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Resonating the Fragmented Body: Sound Design in New Media

Sound The way we listen is subject to so many filtrations. As I speak to you now, you may be focusing on the content of what I am saying. The words. But also, you are contextualising those words within a host of other signifers: m the intonation of my voice, the space of the electro-acoustic apparatus and the room itself. . all of which conform to what you have come to expect from a conference hall. It is this material conjunction between meaning or content and the productive context that I would like to explore in this paper, in relation to new media production as n pertains to sound design m particular.

We keep hearing about content as though it is something that can just be poured into the awaiting technological vessel. The question of content to my ear however, also begs the question of the container This split is just another manifestation of an old divide: hardware/software, technical/ creative etc.

Sound; as a resonance of matter in space tends to resist this division between content and container. If I put the sound of my voice into this glass *[speaks into glass]* – it becomes a different sound. Digital audio storage and manipulation and the advent of desktop audio production have opened the way for a convergence in the sites of media production and of the formats of distribution – but on the whole, at least as far as audio production is concerned, this has not led to convergent forms of practice.

Whilst it is commonly acknowledged that sound plays a crucial role in multimedia design it has received relatively little discussion in the plethora of books and articles magazines etc. that have been spewed forth to show us "How To." I would like to examine some of the practices currently employed in new media for both sound design and the conceptual production of which it is part, and raise some questions about the baggage those practices carry as well as the baggage that we are dealing with in bringing sound to the screen at all.

It is crucial to locate what we are doing in the context of a crincal pracnce not only a practice of critl-cism. Peter Lunenfield in his article "Theorising m Real Time" says·

> *"wna: is co/led for is not simply the building of a metacritical language, but a working made/ for practice" a 'real time' theory ·designed as much for ns use value for the artist as for its expedience for the tneonst."*

In order to approach the sometimes prosaic actualities of production processes from *a* position that enables me to engage theoretically with that practice I have found it is appropriate to draw on a concept of materiality that is neither the absolute and knowable "substance· of the enlightenment nor the structuralist formations ot'materialsm" but rather as something contingent on the nexus of bod·ily engagement with the material signifiers for formations of meaning. As Vivian Sobchack puts it:

> *"we cannot reflect upon and analyze either technologies or texts without having at some point engaged them immediately – that is, through our perceptive sensorium, the matenality (or rmmanent mediation) of our own bodies•*

Sound is produced *by* the vibration of matter in space and time. Sound gives us information about the physical structure of things and the spaces in which they are heard. Is it wood or glass, metal or plas-ticl Is nm the bathroom, the forest the street or the stock-exchange trading room' Ihe resonant dimensions of our own bodies determine the range of frequencies we are able to hear and produce. The greatest sensitivity in human hearing occurs around the midrange frequencies which are also

where the frequencies of the human voice are to be found. We are morphologically predisposed to a certain clear zone of perception, a slice of world we can apprehend (had we the dimensions and auditory acuity of whales we would not have ever built GPS systems to bring the relation of our position to the earth's surfaces into our scale and frequency range).

Hearing is the vibration of sound entering our body and rattling our bones. The reverberation of the space, the decay of sound in time indexes our body in time. Sound, like lived experience, is elastic within time, but never outside u. The pace or rhythm of sound is perceived directly in relation to the time measures of our bodies, heart rate and breathing. They are regularly exploited by sound designers in subtle and not so subtle ways to manipulate the perceived pace of visual materials. For in our visually overloaded culture, we do interpret auditory differences visually. We will tolerate bad pictures with good quality sound but not the other way round; but improvements in sound quality will often be perceived as improvements in image quality. What we hear directs our interpretation of what we see, what Michel Chion calls "added value."

It is hardly surprising that we borrow information from our auditory sense to support our visual interpretation as our hearing is much higher resolution than our seeing. Whilst we have the illusion of continuous movement at only 24 frames-per-second, our ears require over 44,000 samples a second to enjoy CD quality sound. We can hear from all directions, but see in only one. We hear faster than we see, and our brains process audio information faster than the speed of sound so we are always hearing backwards and assembling the meaning of sound "retro-auditively"; filling in the gaps, interpreting nuances of resonance and decay to map our body into the spatial and temporal milieu. The world pours into us through our never closing ears, we are always in sound and in time.

The importance of dealing with sound's spacio-temporality in addressing design issues in "interactive" or "non-linear" works lies in the flexibilrty of duration which this work demands. The situation of a computer in a physical space conjuncts that physical space with a conceptual space for the computer user. We might call that conceptual space a virtual world, but the spatialisation of ideas predates that terminology by many hundreds of years, and such a conceptual space may not be constitutive of all that the word "world" implies, in this context, of self containment and unity. What is relatively new in the relation between these two kinds of space, is the possibility of bringing sound, a key index of the physicality of architectural space, to bear on conceptual spaces. In resonating these hybrid spaces we should not be drawn into the trap of restricting sound to a spatial representation enslaved to Cartesian geometry - conceptual spaces are not constrained to three dimensions and the way patterns in sound are understood do not follow the perspectival habits we in the West have developed visually. The designation of the screen as a window on a world, or windows on several non compossible worlds, is shattered by the emanation of sound from the computer into the physical space. In resonating the conceptual space we have also to resonate the space of the listener and the hardware of the computer. Sound, more than any visual link-up, has the capaaty to actualize a presence of one space in another, regardless of physical proximity (hence the immense popularity of the telephone).

Before the advent of recorded sound the question of "where" a sound was had a different relation to the body of the listener, the resonance of spaces indexed the hearers movement in the world (The resonance of an unfamiliar space still draws our attention to our own footsteps). The invention of recorded sound created the possibility of displacing the space of sound and reorganising its temporal flow through editing, changing playback speeds or reversing the tape. The one thing we cannot do to that temporal flow of course is to stop it, not at least without ceasing the sound. There can be no freeze frame.

Once divorced from its original context, sound becomes an object in its own right, not just the barking of a dog (certainly not that of a particular dog) but a piece of duration up for grabs to be speeded up, slowed down, repeated, reversed, reverberated, etc.

With analogue equipment there was a strong sense of the sound having a concrete autonomous existence. This *[holds up a piece of 1⁄4" tope]* is something you can get your hands on, you can know that this is a cough cut from the middle of a recording made of someone giving a paper at a conference like this one - it has a certain material autonomy - you can reproduce the cough by running it across the heads of just about any 1/4-inch tape machine.

But actually an analogue sound rs no more "a sound" than is a digital sound - it's only an analogue of a sound and with either analogue or digital storage it is possible to change the sound in *ways* that would be impossible for the originating body to produce. Each technology introduces its own componerrts into the sound it re/produces bringing about a re-embodiment of the sound; in this regard the reproduction of sound is never reducible to representation. The recording or transmission of analogue or digital sound creates not disembodiment - but an impossible, or non-compossible, re-embodiment.

Many of the things which have been said about the digital manipulation of recorded audio are also true about analogue recordings but there are additional aspects to digital storage that highlight things whuh perhaps didn't draw our attention so strongly before, such as the issue ol "where" the

sound physically is when it's stored. The material affordances of digital technology are different, but they are still matenal.

When a sound is digitized n seems to go through another level of abstraction from it's material origin; once it rs represented as zeros and ones the manipulations that can be enacted on it are not subject to the same constraints as with analogue equipment where for example, a tape loop must be at least long enough to fit around the assemblage that houses the tape head and tape driving mechanism and the period of time for which tt can be repeated is limited by the wear on the tape surface itself as it passes through the mechanism and across the heads, in the digital domain the tiniest sample can be looped indefinitely. What is important here is that it is possible to adJust the parameters of data to produce new sounds which would not only be impossible for the originating body/source of the sound to produce: but which additionally exceed the capacity of the listening body to perceive; since the parameters of the output can be adjusted outside of time in disregard of the limits of hearing and response time of the listening body.

For example, in some software, you can zoom in and stop the sound and draw on the wave form pixel by pixel directly manipulating the stored sound data at a level of detail that you couldnft do on the fly –you start to be able to make adjustments at levels of detail the ear cannot detect, to push beyond the threshold of perception. This is frequently achieved by a visualisation on the screen which enables us to work with sound without listening to it But rather than looking at this as a greater degree of abstraction, as a de-materialization, as the of virtuality and digitahty tend to do; I prefer to look at it as a re-ernbcdiment, as the resonance of digital stuff. After all as Freidrich Kittler has argued there is no software, that is to say, what we call software is in fact entirely dependent on hardware to run. The immateriality and virtuahty conferred upon all things digital needs to be explained in other ways.

This question of immateriality is part of a much older problem of how we define intelligence as separate from our bodies, and the burden the computer has carried to emulate this disembodied brain. This conception of intelligence as unconstrained by bodily and therefore perceptual limits, is really apparent when you read things describing "intelligent software" and you think about what that software is actually domg and often it's just omething really simple - but it's doing it really fast. Intelligence in this context becomes synonymous with physically inhuman speed, speed that exceeds human perception.

Sherry Turkle, m her keynote, has addressed the issue of transparency as a disappearance of the workings of digital machines. That transparency of the technology stops us thinking about the material affordances of digital audio as being material. But this idea that the sound rs virtual, or not there, is in a sense just an accentuation of something that existed already with analogue, there isn't a "sound" "there" [holds up tape] – you've just got a pattern of magnetic rust on a piece of plastic and if you de-magnetise it the only sound it makes rs: *(scrunches up tape near microphone]*

You become more aware of this absence when you see people looking at the wave form representation on the screen of a non-destructive editing software and saying "OK, there is my sound: Because it is stored in a more fragmented way; and because what we see on the screen is only in fact a parncelar instance of a representation of a magnetically stored data pattern; and because the manipulations we make on those instances can be stored separately as a session file, or midi data, or effects settings, or macros which may be entirely transposable to other sets of recorded audio data: we become much more aware that there isn't a sound "there."

I want to take a quick look at some of the factors prevalent in current new media practices which impinge on our capacity to really tackle the acoustic space-time of new media – particularly the incongruous Juxtaposition of filmic models and page-based textualities as models of the screen space (I am not saying that incongruity is a bad thing, but let's notice it). A lot of existing literature on sound design in new media tackles technical issues without drawing into question a model borrowed from film which distinguishes categories of sounds according to either diegesis: voice over, dialogue, sound effects, atmos., music; or relative to the spatial dimensions of the shot foreground mid-ground and background – the long, medium, and dose up shots of audio.

But the already complex relation of point-of-view to point-of-audition works differently when the viewer is kinaesthetically implicated by mouse movements, for example, across a two-dimensional surface that rarely conforms to the same codings of the representation of space that inhere to cinematic naturalism; the on-naturalness of which we should not forget.

In the early days of sound cinema there were strong discussions about the relationship between the eye and the ear – the idea that you could see something in long-shot and hear it in close up at the same time was deemed unacceptable. Rick Altman has documented in detail the transition, within ten years, from this desire for a natural proportionality between image and sound to a prioritisation of clarity in dialogue over spatial verisimilitude. This rs one of the many rifts in the perceptual coherence of subjectivity that have not only never healed but which have proliferated, fissuring, bifurcating, replicating in multiple lines of flight from the totalising unffied subject position that our disembodied (artesian minds once aspired to. Michel Chion says.

"this question of the unity of sound and image would have no importance if it d1d not turn out through numerous films and numerous theories ta be the very signifier of the question of human unity, cinematic unity, unity itself"

The cinematic model of point-of-view and point-of-audition in sound space, seems incongruous at the interface between d1gita1 stuff and the distnbuted self. EX1Sting practices for conceiving of new media forms privilege particular ways of knowing whKh the experience of listening and the resonance a body in the space-time of sound might bring into question

While production techniques are by no means fixed, and are constantly evolvingg One tool which seems to be making its stamp fairly and squarely across a wide range of non-linear digital productions is the tree diagram. Whether it looks like a tree, or it looks like a rhizome, or whether II looks like a molecule kit; the basic form of the diagram, comprising a link and a node, carries strong spatial/ representational implications. The node often maps onto the box of the screen shape, the links define 'movements" between these screen "spaces'.

The tree diagram as a taxonomic tool for defining bodies of knowledge, as manifested by the enlightenment encydopedists, finds extended expression in the ongins of what we have come to know as hypertext. When Vannevar Bush invented the Memex it was a question of drawing conceptual links between discrete and knowable scientific data zones. Bush's context for inventing the Memex idea was to do with a certain episteme which defined the known and the knowable, and m which connections between discrete units of knowledge could be transparent and self evident. I would like to suggest that an embodied perceptual experience such as listening demands recognition of other kinds of knowledges to which our historically disembodied intelligence is inadequate and this needs to be reflected in the way that sound design is incorporated into digital multimedia projects

At this point I should reveal some of the impetus behind my writing this paper. I have just had the privilege of working for several months on a project, which shall remain nameless, where I was hired to stick some sound effects in after all the creative production decisions had been made. After producing hundreds of little sound files for each section of the title, these files then went to the programmers who effectively did the mix in a paint by numbers kind of way. Designing sound in this situation involves, to an extent hearing all the little bits as an imaginary whole and finding a resonance appropriate to the juxtaspace of the screen. The relevance of this experience is not in its specifics, but in its typicality. We too often hear lists of ingredients for new media comprising graphics, video, photography, text, "etc." when the only "etc." left to the imagination is sound ... Sound as flavor-enhancer for visual media.

The point I am making here is that it is not possible to say "here is the technical stuff," and "there is the content creation over there somewhere'. The "de-erterification" of sound can only take place via a critical re-working of current practices. A successful convergent multimedia practice demands a convergence in bodies of knowledge and a re-evaluation of ways of knowing.

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