

## **MINIATURE SOUND: Notes on a soundscape for a radio program on Nanotechnologies**

**by Ian Andrews**

I once read somewhere that a hermit who was watching his hour-glass without praying, heard noises that split his eardrums. He suddenly heard the catastrophe of time, in the hour glass. The tick tock of our watches is so mechanically jerky that we no longer have ears subtle enough to hear the passage of time<sup>1</sup>

Nanotechnology is electro-chemical-biological technology of the very small, (the prefix *nano* denotes the order of ten to the minus nine). To what extent is it possible to apply notions of the miniature to theories of sound, and conversely to conceive of a soundscape which relates to micro-miniaturization and the infinitesimal?

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Sound is an alteration in pressure, particle displacement, or particle velocity which is propagated in an elastic medium (air).

But sound is also the auditory sensation produced through the ear, by the alterations described above.

The first part of this description belongs to the objective realm of science, while the second, requiring the presence of a subject of perception, finds its place in the domain of phenomenology. A phenomenological description of sound would consist of the knowledge that a disinterested subject, “living among things,” might acquire of the spatial relationships between objects and sounds, as well as a reflective description that seeks out underlying relationships from an ideal non-position, a pure position distinct from the situation of the object in its concrete context. But the perceptual object is, to a large extent a cultural phenomenon, which is both socially and linguistically constructed. The subject of perception has an a priori knowledge of things, of space, of dimension, and direction, which precedes perception. This body of knowledge contributes to the formation of the phenomenological “perceptual cogito” which orders the passage from perceptual meaning to language meaning, from behaviour to thematization. But there is also a prejudicative *Logos* that remains hidden, veiled by language, and not explicit in perception, which establishes a level at which every other experience will henceforth be situated. Merleau-Ponty calls this level the invisible. The invisible is to the visible, what the unconscious is to consciousness. For Merleau-Ponty, perception, like the unconscious, is structured like a language.

Merleau-Ponty, in *The Visible and the Invisible*, formulates a philosophy of the flesh. The flesh is the body in as much as it is the audible hearer; the equivalence of sensibility and sensible thing; the doubling up of the body into inside and outside; an intertwining of introjection and projection. Merleau-Ponty insists that we must reject the Cartesian model, which places the perceptual cogito inside the body, which is

consequently placed in the world. “The body sensed and the body sentient are as the obverse and the reverse.”<sup>2</sup> The flesh is, not matter, not mind, not substance, but an “element” of being- “not objects, but fields, subdued being, non-thetic being, being before being.”<sup>3</sup>

Things become dimensions only insofar as they are received in a field, the body is this field itself; “my body is to the greatest extent what everything is.”<sup>4</sup> The subject of perception, in this case, becomes, not one of phenomenological interiority, but rather a complex interpenetration of outside and inside.

There is no boundary between the self and the external world. Reality is not things (dead matter) but events, fields of energy, Eros and Thanatos, libidinal cathexes, flux, bands of intensity, differentiations of the flesh.

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The miniature, however, problematizes the perception of the subject, for whom it constitutes a remoteness (for Hiedegger, a *de-severance* [*enterferung*] as regards being-in-the-world), that cannot be visualized; “this knowledge still remains blind.”<sup>5</sup> The “lived distance” which binds us to things disappears and so, in terms of perception and subjectivity, the micro and the macro present a reality that is unlivable and unbearable to anthropomorphic consciousness. The schizophrenic lives at one extreme of the Chiasm; “I the world” (as opposed to I the other), as close as possible to matter, “...the terribly disturbing sound of matter.”<sup>6</sup>

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Imagine a miniature (virtual) perception made possible with advances in nanotechnology, where we can construct self-replicating automata, and send them into microscopic spaces to gather information, to “hear” for us with micro-miniature microphones and nanotransducers, with built-in interactive autonomous machine perception, possessing the same dynamics and frequency characteristics as the human ear. They become ears; ears ripped off the body, the body made obsolete. William Burroughs recognized the aural implications of self-replicating automata with the sudden availability of taperecorders in the 60s.<sup>7</sup>

What could be described as miniature sound? Sound made by very small objects (of miniature origin)? Or small (faint) sound on the threshold of audibility, regardless of the dimensions of the originating object?

It may, at first, seem logical to posit the first schema, as it could be argued that a faint sound made by a large object is merely an effect of distance. But does not this assumption betray one of the fundamental problems of Western metaphysics; the distinction between cause and effect, object and sound?

Christian Metz describes a “primitive substantialism”, which is ingrained in the culture of the west, designating sound always as an attribute, a non-object and ontologically privileging the visible object of emission. This undoubtedly has something to do with the subject-predicate structure of Indo-European language, which for Nietzsche, always places “being” behind doing. Nietzsche argues, that in

language we separate the lightning from its flash and thus we duplicate the doing, we make the same phenomenon first a cause and then the effect of that cause.

“Our whole science is still, in spite of its coldness, of all its freedom from passion, a dupe of the tricks of language, and has never succeeded in getting rid of that superstitious changeling “the subject” (the atom, to give another instance of such a changeling, just as the Kantian “thing in itself”).”<sup>8</sup>

Because Western metaphysics privileges the material over the immaterial, we have the tendency to neglect the characteristics of the sound itself in favour of those of the originating “substance”.

In Lautréamont’s *Maldoror* a spider listens.

It listens attentively for any sound that may be moving its mandibles in the air. Allowing for its quality as an insect, it cannot do less, if it has any ambitions of adding brilliant personifications to the treasures of literature, than to attribute mandibles to sounds.<sup>9</sup>

With the aid of Nietzsche, we can begin to recognize what is at first strange in the logic of Lautréamont’s spider, which questions the cause-effect, subject-predicate, oppositions of language by inverting the equation, and instead, making the object an attribute of a sound.

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It becomes clear that, if we consider sound as a phenomenon in itself (as a process or a becoming), and dispense with the need to establish origins, a de-materialized notion of miniature sound must extend to all that is on and below the threshold of hearing.

In an anechoic chamber hearing does not cease, but merely changes from acoustic to visceral: from consciousness “at a distance” to self proximity. The composer, John Cage, in such a room, still hears two distinct sounds, one high, and one low. He is told that the high sound is his nervous system and that the low sound is his blood circulating. Silence, even relative, is destroyed as soon as there is a body to perceive it.

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The smaller an object is, the less its behaviour can be understood in terms of traditional abstract geometrical localization. The study of micro-physics reveals the condition that the spatial position of a material object cannot be exactly determined. The artificial distinction between geometrical and temporal descriptions breaks down, necessitating a phenomenalist synthesis of space and time. It is impossible to conceive of an object independently of its movement. The ontological consequences of this are that we can no longer distinguish between what is real “now” and what will be real in some time in the future. This has led to a shift, in physics, from a study of spatial forms of matter, to a study which re-unites energy and matter, and which is bound up with the hypergeometry of space-time. This entails that matter be thought of, not as “thing oriented” but as phenomena.

Here we encounter again the problem of our language, which is inherently substantialistic. As with sound we tend to think of energy an attribute or a quality, and thus we attribute too much importance to the atom as a causal entity. We should not say that matter *has* energy, but rather that matter *is* energy and, conversely, that energy *is* matter.

Energy, like sound, is immaterial and insubstantial, it is devoid of an obvious structure, it occupies a middle ground between potential and actual, between space and time. Gaston Bachelard argues that “In its energetic unfolding the atom is *becoming* as much as it is *being*, motion as much as it is object.”<sup>10</sup> He suggests that the implications of Einstein’s equation,  $E=mc^2$ , are not only transformational, but ontological: “it obliges us to ascribe existence to radiation as much as to particles, to motion as much as to matter.”<sup>11</sup>

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In *The Poetics of Space*, Bachelard explores the theme of the miniature in literature, in a phenomenology of the poetic imagination in which each sense has its own imaginary. Bachelard argues that the miniature worlds of the imagination provide an exercise in “metaphysical freshness”, which permits the philosopher to renew his experiences of “an opening onto the world”, “of entrance into the world.”<sup>12</sup>

It is here that Bachelard introduces the “sound miniature”, inviting us to hear in regions beyond perception, to hear the impossible sounds, of the poet’s imagination, from Poe’s auditory hallucinations to the sonorous depth of being in Claudel’s *L’annonce faite a Marie*.

VIOLAINE (who is blind) - I hear...

MARA-What do you hear?

VIOLAINE- Things existing with me.<sup>13</sup>

For Bachelard, Claudel’s dialogue establishes the ontological link between the invisible and the inaudible, and the confirmation of existence through that which is audible.

Bachelard’s explorations into “ultra-hearing” provide a point of departure for a phenomenology of the verb “to listen”. Thus he speaks of a “hearing oneself seeing,” and a “hearing oneself listening.” But what is the relation between “hearing oneself listen” and “hearing oneself speak”?

Jacques Derrida, in *Questioning the phenomenological value of the voice*, argues that hearing oneself speak (*s’ entendre parler*) is a pure auto-affection, which gives the illusion of self presence, resulting in an apparent transcendence of the voice with regard to signification. When we speak we hear ourselves at the same time that we speak; we hear the sounds (phonemes), and we understand, and are affected by the expressive intention (the signifiers) that we produce, without a detour into the external world (as in seeing ourselves). To hear oneself speak is to hear our own presence in the self-assured certitude of consciousness, and “consciousness as meaning (*Vouloir-dire*) in self-presence.”<sup>14</sup>

For Derrida, this pure auto-affection, occurring in absolute proximity to self, constitutes an absolute reduction of space in general. “As pure auto-affection, the operation of hearing oneself speak seems to reduce even the inward surface of one’s own body; in its phenomenal being it seems capable of dispensing with this exteriority within interiority, this interior space in which our experience or image of our own body is spread forth.”<sup>15</sup>

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What remains for a phenomenology of sound is to rescue sound from speech (*Phone*), and thus from apparent transcendence and onto-theological ideality. Saussure distinguishes the sound image, the “psychological imprint of the sound”<sup>16</sup>, from the material sound. For Derrida, real objective sound, in the world, though indispensable to the sound image, is radically dissimilar to it. The sound image, the *being heard* (heard + understood) of the sound, is “*lived* and *informed* by differance”.<sup>17</sup> Derrida assigns objective sound to external experience, to the non-phenomenal, the unheard, the inaudible, and thus neglects that which, in sound, is heterogenous to meaning and signification.

What is needed is a study of pure objective sound in language; that which is pre-predicative, the “inarticulate cry,” echolalias, rhythms, intonations, glossolalias, the musication of speech, in short, that which “produces shapes and exceeds operating consciousness”.<sup>18</sup>

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<sup>1</sup> Gaston Bachelard, *The Poetics of Space*, Trans. Maria Jolas, Beacon Press, Boston, 1969, P. 167.

<sup>2</sup> Maurice Merleau-Ponty, *The Visible and the Invisible*, Trans. Alphonso Lingis, Northwestern Univ. Press, Evanston, 1987, p. 138.

<sup>3</sup> Ibid, P. 267.

<sup>4</sup> Ibid, P. 260.

<sup>5</sup> Martin Hiedegger, *Being and Time*, Trans. John MacQuarrie & Edward Robinson, Basil Blackwell, 1983, P. 141.

<sup>6</sup> Antonin Artaud, Quoted in Deleuze and Guattari, *Anti-Oedipus: capitalism and schizophrenia*, Trans. Robert Hurley, Mark Seem, & Helen R. Lane, Univ. Minnesota Press, Minneapolis, 1989, P. 19.

<sup>7</sup> William Burroughs, *The Ticket that Exploded*, John Calder, London, 1985.

<sup>8</sup> Friedrich Nietzsche, “The Genealogy of Morals”, (*I, 13*), *The Works Of Friedrich Nietzsche*, Trans. R.J. Hollingdale, Tudor, New York, 1931.

<sup>9</sup> Comte De Lautreamont, *Les Chants de Maldoror*, Trans. Guy Wernham, New Directions, New York, 1965, P. 243.

<sup>10</sup> Gaston Bachelard, *The New Scientific Spirit*, Trans. Arthur Goldhammer, Beacon Press, Boston, 1984, P. 70.

<sup>11</sup> Ibid. P. 72.

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<sup>12</sup> Bachelard, *The Poetics of Space*, P. 161.

<sup>13</sup> Ibid. P.180.

<sup>14</sup> Jacques Derrida, *Speech and Phenomena*, Trans.David B. Allison, Northeastern Univ. Press, Evanston, 1987, P. 147.

<sup>15</sup> Ibid. P. 79

<sup>16</sup> Ferdinand De Saussure, *Course in General Linguistics*, Trans. Wade Baskin, McGraw-Hill, N.Y, 1959, P. 66.

<sup>17</sup> Jacques Derrida, *Of Grammatology*, Trans. Gayatri Spivak, Johns Hopkins Univ. Press, Baltimore, 1976, p. 63.

<sup>18</sup> Julia Kristeva “From One Identity to Another”, in *Desire and Language*, Trans. Thomas Gora, Alice Jardine, & Leon S. Roudiez, Columbia Univ. Press, New York, 1980, P.131.