

# Hypersonic sensation: the non-human in human perception

Eleni Ikoniadou  
University of East London, UK

Some mornings I wake up with my head full of rhythms, and rhythms of rhythms, and rhythms of rhythms of rhythms. And to have to speak English is like having to put on a straitjacket.  
(Leroy Little Bear 'Sa'ke') Henderson in Peat, 2005: 222)

## Introduction

This essay investigates the impact of a materialist notion of the virtual on the concept of digitality, by looking at encounters between new media art, science and technology. It is part of an attempt to address a predisposition in new media and cultural theory, towards approaching digital processes as purely immaterial; that is, quantifiable, probabilistic and technical. Broadly speaking, in cyber-cultural theory this tendency has been articulated as a celebration of the disembodied properties of information. The post-war emergence of cybernetic and informational machines (Wiener, 1965; Shannon, 1949) helped to trigger alternative views on the relations between body and technology. Cybernetic research touched on issues such as the boundaries of the human, free will, consciousness, and autonomy.

Described by Hayles as the 'first wave' of cybernetics (1945-60)<sup>1</sup>, such accounts envisioned the removal of materiality from information, addressing the latter as an immaterial, mathematical abstraction (disembodiment). Particularly during the nineties, the field of humanities seemed to be significantly influenced by the revolution of information transmission. More specifically, the advancement of digital media such as the Internet and virtual reality had a profound impact on postmodern critical theory, reflected in debates about: the relationship between humans and machines; the notion of the cyborg; virtual reality and immaterial communities; the Cartesian split between mind/body and the disembodied spaces of digital intelligence.

On the other hand, new media theorist Mark Hansen (2004) has asserted an opposing materialist view, stressing the centrality of the human body in digital art. His perspective suggests sensory perception as the source of virtuality, central for the construction of an otherwise void, digital space. Hansen draws on Henri Bergson's notion of 'affectation' (1896) to stress perception's empowerment by the advent of 'digitization'. His argument is that digitality can reinforce the importance of the human body, as the latter is able to convert discontinuous and quantifiable numerical data (information) into 'corporeal' images. Hansen's perspective of the interactions between human body and digital media seems to offer a phenomenological interpretation of the notion of 'affect'. That is to say, he appears to suggest an absolute reliance on human perception for the construction of a predominantly observable, otherwise void, digital space (embodiment). The digital, in this case, appears to function as a facilitator of bodily affectivity and virtuality immanent to the 'embodied being'.

Both the cyber-cultural approach of disembodied information and the neo-phenomenological embodiment of digital philosophy seem to imply a view of technology as a tool or object, dependent on the intentions of a human subject. In addition, the first approach defines the virtual as an imaginary world enabled by digital code, while for

the second it is an intrinsic quality of the sensorimotor. The present essay proposes to revisit the virtual dynamics of the digital as an abstract but real quality, which is indeterminate and autonomous but immanent to code. In so doing, it attempts to identify and occupy a gap in the theorisation of the digital, in-between the technological determinism of postmodern cyber-cultural theory and the more recent phenomenological approach of new media philosophy. In particular, the essay aims to explore the impact of invisible hypersonic energies on human perception, by looking at the types of interactivity that they appear to invite within recent examples of digital art. According to it, a hypersonic field of forces could help to propose a nonhuman becoming of human perception; that is, a nonsensuous, virtual state that does not seem to be available to sensory awareness. This virtual impact on digitality is examined by drawing on recent examples in digital installation art. The latter often create invisible and vibrational fields of interaction by intersecting alternative architectural practice, experimental interactive art and technoscientific research. These projects are used to point to an affective (non-sensuous) and rhythmic (amodal) quality of experience, detached from the active participation of human perception. Such a virtual quality is understood to envelop the digital event and become vaguely felt at the microscopic level of relations between body, space and technology.

In order to address these questions the essay is structured in three sections. The first will be looking at the inaudible impact of directional audio technologies on a body, particularly within its novel usages by new media artists. The second section explores the notion of sensation by looking at a project engaging with invisible vibration rather than any audiovisual output. Finally, the third section proposes the detachment of the body from a determinate mode of sensuous perception. Here, a specific phenomenon of neuro-physiological research, the hypersonic effect, is discussed vis-à-vis a third (hypersonic) new media art example.

## 1. The Silent Sound Effect

According to F. Joseph Pompei, inventor of the 'Audio Spotlight' (1998), ultrasound technology is an appropriate carrier of directional sound<sup>2</sup>. Ultrasound, itself inaudible, has highly directional properties and thus can be controlled in the shape of very narrow beams. When it interacts with the nonlinear transmission properties of the air, it becomes distorted and produces audible frequencies. In the case of the Audio Spotlight, a narrow beam generates and distorts audible by-products via a software program capable of targeting specific recipient bodies. Within the specified zone of the Audio Spotlight, targeted bodies experience the by-products of a highly inaudible technology, created by secondary vibration. The Spotlight's beam, arguably, is narrow enough to target a particular body and to exclude others outside its assigned space – resembling a flashlight (or spotlight) beam in a dark room. Commonly, sound technologies, such as loudspeakers and speaking trumpets, would spread sound towards all directions, simultaneously, flooding space like a light bulb. Audio Spotlight, on the contrary, travels through space in straight lines and towards a particular direction, impacting on a targeted body with selective precision.

Audio Spotlight is not a digital machine; nevertheless, one of the many uses of the technology has been to supplement digital art projects. *ACCESS* (2003) is an interactive work by new media artist Marie Sester, which uses a robotic spotlight and acoustic beam from audio spotlight technology, in order to track and target moving bodies in a designated space<sup>3</sup>. In particular, a digital camera is used to determine a 'tracking zone', which is invisible by the participants, via a spatiotemporal grid connected to a motion tracking software. When a body is captured by the 'invisible eye' of the camera, the spotlight falls on it and audio whispers – perceptible only by the targeted body – order, encourage, scare or simply address it. As long as a body remains within the (invisible) tracking zone it will be pursued by the spotlight and the audio. According to the artist, bodies under the spotlight are unaware of what exactly is happening to them: who, why or how is hunting them. Physical movement triggers both spotlight and sonic beam, whilst a body can also be tracked by clicking on it from a Web interface. Although bodies can be selected in real-time by web users the device 'has a mind of its own' and will function autonomously by scanning the tracking zone. In this way it becomes difficult to determine who is in control, audio beam, web user or moving body.

*ACCESS* combines the submerging of selected bodies in its spotlight with a sonic attack. As such, it could be suggested to produce a field of intensive, audiovisual forces that shock bodies passing through them. On one level, the spotlight appears to immerse a targeted body in the beam's brightness, adjusting its speed and rhythms to those of its movements. The spotlight's intensity is designed to envelop a body's movement entirely, becoming one with it, constituting their separation impossible until a new movement 'grabs' its attention<sup>4</sup>. On the one hand, it appears that the device is in full control of a body, targeting indiscriminately across its spatial territory and for any indeterminate amount of time. On the other hand, the process of contagion, by which the spotlight seems

to proceed, implies a more dynamic role for the targeted. This becomes more obvious in the manner with which participants engage with the installation; provoking contact with one another in an attempt to 'lure' the spotlight towards or away from them. Within the same movement, a body might emerge from the shadows of the space and become captured by the grid; whilst another becomes undetectable, 'falling back' in the darkness out of which it emerged. Looked at from the viewpoint of contagion, interaction between body and machine could be said to take the form of a viral hide and seek, rather than a unidirectional game of control. As participant bodies slip in and out of its indeterminate zone they become potential carriers of audiovisual forces - interacting virally both with other bodies and with the machine; with perhaps almost no regard to the audio spotlight's directionality or tendency for control.

At the audio level, this work seems to trace bodies by sending sonic and verbal indications that follow them through space. At times, for example, targets may feel as if these voices derive from within their own heads. As deceptively autogenerated, the voices perplex a targeted body and intensify its feeling of disorientation conveyed by the floodlight. Akin to the inner voices that haunt and confuse hallucination sufferers – typical of schizophrenic bodies – targets become unsure whether the voices are heard exclusively by them or if others can hear them. Often, the messages they transmit may take the shape of commands, instructing targets towards specific actions. On the verge between voices in the head and external control, hallucination and reality, a targeted body seems to be thrown into doubt: should it try to escape or obey, run or fight<sup>5</sup>? Is it being invaded or is a feeling of inner *sensation* – the contraction of its own perception – contaminating outside space<sup>6</sup>? The targeted body's capacity to affect and be affected by the audio spotlight in a process of 'rhythm and contorsion' appears renewable. In other words, the (hide and seek) situation can be repeated in the future, when the body may assume the role of the hunter or succeed in escaping as hunted by the machine. Every time the process re-starts, all the elements of the assemblage fall back into an uncertain process.

All in all, ACCESS may be said to invite a mode of interactivity that approaches relations between body, space and technology at their *potential* level. The installation may be understood to allow the generation and acceleration of micro-perceptual processes that may escape the sensuous body. As the machine delivers a twofold blow of sound and light pulsations to a moving body, its perception of space could be suggested to stretch. Its audio spotlight, in this case, appears capable to transform a body's perception at any given time. Yet this mode of perception, as it is discussed here, does not appear to point to a reflection of what is already given in the world, awaiting discovery by a perceiver. According to Massumi, following Deleuze and Guattari ([1980] 2002), affective perception takes place in-between perceiver and perceived:

The properties of the perceived thing are properties of the action, more than of the thing itself. This does not mean on the other hand that the properties are subjective or in the perceiver. On the contrary, they are tokens of the perceiver's and the perceived's concrete inclusion in each other's world<sup>7</sup> (Massumi, 2002: 90).

The audiovisual variables that operate in ACCESS, might point to something else outside themselves – a moreness encompassing bodies and machines that is utterly formless, senseless and imperceptible. Before forces become audible and visible effect they are affective energy, invisible and dimensionless virtual potentiality. Contemporary media artists working with various aspects of invisible and inaudible bio-electromagnetism, explore the relationship between transient force and bio-environment. The next section analyses the aesthetic implications of a current concern in new media art to engage with the dynamic nature of the invisible bio-artificial world.

## 2. The imperceptible aesthetics of energy

In *Spaces Speak, Are You Listening?* (2007), Barry Blesser considers alternative ways of experiencing spaces that undermine the visual prevalence of traditional architecture. Blesser envisions a synaesthetic manifestation of architecture, where each sense complements the other in order to feel structure – the proximity of walls, the sensation of ground and so on (2007: 20). Although his book examines 'auditory spatial awareness' specifically, Blesser's postulate is that bodies may think, perceive and feel differently by becoming exposed to the dynamic reverberations of architectural spaces (2007: 321, 61-2). Overall, in this book it emerges that human bodies have varying responses to aural architecture, as they become affected by it. Nevertheless, according to the arguments of the previous section, a body may equally affect space within the same digital assemblage. The insinuated nonconscious becoming of perception in ACCESS, below the range of perceptible activity, may suggest an intensification of the interactive experience. ACCESS may be suggested to unfold a rhythmic play in-between machine, space,

and body, which could not be said to originate from any particular source. Rather, it seems to be generated in-between the elements, as a potential relation, a virtual field that is immanent to the digitality of the project.

However, the conceptualisation of a vibrational, invisible, and dimensionless aesthetic perhaps becomes more obvious in Christa Sommerer and Laurent Mignonneau's, *Nano-Scape* (2001)<sup>8</sup>. Nano-Scape is an interactive system devoid of any audiovisual output, which suggests aiming to allow visitors to experience the invisible forces of space 'intuitively'. More specifically, participants are invited to interact with the surface of a table via four electromagnetic fields (installed inside the table) and a magnetic ring on their finger. As their hands hover over the table, magnetic energies of repulsion, attraction and minor shock become felt. In feeling the invisible surface over the table, participants are interacting with a digital simulation system with a wireless magnetic force feedback interface. The magnetic field is changed and regulated depending on four cameras tracking the user's hand movements. Embedded in the ring are markers that enable the system to detect its position at any moment and thus change the electromagnetic field produced by a coil. In addition, multi-user interaction (maximum four) is encouraged, in order to allow simultaneous interaction and create 'collective feelings' between human participants, table, space, technology and the like. As a result, participants may feel the impact of feedback forces from table to hand and from hand to hand. This is a rather strange sensation triggering the feeling 'that there is something there but you cannot see or imagine it clearly' (Sommerer, 2006).

Nano-Scape is a digital installation based on complex interaction feedback loops, incorporating principles of self-organisation and complexity theory. At their peak, the feedback forces that it utilises cause the magnetic ring to vibrate, seemingly controlling the movement of the participant's hand. This aims to be an intriguing experience of controlling and being controlled at the same time. Sommerer and Mignonneau seem to have tried to create an 'invisible link' between analog, digital and simulated worlds, encouraging users to supplement the work with their own imagination. Perhaps, then, Nano-Scape seeks to stretch its tentative surface that extends beyond perceptible reality; self-constructing invisibly as you scan the air that surrounds it. It emerges as a machine that attempts to push the boundaries of the known, by interacting with the unidentified zones that envelop the table, and not with an actual object.

In addition, Nano-Scape seems to attempt to sidestep the audiovisual element that has dominated contemporary art, by becoming an interface for elusive energies. As a virtual interface, it could be suggested to link participating elements (hands, ring, space, table, camera and software) without the need for direct perception. Thus, it may help us to reconsider the notion of interactivity, from the standpoint of a vaguely sensible and 'vanishing' aesthetics. Nano-Scape, then, may be thought to propose the consideration of *implicit* formations, resonating below perception and between the interacting elements. As such, the installation becomes the interactive process that replaces the object: a potentially infinitely expandable cluster of vibrations that surround the actual machine but are inexhaustible in it<sup>9</sup>. Nano-Scape incorporates concepts inspired by a hidden realm of resonance and vibration, before the latter become audible. Here, the artists appear to expose a vibratory state of perception (sensation), underlying or running across the sensory scale of a body. Drawing from Massumi, sensation is an extremity of perception (2002b: 97): a feeling without a human subject, in excess over the actual and inaccessible by the conscious body. As a self-referential, vaguely sensible feeling, sensation could point to something altogether non-human in human experience. In other words, it does not seem to belong to the body the way perception is owned by a subject. Rather, it could be viewed as an autonomous entity immanent to the digital event, transforming the distance between subject and object into an intensive and reciprocal resonance. Looked at in this way, Nano-Scape becomes a useful example for exploring the virtual tensions of digitality vis-à-vis the transformations of perception. Ultimately, in staging unusual bodily experiences of machine spaces, it could allow us to speculate on the impact of a deeper, hidden order of sensation; accompanying actual perceptions in digital assemblages<sup>10</sup>.

According to this section, emerging aesthetic experiments such as Nano-Scape may help to suggest a move towards alternative understandings of a body in digitality (technological, biological or other). The final section of this essay, explores such experimental works further in relation to what a body can 'hear' without ears, i.e. the hypersonic effect.

### 3. Hypersonic affect: in-between internal and external energies

It is generally known that sounds above the frequency range of 20 kHz cannot be perceived by human hearing. Nevertheless, experiments by a team of Japanese researchers led by Tsutomu Oohashi (2000) seem to have discovered an alternative type of hearing. According to the published outcomes of their research, complex sounds of high frequencies not only affect human response but in a way complete perception<sup>11</sup>. In particular, the team



used Gamelan soundscapes from Bali that are extremely rich in high-frequency components (HFC). Their study demonstrated that during the convergence of very high (inaudible) and lower (audible) frequencies, perception seems to expand. Accordingly, at this level, a body becomes more receptive to external impulse than when it is exposed in either high or low frequency, alone. This combined impact of inaudible and audible forces on a body was coined by the scientists as ‘the hypersonic effect’.

The team established that ‘the (perceptual) sensitivity of human beings may not be parallel with the ‘conscious’ audibility of air vibration’ (Oohashi et al, 2000: 3549). HFCs may be conveyed through passages distinct from the usual air-conducting pathway and, as such, they can affect the central nervous system and deep-lying brain structures directly. The hypersonic effect, it seems, includes the potential participation of non-auditory sensory systems, for which vibration is not necessarily translated to sound. Oohashi and his colleagues note that only when the entire body, including the head, is exposed to consciously unrecognisable air vibration, deep-lying structures of cerebral flow (that do not belong to the conventional auditory perception system) are enhanced and activated.

Following this finding, such consciously inaudible vibrational stimuli could be understood as microscopic perceptions that do not pass through the conventional air-conducting auditory system. The team’s findings seem to suggest that conventional sensory perception may be only a glimpse in the manifold layers of sensation that populate a body. As unidentified inaudible effects they may constitute an integral but hidden part of a body’s capacity to perceive (sound). As such, they could be better understood as *affects* that may or may not contribute to the system, without surfacing to perception. The research team reports that a hypersonic effect may involve certain nonconscious mechanisms that induce the activation of ‘electroencephalogram rhythms’, when they are exposed to HFCs (Oohashi et al, 2000: 3551). Looked at in this way, the body may appear to be affected by inaudible (phantom) rhythms, which interfere and blur external stimuli with internal qualities. In other words, it may no longer be clear whether these rhythms derive from an external source or constitute an integral component of the body. In addition, the hypersonic effect seems to enable a *coexistence* between what is within the auditory capacity of a body and a potential energy that surpasses it; between external forces of inaudible frequency and the body’s own self-generated inner-rhythmicity. In this middle zone, the hypersonic effect becomes affect: a rhythmic tension that seeps under and in-between conscious perception and affective sensation.

In a project entitled *À Fleur de Peau – Soundsuit for a Body* (2003), media artist Lynn Pook explores the idea of the body as a sound installation<sup>12</sup>. In particular, the participant is invited to wear an apparatus that is strapped to his/her head, torso, limbs, hands and feet through ribbons; hanging downwards from the ceiling and attached to 16 micro-speakers without a membrane. Unlike ordinary loudspeakers these are barely audible and vibrate vigorously, using high pitch frequencies aimed at reaching areas of the body that are not usually associated with hearing. According to the artist, ‘contact speakers’ require attachment with a resonant body, i.e. the user, in order to become felt. Finally, the user is fitted with earplugs to block external sounds and a ten minute composition made of ‘sonic textures’ is played all over the participant’s body<sup>13</sup>. The work invites participants to ‘disconnect’ from vision, as a standard mode of perception, in order to ‘feel’ vibrational stimulations whose sources are difficult to locate. As a result, the body is affected by the intersection of external stimulus (attached speakers) with internal resonance (the sounds are carried from the bones to the inner ear and from the guts to the limbs). During this ten minute process, the body appears confused, feeling vibration across its skin and hearing its own rhythms, at the same time. During the festival, Pook invited musicians and composers to test the installation as an instrument, on which to develop compositions that blend together internal and external sensations.

*À Fleur de Peau* seems to map the course of a body becoming instrument; a process that synthesises metal and skin, plastic and bone, organic and technological matter to a symbiotic degree. As such it seems to be a ‘quasi-installation’, completed only at the point of connection between body and device. Vibratory micro-speakers and participatory body appear to come together in order to form a hypersonic experience, felt across and under the skin. Together they compose a soundsuit that is felt affectively, i.e. as a self-modulating, nonsensory and not entirely conscious manifestation of the virtual zones of perception. The micro-speaker apparatus is used to circulate a form of ‘electroshock’ to the internal organs, however, at the same time, the shock seems to be further enabled by the resonance of the bowels and nerves, as well as the rhythms of the brain. *À Fleur de Peau*, then, could be thought as a surplus value, emerging out of the overlap of the body, as a vibrating machine, and the resonance of the vibratory speakers. This body-instrument appears as a surplus of rhythms that may not be fully absorbed by auditory sensory memory or fully controlled by the device. In other words, something seems to escape the trading between interior bodily pulsation and exterior resonance, becoming too abstract to fit the human experience.

Considered from this standpoint, the hypersonic suit seems to expose the body as a field of forces, speeds and affects that has been detached from the dominance of human perception. Here, the body opens up to its potential

relations with space, sound and technology, not entirely dependent on its conscious perceptions. In this example, perception could be said to cease being the core of receptive activity and become rearranged along a continuum of human and non-human layers. The project gives the impression of trying to convey a tension between the external and internal realms that it brings together, interfaced by hypersonic affect. As it was suggested earlier, hypersonic affect (or sensation) is a notion aiming to insinuate that not everything about perception is purely 'human'. Drawing on an encounter between neurophysiology (hypersonic effect) and media art, this section suggested that perception oscillates between normality (sensuous perception) and defectiveness (non-conscious sensation). Hypersonic affect has been proposed to emerge as the vibratory microcosm of perception; what we cannot see, hear or know directly, but which nevertheless seeps under and across human perception.

## Conclusion

As it was suggested in this essay, digital aesthetic interventions in technological (audio spotlight) and scientific (hypersonic effect) experimentations could help propose a nonsensuous, or machinic, becoming of perception. As Deleuze explains, machinism:

...does not mean mechanical or organic. Mechanics is a system of closer and closer connections between dependent terms. The machine by contrast is a 'proximity' grouping between independent and heterogeneous terms... (Deleuze and Parnet, [1977] 2006: 77).

Deleuze proposes that all the elements of a machinic assemblage, including human bodies and technological devices, are part of a collective machine (2006: 76-77)<sup>14</sup>. For him the organic body and the inorganic tool are nothing without the machinic assemblage which gives them "a certain relationship of vicinity" with each other, animals, and other elements (2006: 77).

This essay attempted to explore the idea of a non-human becoming of human consciousness by looking at unperceivable relations between body and ultrasound (audio spotlight), invisible energy (electromagnetism) and hypersound (hypersonic affect). Across its three sections, these processes have been used to help 'tip' human perception over to its impersonal, virtual side. The latter, it was proposed, seems to be better understood as something altogether 'non-human', emerging as an autonomous, alien entity, amidst the properly human quality of the self, subjectivity, cognition and sensibility. The non-human state of perception, then, is not meant here as alluding to something technological, but as cutting through distinctions between living and nonliving matter. The non-human zone of human perception is a notion that aims to address peculiar encounters between perception, sensation and hallucination, in order to ask what transformations it might enable.

This essay aimed to explore alternative ways in which the mutations of perception may be considered as an additional layer of the virtual architecture of digitality. According to it, interactions between human bodies, digital technology and sonic spaces may push our idea of human experience towards a non-human dimension. In these selected projects, a body appears to hallucinate in its encounters with 'hypersonic sensation', inviting perception to brush against its own virtual states. Hypersonic sensation provides a direct shock to perception, alluding to the idea that a body might be understood as a field of partialities (partially conscious and nonconscious, sensuous and affective), rather than as an obligatory whole. Considered as only partially human, the body could become liberated from causal explanations and predetermined expectations of its relationship to technology. At a level beneath what we can sensuously perceive, these elements might form potential linkages that exceed the actuality of their interactions. Digital experiments, exploring the relations between bodily sensation and imperceptible energy, could provide useful ways with which to re-think perception. Beyond the elementary macro perceptions of the senses, an affective aesthetic of digitality could shift our focus to the vibrational intensity of spaces.

As it was suggested, a speculative notion of hypersonic sensation may be more appropriately explored in actual digital 'events' (aesthetic, scientific and technological). The installations in this essay were used to tap into a non-sensuous and amodal quality of experience: not purely lived or entirely accessible by the sensuous and agential body (in other words, phenomenological). This was part of an attempt to create an intimate alliance between philosophical and cultural theorisation and digital practice. Cross-pollination between theory and practice is perhaps crucial in conducting abstract but material experimentations with concepts. Such materialist accounts could be argued to approach the theoretical engagement with media technologies and aesthetic experiments from a specific angle; that is, as a *symbiotic* relation between experimental fields, rather than a mere correspondence, communication, deconstruction or representation. As the essay attempted to demonstrate, theory and practice can be approached from a middle space of intersection: where technoscientific ideas emerge on the edges of obscure,

philosophical thought and artistic practice slowly enters ‘the laboratory’ with fascinating results. Themselves the offspring of an intimate alliance between science, technology and art, these artworks might help propose a collective machine of digitality, which escapes the total and subjective imposition of form on matter. The digital event is then perhaps better understood as a machinic assemblage between virtual, indeterminate domains and actual, determinable processes. Here, technological elements are not purely inert and subjected to human intervention; whilst living and artificial matter may connect only at the level of potential force. Considered from this standpoint, digitality becomes a nexus of heterogeneous elements, interfaced by elusive energies and pointing to the transmutational fabric of life.

## Endnotes

<sup>1</sup> N. Katherine Hayles discusses how information theories with a systems-based approach to the construction of the human subject (and particularly Wiener’s first-wave of cybernetics), extended liberal humanism instead of subverting it, as they intended. cf. Hayles’ account on *How we Became Posthuman*, 1999, and particularly for this point, p 7.

<sup>2</sup> Audio Spotlight was Pompei’s doctoral thesis at the MIT’s Media Lab in 1998, which he then turned into a commercial product by founding Holosonic Research Labs Inc. in 2000. For useful information on Audio Spotlight, including audiovisual documentation and news broadcasts, cf. his company website, available at <http://www.holosonics.com/index.html>. See also, Simon Emmerson, ‘Diffusion-Projection’, in *Living Electronic Music* (2007), especially pp. 166 – 67.

<sup>3</sup> ACCESS is permanently exhibited at the ZKM [Zentrum für Kunst und Medientechnologie], Center for Art and Media, Karlsruhe, Germany, since 2003. For more information on the project and video footage, cf. project description, available at <http://www.accessproject.net/> and Appendix 1 of this essay.

<sup>4</sup> Motion tracking algorithms are programmed to capture the movement of a body in the form of a granular moving swarm. In other words the camera ‘sees’ a population of grains forming a ‘sticky’ blob: when two bodies (swarm clouds) come into contact (or close proximity), the program may leave one target for the other. Visually, in relation to the image of the coded ‘grid’, it could be suggested that a notion of digital *contagion* is at play here.

<sup>5</sup> According to Walter B. Cannon (1914), the adult immediate and instinctive response to fear is either to stay and defend oneself from danger or flee and escape it.

<sup>6</sup> The term sensation is explained in the second section of this essay.

<sup>7</sup> According to Deleuze and Guattari, “Perception will no longer reside in the relation between a subject and an object, but rather in the movement serving as the limit of that relation...it will be in the midst of things...as the presence of one haecceity in another, the prehension of one by the other or the passage from one to the other: look only at the movements” (2002: 282).

<sup>8</sup> *Nano-Scape* is an ‘invisible interactive sculpture’ developed for the exhibition ‘Science + Fiction’ at the Sprengelmuseum in Hannover, ZKM, Karlsruhe, see Appendix 2.

<sup>9</sup> Vibration may be understood as an elementary rhythmic movement of matter, whose ‘vital powers’ exceed ‘every domain and traverse them all’. According to Deleuze, these are ‘more profound’ than the senses, however, they may appear as sound or organised music when they ‘invest the auditory level’, or as painting and visual imagery, when they ‘invest the visual level’ (2003: 42).

<sup>10</sup> Massumi explains that ‘sensation is the mode in which potential is present in the perceiving body’ (2002: 75). Following his approach, participants of Nano-Scape might not be merely interacting with a camera, motion tracking sensors or walls and tables (in an action-reaction association with the physical aspects of the installation), but address bodies at the level of potential.

<sup>11</sup> For more details on this research cf. Tsutomu Oohashi et al, ‘Inaudible High-Frequency Sounds Affect Brain Activity: Hypersonic Effect’, *Journal of Neurophysiology*, Vol. 83, No. 6 June 2000, pp. 3548-3558.

<sup>12</sup> The installation was part of the *Garage 04* festival for contemporary art and culture in Stralsund, Germany. For more information on the project and see the artist’s personal website available at <http://lynnpook.de/kontakt.htm> and Appendix 3 for images. Some of the information here draws on personal communication with the artist.

<sup>13</sup> According to Lynn Pook, the technical aspects of the installation involve a digital computer which is running the composition (on multi-channel player software), a soundcard (with eight analog and eight digital outputs), a digital-analog transformer and a sixteen channel amplifier.

<sup>14</sup> Deleuze draws his understanding of bodies in relation to affect from Baruch Spinoza, who writes that ‘all bodies are either in motion or at rest (axiom I), every body is moved sometimes more slowly, sometimes more quickly (axiom II), and that bodies are distinguished from one another in respect of motion and rest, quickness and slowness, and not in respect of substance (axiom III)’ (Spinoza, 1955: 90-91).

## References

- Blesser, B. *Spaces Speak, Are You Listening? Experiencing Aural Architecture*. Cambridge, MA: MIT Press, 2007.
- Brooks, C. M., Koizumi, K., Pinkston, J. O. et al. (contributors). *The Life and contributions of Walter Bradford Cannon, 1871-1945: His influence on the development of physiology in the twentieth century*. Papers delivered at a Centennial Symposium held at State University of New York, Downstate Medical Center, 25-26 May 1972, New York: SUNY Press, 1975.
- Deleuze, G. and Guattari, F. *A Thousand Plateaus, Capitalism and Schizophrenia*. London: Continuum, 2002.
- Deleuze, G. & Parnet, C. *Dialogues II*. London: Continuum, 2006.
- Elwes, RHM. Ed. *Benedict De Spinoza: On the Improvement of Understanding, The Ethics, Correspondence*. New York: Dover, 1955.
- Emmerson, S. *Living Electronic Music*. Aldershot, UK: Ashgate, 2007.
- Garage 04 media art festival. <[http://garage.in-mv.de/index.php?element\\_id=206](http://garage.in-mv.de/index.php?element_id=206)> (Accessed 28 September 2008).
- Gershon, M. D. *The Second Brain: A Groundbreaking New Understanding of Nervous Disorders of the Stomach and Intestines*. New York: Harper, 1999.
- Hayles, K. N. *How We Became Posthuman: Virtual Bodies in Cybernetics*. Chicago: University of Chicago Press, 1999.
- Kovats, S. ‘The Electromagnetic Bride’ conference at V2, *Institute for the Unstable Media*, 6 May 2006, 10:00- 17:00, Goethe Institute Rotterdam. <<http://www.v2.nl/portal2004/events/channel/item.xml?uri=urn:v2:portal2004:rss:events.rss:060502110413-Electromagnetic-Bride>> (Accessed 12 September 2008).
- Massumi, B. *Parables for the Virtual, Movement, Affect, Sensation*. London: Duke University Press, 2002.
- Massumi, B. *A Shock to Thought: Expressions after Deleuze and Guattari*. London: Routledge, 2003.
- Oohashi, T. et al. ‘Inaudible High-Frequency Sounds Affect Brain Activity: Hypersonic Effect’. *Journal of Neurophysiology*. 83: 6, 3548-3558, June 2000.



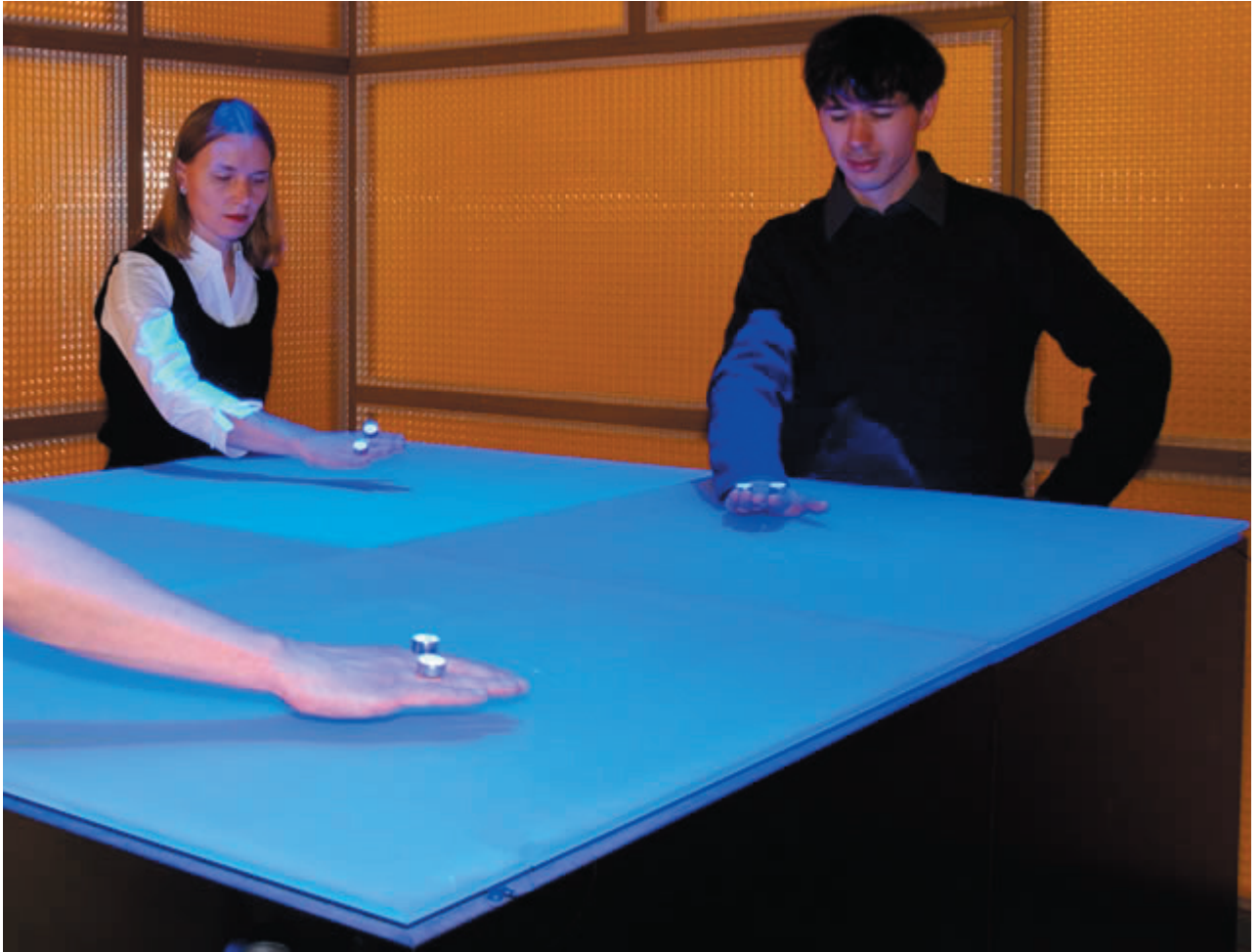
- Peat, D. F. *Blackfoot Physics: A Journey Into the Native American Universe*. USA: Weiser, 2005.
- Pompei, J. *Audio Spotlight*. <<http://www.holosonics.com/index.html>> (Accessed 13 November 2007).
- Pook, L. Personal website. <<http://lynnpook.de/kontakt.htm>> (Accessed 4 October 2008).
- Serres, M. *Five Senses*, London: Continuum, 2006.
- Sester, M. *ACCESS* 'Project description'. <<http://www.accessproject.net/>> (Accessed 20 August 2008).
- Sommerer, C. 'Nano-Scape: Experiencing Aspects of Nanotechnology Through Interactive Art'. The Electromagnetic Bride Conference at V2 *Institute for the Unstable Media*, 6 May 2006, 10:00- 17:00, Goethe Institute Rotterdam. <<http://www.v2.nl/portal2004/events/channel/item.sxml?uri=urn:v2:portal2004:rss:events.rss:060502110413-Electromagnetic-Bride>> (Accessed 12 September 2008).
- Sommerer, C. and Mignonneau, L. Artworks 1992 – 2007. *Nano-Scape*, 'Project description'. <<http://www.interface.ufg.ac.at/christa-laurent/WORKS/FRAMES/FrameSet.html>> (Accessed 9 March 2008).
- Thomas, J. A., Moss, C. F. and Vater, M. Eds. *Echolocation in Bats and Dolphins*. Chicago: University of Chicago Press, 2004.
- Wiener, N. *Cybernetics, or Control and Communication in the Animal and the Machine*, Cambridge, MA: MIT Press, 1961.

## Appendix 1 - *ACCESS* (2006)

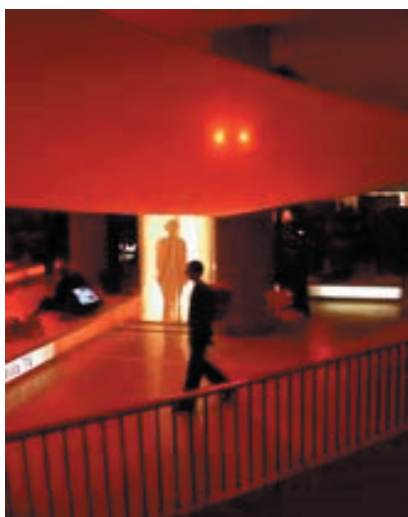




## Appendix 2 - NanoScape (2002)



### Appendix 3 - À fleur de Peau – Sound suit for a body (2003)



**Please mention the bibliographic information when referring to this book:**

*Sounds of the Overground: Selected papers from a postgraduate colloquium on ubiquitous music and music in everyday life.* Edited by Nedim Hassan and Holly Tessler. Turku, Finland: International Institute for Popular Culture, 2010. (Available as an e-Book at <http://iipc.utu.fi/publications.html>).