Experiment in Electronic Communication with the Dead*, trans. N. Fowler, Garrards Cross, Colin Smythe, 1971, and Joe Banks' *Rorschach Audio: Art and Illusion for Sound*, London, Strange Attractor, 2012.

