

SUBJECT: ACOUSTIC CYBERSPACE

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Today I'd like to talk about some abstract ideas, some images, some open-ended notions about acoustic space. In particular, I am interested in the relationship between electronic sound and environments, on the internet or in music. I won't talk about the various technologies involved; instead, I'll try to get at some of the deeper issues about sound and the ways it constructs subjectivities and can act as a kind of map.

A good place to start is with a distinction that Marshall McLuhan draws between visual space and acoustic space. McLuhan used the notion of visual space as a way to describe how Western subjectivity has been organized on a technical basis since the Renaissance. McLuhan argued that Renaissance perspective not only provided a powerful new way of organizing the visual field (in terms of representation), but also engendered a very specific form of subjectivity. He didn't just associate this subjectivity with the point-of-view produced by Renaissance perspective painting—he related to it also to print technologies and to the new form of the book. In essence, he argued that the self that comes down to us from the Renaissance—the “molar” self of the modern West, as some have called it—is a visual self.

Renaissance perspective thus serves as a pictorial analogy for a much more general phenomenon—the power to create a distinct, single point of view that organizes thought and perception along linear lines. This is related to print technologies—and print culture—because, according to McLuhan, these technologies inculcate within us a habit of organizing the world in a linear, atomized, and sequential fashion. Central to this visual space is the axiom or assumption that “different” objects, vectors, or points are not and cannot be superimposed; instead, the world is perceived as a linear grid organized along strictly causal lines.

McLuhan contrasts this construction of visual space, and the kind of subjectivity associated with it, with

what he calls “acoustic space.” Acoustic space is the space we hear rather than the space we see, and he argued that electronic media were submerging us in this acoustic environment, with its own language of affect and subjectivity. Acoustic space isn't limited to a world of music or sound; the environment of electronic media itself engenders this way of organizing and perceiving the other spaces we intersect.

Acoustic space is capable of simultaneity, superimposition, and nonlinearity, but above all, it resonates. “Resonance” can be seen as a form of causality, of course, but its causality is very different than that associated with visual space, because resonance allows things to respond to each other in a nonlinear fashion. Through resonance in a physical system, a small activity or event can gain a great deal of energy; for example, if I belted out a pitch that resonated with the unique acoustic characteristics of this room, the energy of my voice would be amplified by the environment. That's why some singers can shatter a glass with their voice: they hit the resonant frequency of the glass (which is a space and contains a space), making it vibrate to the point of shattering. Resonance is a very powerful analogy for understanding how various types of energies and spaces operate.

Resonance is just one quality of acoustic space; another one is simultaneity. Where visual space emphasizes linearity, acoustic space emphasizes simultaneity—the possibility that many events that occur in the same zone of space-time. In such a scheme, a subject—a person, maybe—organizes space by synthesizing a variety of different events, points, images, and sources of information into a kind of organic totality. This isn't true in the strictest sense, but, nonetheless, our thoughts and perceptions can tend toward this simultaneity: we sense many things at once, and combine them into a coherent if fragmentary whole.

McLuhan argued that what we hear is very different from what we see. Needless to say, we hear

things and we see things simultaneously—but according to different logics, logics that are culturally defined and change over time. There’s no hard-and-fast, timeless distinction between the two; rather, these are simplified ways of talking about the conditions for experiencing information, consciousness, conception. And the rise of electronic media is awakening more acoustic sensibilities in the ways we experience the world.

Much of what people say about cyberspace, the internet, virtual reality, and other electronic spaces is centered on visual images and graphics. This discourse occurs on many levels—the artistic, the intellectual, as well as more practical technical issues and pragmatic social practices. And given the nature of today’s interfaces, it isn’t hard to see why. But I think we might benefit by weaving some of the deeper questions raised by acoustics, which includes hearing and orality, into the broader technocultural debate. For one thing, there’s electronic music, a tremendously innovative, exciting and polycentered field, which raises all sorts of issues around aesthetics, spatial constructions, the non-thought, the production of subjectivity. And then there’s the larger environment of electronic arts or information culture—the internet, virtual reality, for example—which remain for the most part centered on the lingering dreams of visual space. If you think for a moment about the technical construction of virtual environments, I think you’ll agree that Renaissance perspective continues to play an extraordinarily powerful role.

I’ve had the opportunity to experience a number of very high-end virtual reality environments. Some of them are profoundly immersive experiences. This isn’t necessarily a goal for all virtual environments, but it’s definitely a looming question for the people who work on making them: How can we create a space where perception and subjectivity are sucked into an alternate dimension, an alternate kind of space? This is a central narrative about virtual reality; there are many, but this a very strong one. In many ways, it’s a naive narrative. Yet the first time I experienced 3D audio, I was transported far more viscerally than in any of the far more sophisticated visually based virtual reality installations. There was something about the very pure non-graphic spatial organization of very good 3D audio that

created an incredibly powerful immersive experience. Typically, people relegate acoustic dimensions to the “background”—a soundtrack or score that “accompanies” a primary visual experience. But in an immersive acoustic environment, you might hear all the sounds you would hear on a street corner, spatially organized in real time, surrounding you. This is much, much, stronger than a visual experience, which tacitly distances you, places you in a transcendent, removed position, rather than embodying you at the center of a new context.

My question here is: why are acoustic spaces so effective in this regard? What is it about sound that is so potentially immersive? I think it has to do with how we register it—how it affects different areas of the body-mind than visuals do. Affect is a tremendously important dimension of experience, and one of the most difficult to achieve in a visual environment. “Atmosphere” might be a good way to describe this aspect: sound produces atmosphere, almost in the way that incense—which registers with yet another sense—can do. Sound and smell carry vectors of mood and affect which change the qualitative organization of space, unfolding a different logic with a space’s range of potentials. Ambient music, or an ambient soundscape, can change the quality of a space in subtle or dramatic ways.

We’ve seen some interesting experiments and opportunities with the use of RealAudio on the internet, for example. But, more than that, I’m interested in getting people to think about the larger implications of sound and acoustics. Not as simply a vehicle for communicating information or establishing dialog between far-flung actors; and not simply as electronic music, a genre of activity and expression that, however fascinating, is commodified and compartmentalized from our “other” activities and experiences. A broader understanding of acoustic space is what I’m after: I’m really talking about different dimensions of the kind of subjectivity that we produce in networked environments. This dimension is profound, and we should consider it, work with it, explore it.

A historical example of the possibilities of acoustics that’s worth considering is the history of radio: there was a tremendous amount of vitality in the early years of radio, and most of it was sapped

away as it became commodified and consumerized, with the exception of pirate radio efforts, some public radio, and the fringes of radio art. Our situation now has a bit of déjà vu about it: when the ability to communicate via wireless telegraphy occurred, it was absorbed into—and contributed to—the construction of a utopian imagination, in ways that strongly resemble some of the rhetoric surrounding information technology. In fact, with each significant mutation in electronic technologies from the mid-nineteenth century on, there was an eruption of utopian energy. “Now we will be able to communicate across the world, now we will be able to solve conflicts, now we will have better education, now we will have more democracy.” These ideas were very much associated with the mutation in electronic acoustic space brought about by radio. Imagine for a moment what the radio spectrum presented—a space that was not a space, wide-open, unknown, literally cosmic. As people began to interact with the world of vibrating waves, a sort of “hacker” culture develop around it: people began to build their own crystal sets and talk to with others in unknown places, exchanging information and building their own networks. In fact, broadcast radio emerged from the ground up—from these smaller radio hackers deciding to broadcast music and news. This is very much like what we associate with the internet’s cultural development. But radio was quickly absorbed into commodity systems, and the state imposed its desire to organize the space of the spectrum, establishing the boundaries and rules that define the commercial radio that now dominates our airwaves.

Of course, there are other dimensions of the spectrum which maintain a more utopian, progressive, and imaginative aspect. There are pirate radio broadcasters, and there are people who listen to lightning storms, there are our favorite college radio stations...the spectrum is still open, in a sense. But for the most part it’s a vast, depressing wasteland.

Now, internet “radio” isn’t radio; it does not exploit the spectrum, and that is a big difference. But it is hardly immune to the same kinds of domination at the hands of similar forces. It’s incredibly important to maintain electronic communications media as a space of openness, of indetermination, of the

affects of the unknown. What made early radio so exciting, in terms of the technical, the social, and the imaginative, was its openness: it was a space that wasn’t entirely defined, wasn’t totally mapped. More than that, I think, it was an acoustic space, which opened up a different logic. And that’s happening again: the acoustic dimension of electronic media, and particularly of the internet, offers an opportunity that is very different than simply providing more information, or making more web sites, or more entrancing animations. Or even making cheap phone calls.

The idea that we can create another kind of dimension with its own possibilities—not just “informational” possibilities—gives us a more atmospheric sense of where we are headed, as we plunge into the twenty-first century and its weird global environs. It’s really difficult to see what this might mean, impossible even. All of the different factors, all of the different networks that are commingling and interacting...how do we make our way through this? How do we ground ourselves enough to get a sense of what our spaces are or might be, or how we relate to these spaces? It is precisely this acoustic dimension that gives us tools, not just as individuals, but particularly as collectivities as well. It enables us to modulate and re-singularize this new environment in powerful ways—ways that the visual, the graphic, and the text-based, do not.

Acoustic spaces can create different subjectivities; they open possibilities and potentials—particularly on an aesthetic and informational levels—that can help us feel our way through the spaces we are opening up and moving into. The greatest example of this is music, particularly electronic music. Of course, one could talk about music in general and its relationship to affect, the way that its vibrations resonate inside the body, conjuring up pleasures, fears, singularities, etc.. But I’m especially interested in electronic music, because its history loosely maps the changing relationship between subjectivity and the “acoustic space” of electronic media in the twentieth century.

An example: the first truly electronic instrument is a gadget invented by the Russian Leon Theremin, which was appropriately called the *theremin*. Theremin created his instrument in the early twenties; basically, it created an electromagnetic field that

you could modulate with your hand. You controlled pitch and volume by inserting your body into this field; seemingly, you plucked the music from thin air. Theremin thought of his creation as a concert hall instrument, and Clara Rockmore, the greatest thereminist of all time, used it for performances of Rachmaninoff and Ravel. But what do we see and feel when we hear the theremin's eerie, ethereal tones, its weird and wavering voice? We know the instrument through the soundtracks of fifties UFO movies and pop songs like the appropriately named "Good Vibrations." So though the instrument was constructed as an instrument to play "real" music, it drifted through twentieth-century pop culture, picking up any number of strange associations—cosmic vibrations, outer space, paranoia, drugs. Electronic space opens up a variety of curious modes of subjectivity—and not just science-fiction clichés. Think of what happened to electronic music in the sixties and seventies, in both psychedelic music and art music like Stockhausen. We find an emphasis on the cosmic, on spatial disorientation, on transport, on affect, on the nonhuman. The acoustic spaces of electronic music aren't limited to the organization of affect and narrative that define much popular music, with its highly personalized structures of love and loss.

Rather than merely extending the language of human affect along such typical lines, electronic music opened up much less personalized soundscapes and psychic spaces. It's not just a genre or technique of music, but a much deeper phenomenon that involves mapping the electronic media spaces that humans find themselves in, whether the "space" of the spectrum, the acoustic space of McLuhan, or the deterritorialized spaces that have become so important for the articulation of post-modern subjectivity.

Another example one could site is dub music. Dub music arose in a very crude technological context, in low-tech Jamaican recording studios in the early seventies. Basically, what dub artists did was take the backing tracks from whatever pop songs were laying around, and cut and splice them, mutating their various elements by submitting them to a variety of strange and often primitive effects: echoes, distortion, reverb. The result was that an ordinary reggae tune, with its dance-friendly rhythms,

became unfolded into a strange and somewhat alien electronic space. When you listen to dub music, you become submerged in a kind of immersive space carved out by all these sonic effects. The "invisible landscapes" of John Cage or the ambient music of Brian Eno furnish other, very different, examples. And yet all these environments suggest a kind of cyberspace—a spacious electronic orientation of affect and quality rather than information and quantity, a space of simultaneity, superimposition, nonlinearity, odd repetitions, and odder resonances. At the same time, as many of these musical forms propagated themselves, their various folds and mutations created new spaces for subculture, psychic resistance, and popular rituals.

Music and sound are tremendously powerful forces for organizing affect; their power to structure subjectivity, in the here and now and over time, makes them an incredibly productive language, one capable of overcoming the linear grids implied by text. This isn't just true of electronic music: all popular music functions, particularly for young people, as a way to construct and define a whole worldview, a whole position, a whole set of ways of organizing the world. It is no accident that you find the logic of youth subculture most strongly articulated around music. And in the world we're moving into, a world full of cultural viruses, memes, decentered subjects and unfolding paraspaces, these issues will only become more important.

In closing, I'd like to re-emphasize that the acoustic dimension of electronic technology is a powerful emergent domain—not just for aesthetics, but for the organization of subjectivity and hence for the organization of collectives, of larger political groupings in the broadest sense of politics. I have used the example of music because it demonstrates most clearly how large groups of people around can organize—or be organized—around the politics of affect, of resonance. This is a very powerful language, even a dangerous one. Electro-acoustic spaces aren't simply a genre of music or a backdrop for good VR—they are interfaces with the machine, interfaces where we mutate in order to feel our way. As our machines become more complex, our relationships with them will become more complex, and whole new domains and dimensions will keep opening up—

and closing down as well. By pushing the boundaries of electro-acoustic environments, of acoustic cyberspace, we can maintain a line into the open spaces of the unknown.

[This transcript of a lecture at "Xchange On-air session," Riga, November 1997, first appeared in e-lab's *Acoustic Space* <<http://xchange.re-lab.net>>; a real-audio version is available at <http://ozone.re-lab.net/festival/erik_d.ram>. Edited by Ted Byfield.]

SUBJECT: CALLING RADIO NETTIME: A SELF-EXTRACTING COMPILATION

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DATE: SUN, 27 SEP 1998 22:00:44 +0200 (CEST)

Schopenhauer wrote, "To become like music is the aim of every art" (*Schriften über Musik*, 1922), and indeed, music does differ from every art form, including poetry, in that it is not concerned with narrative or descriptive aims. Even in opera, oratorio, or lieder, the text or poem does little more than complement the music. In an important sense, our understanding of a particular aria or song does not really depend on knowing the text (P. Vergo, *Towards a New Art: Essays on the Background to Abstract Art, 1910–20*, London: Tate Gallery, 1980).

You might wonder what this quote has to do with net.radio. When issues like sampling and mixing are taken far enough, they could even transform traditional radio. Techniques from media pioneers and artists have seeped into mass media almost unnoticed; they probably will continue doing so. Already many documentaries on both television and radio are on the edge of what was once journalism. I am not saying straightforward journalism will disappear; I do think, though, that under the influence of what is called an "information overload" and developing technologies, not only the ways in which music evolves will change but also our representations of the world will change. Narrative will not disappear of course: some of it will just become more complex, sometimes close to ethereal. Net.radio and net.art overlap in attitude toward technology and in its social setup. I have

tried to demonstrate this in my first article "Waves in the Web," and my interviews with pioneers such as Heidi Grundmann and Helen Thorington would seem to support this thesis. Hopefully, the following bits and pieces will indicate some of these shifts as well as the new patterns that are forming. I've spliced them together with short passages to give them not just a foundation but maybe even enough structure to resonate.

BACKGROUND SOUNDS

To understand what radio is in the age of digital media, traditional ideas about radio have to be set aside (Bosma, "Waves in the Web," *ZKP4*, Ljubljana: Ljudmila, 1997).

"About four years ago I became aware of the failing radio system. I say failing but what I really mean is public radio was turning more commercial, looking more to the bottom line and the mass audience than it had in previous years. Stations were depending more on audience research and what audience research said, of course, was that the kind of work we do, experimental work, new work, would not command large audiences or bring money back to the radio stations in the amount that they thought was important. Slowly documentary and drama, experimental work, experimental music have all disappeared from the public radio system" (interview with Helen Thorington, Vienna, December 6, 1997).

“A program like Kunstradio and the work of the artists working for Kunstradio is something alien to the structure of that culture, even on a cultural channel. We have much more affinity to free radio, independent radio or to people that work in the web. Its different alliances that come together and it is very necessary that they do come together because otherwise... I mean, the commercial pressures are at any rate so strong that there is a reflection process going on, whether you call it art or whatever” (interview with Heidi Grundmann, Ljubljana, May 1997).

Helen Thorington of New American Radio and Heidi Grundmann of ORFKunstradio have each, in their way, done their share of net.radio experiments supported others' efforts. Working with sound on large projects on the net, projects that could inspire traditional broadcasters to different uses of the internet as a medium, requires a great deal of flexibility on the part of the people involved—and a flexibility that most traditional broadcasters need to adjust to.

“The artists have since many years recognized that some type of technicians have become a co-author of their pieces. They could not do it without these type of very engaged technicians, who are themselves challenged by the artists to find different solutions and so on. Plus there is the aspect that people from different disciplines are suddenly working together, also from the arts. Some people come from music art, others come from dance. There are the people from the visual arts, people from literature, and they constantly reshuffle in groups to do things. They take on different tasks, and they are developing new production strategies for this new kind of conglomerate of media. It is a constant learning, developing and research process that needs groupings of some sort. They don't need to be groups for life, but for certain projects. They also have to look over the borders of one organization or one country or whatever. It's a constantly looking out and putting energy together. Acting to the moment, which is difficult enough to grasp” (email interview with Rasa Smite, December 18, 1997).

Not only does the “crew” need to be flexible, and the idea—with all its corollary assumptions—that everyone will hear the same sound or program needs to go: it is no longer necessary, and in many cases not even desirable.

What is most important to learn from (net.radio) experiments, besides the enormous variety of medialinks possible, is the fact that what is heard in one place is not necessarily the same as what is heard in another. Each end of the “line” can add its own preferences to the project. What is heard from each computer or in every setting involved, be it a radio station that broadcasts the event live, creating its own version of the signal or a theater/performance space where the project is processed further and a new signal might be send back, depends on the technical and creative choices made at that side of project. As Gerfried Stocker puts it: “When you work with digital sound, when you start to sample and you have all those soundpieces that can recombine in several circumstances then you very fast get this idea of a pluralistic space of possibilities. So I think it is no longer adequate to think that you have to create a definite masterpiece. As soon as we entered digital technology, we lost this position that we are in control of the result” (“Waves in the Web”).

Of course, this leaves a lot of questions for radio “broad”casters. What should or does it sound like? Is it useful to make radio in these new ways? Is “radio” useful anymore? Did it ever have to be?

“Solutions are not at all visible in any discussion, like the one on net.art shows that nobody knows a solution, nobody has an answer. Everybody is asking questions. But what I think is very important if one is interested at all in culture and what culture is: there have to be strategies developed for different groups forming again and again for the purpose of realizing different projects” (Grundmann interview). Think about art in the context of the internet is difficult enough, let alone net.art.radio.

“The whole notion of art has changed to a degree where the name itself is in question. Many artists question whether they want to call themselves artists at all. Still there is something going on, which I think is very important to our culture. Whatever you name it” (ibid.).

Beyond all this, a very sensitive question arises with radio on the net, namely, what to do with those screens? I have talked to many media artists, radio and television people about this, trying to get a grip on what future radio might “look” like. The most specific quality of radio or audio in general is of course its “omnipresence,” compared to TV or

video, which is locked in a box in the corner. Now, “radio” too—net.radio—has its shiny prison as well (“Waves in the Web”).

“Radio became changed completely because of the digitalization, the computer and the networking with other media. And so I am today convinced that radio is not only about sound anymore. I am not happy with the term internet radio myself, but definitely if there is such a thing, if you webcast something, if you do live activities in the internet, then its definitely also radio to look at. Its by no means only about sound. The way radio, especially commercial radio, the big national organizations, but even on a community level, has become it is much more obvious now that there is a kind of what we call *Medienverbund* (media combination/ union), a new type of network of different media” (Grundmann interview).

Robert Adrian: “Radio is becoming part of what I’ve called a megamedium. A medium of recording and transmission which combines all these media. We are talking about a communications technology in which the communications element in the recordings changes the notions of space and the recording also changes the notion of time. We are moving into an era in which we have completely different notions of time and space developed around basically the telephone and recording machinery, but fundamentally the telephone” (“Waves in the Web”).

“The big culturally very relevant thing now is that there is the commercial conglomerate in this *Medienverbund* and many even of the public radios and televisions are looking at the new media as a field for business. They are hoping to make money, even the ones that are really uncommercial as radio or television stations, hope that they may get some money out of the so-called new media. I think suddenly the lines are running on different borders, between the commercial sector and the cultural non-commercial sector. I think it is strategically very important to form new alliances there” (Grundmann interview).

WHAT DO WE WANT TO HEAR TODAY?

Radio, like other media, should be combined, deconstructed, and reconstructed. Radio and other media should not just by extended to the net: the net

should be extended too. In the case of radio, this means that audiostreams should be used much more creatively, for example, connected to aerial and cable stations (legal or illegal), played in public places, and played with, through connections to television—or anything else we can think of (“Waves in the Web”). “Many different activities spreading up this year. Great beginning for net.audio environment, I could say—more diversity is hard to imagine: fm radios starting on the net, new web-radio projects, sound.arts, individual self-expressions, different experiments, audio archives, etc. In the same time there is a lack of the concentrated, edited, compiled information about those activities. Especially because real audio very often has been used for short-term broadcastings (like live transmissions from festival and special events). Many “audio” people, I guess, had this idea too—about the necessity of shared space—alternative broadcasters network, where to discuss and exchange information and ideas” (Smite interview).

An interview with Kathy Rae Huffman, who was involved in organizing the “Piazza Virtuale” of Van Gogh TV, sheds some light on another important aspect of multiple and diverse connections and forms of interaction with media: these possibilities involve the audience directly, and it acquaints them with the media in a very different way than mere consumers.

“It’s quite fascinating to me that I am meeting people now, in very strange places, like in Glasgow, or in Spain, people who watched Piazza Virtuale when they were teenagers, and it changed their life. So it does make a difference, it really does. These people are now very active and organizing around issues on the topic. They have no direct contact with this VGTV, but they knew them. In some conversations, when I mentioned what my part was, they say: “Oh, wow, I remember watching that and jumping up and down and thinking this is great! Calling everybody I knew and telling them about it...” Nobody knows these things in the art world, but it must have been going on in various places around the whole European scene (interview with Kathy Rae Huffman, Kassel, September 1997).

Events like these stimulate experimentation with media. They stimulate a pluriform usage of media. More direct and energetic (physical!) involvement

in different platforms and channels could be help us to develop new techniques; they might even, if I can speculate optimistically, help to stave off and unnecessary or undesirable restrictions the corporations or governments might impose on the net (Bosma, "Recycling the Future," lecture given in Vienna, December 1997).

"First of all, it is the kind of event that makes much more impact if you can experience it first hand, yourself. Watching a documentary is a bit voyeuristic and it doesn't translate well. It is really something where the more people who can be involved in a firsthand way, the better. The problem often is that there aren't enough ways to establish nodes for public contact" (Huffman interview).

This kinds of involvement is triggered with the development of all kinds of performances, radio, and art practices that use the net as a tool.

What's interesting about these experiments is how they connect groups of people across large distances and allow for collaboration between different "scenes" during performances or happenings: in short, these experiments truly open events to outside audiences. Not from studio to studio or from technician to technician, but from space to space ("Recycling the Future").

As Monika Glahn and Ulf Freyhoff from XLR put it: "The physical space is the most important for us, and it doesn't *need* to be connected on the net. The connection via internet of two or more physical spaces gives the possibility to synchronize those spaces at least partly and for a certain time. It's an image, located in real time and real space, for and about information, experience, network, communication. Translation. Inside and outside. Crossing and melting borders" (email interview with Glahn and Freyhoff, February 11, 1998).

"The installation/environments that we are building are becoming more and more theatrical in nature. When everything is plugged in and humming, it takes a live audience to close the feedback loop" (email interview with Jeff Gompertz of Fakeshop, December 16, 1997).

It is important to support initiatives that connect the net to physical and/or public spaces and to involve ourselves in making these connections. Doing so will open the net up, make it less likely to

become a socially inbred parallel world, and offers us the challenge of finding new languages and means to express and extend specific cultural moods, techniques, and young or unstable traditions. Public and physical spaces are, naturally, the ones that are most interesting to "enter" via live events involving several media and/or technologies: for instance the internet, a room or building, radio and TV stations, but also fax, telephone, the human voice or body. Connections that are less direct and momentary are also conceivable—print media (pamphlets, newspapers, magazines, books) or slow media like cinema or music industry institutions ("Recycling the Future").

For the groups that inspired me to tell you this, most of what I told you is not really important. What is important to them is that the net and the techniques they use offer them: independence. Independence from broadcasters, from broadcasting laws, independence from difficult organizational structures around art, music and performance in an international context, independence from distributors and freedom to work without too many boundaries and across borders (ibid.).

"It's no secret that the web has offered artists, performative and otherwise, an expanded sphere of exposure. That is merely one side effect of working in this way, as in any broadcasting or publishing medium. The work I have been involved with involving remote linkups has sought to explore the medium for more than just its lure of a 'larger audience'" (Gompertz interview).

"Tune radio rapidly to 75. Tune radio rapidly to 102. And then off" (John Cage, *Water Music*, 1960).

SUBJECT: FLEXIBLE BODIES ON FREQUENCY MODULATION

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This writing is the sum of real-time and remote discussions between Zina Kaye and Honor Harger.

We are discovering the places where radio, radio.art, net.radio, and net.art intersect at this time, and will outline some projects that have taken place in the last year, including Xchange@OpenX at the Ars Electronica festival in Linz, Austria.

Our challenge is to discuss the confluence of these media without reducing their inherent interstructural malleability, and the power of overlapping flexing sound organisms. One could begin by discussing activities that occur in the studio and on the internet. Each node is broadcasting, yet our experience is one of mating these broadcasts into new organisms. This has been facilitated by the ease of communication via the internet, and in turn the internet provides more raw materials for the stream. In this space we can hear virus radio, fake advertisements, airports, space shuttles, generative music, experimental chewing machines, voices speaking in many tongues, sources of coded information and things that go bing.

Radio is not a definitive term, it is an adjunct. It is suffixed by notation of context—for example “micro,” “FM,” “commercial,” and “net.” These contextualized terms are all radio, subsets or different protocols of the same method. The word *radio* itself, without an adjunct, is symbolic and metaphorical. It is a complicated idea consisting of many different component ideas. It has many meanings in many contexts.

“If you had the same number of transmitters as receivers, your radio sets could have completely different functions.” —Tetsuo Kogawa

Intuitively, we have always understood that radio could be used as a means to link people together in conversation, a communications vehicle not for broadcast but for the individuals involved. Our vision of radio doesn't involve the metaphor of a sprawling net; instead, it is more like a conversation—sometimes with yourself and sometimes with a few others. Perhaps radio can be seen as a musical instrument, or as a composer, and its communities as the notes it arranges into melody and discord.

The one obvious difference between radio and internet radio which is rarely addressed is this: radio is transmitted through airwaves and net.radio through wire. One is a hard technology (wire), the other ethereal (airwaves). It is interesting to note that a radio was once known as a wireless, to distinguish it from other forms of communication media reliant on wire, for example, telephones. In a sense, then, net.radio could be seen as a technological regression, dragging radio down once more into wire, tying it to the corporeal.

We are still receiving the browser experience, but the desktop is becoming more crowded with equipment that helps us to become a beacon or lighthouse. The relationship with the equipment is important. Where one might perceive the broadcast as no longer rooted in a particular culture or city, and the producer as not tied to a fixed place of abode in a stable existence, in fact both producer and listener are most definitely tied to the computer. And this despite the fact that net.radio lies in the dimensions of research and extraboundary travel. Equally, a larger structure enfolds the experience, and it is based on people: content providers, techni-

cians, software engineers, archivists, interfacers, and listservers.

The beacons are many: it is like early telecommunications, where discrete nodes pass on the baton and fold information into loops. In such a paradigm, receiver becomes broadcaster. Many nodes will go under one name as a temporary autonomous zone and assault the networks with one unified communication.

Here the group personality is informed by multi-process activities, and the interface is a common piece of software. However, the experience is developing and changing: the computer is being lifted off the ground and the stream is rebroadcast via mini-FM transmitters. The interface is naturally moving once again to wireless communications, and from here perhaps the future lies in mobile phone communications and computerized Walkmans.

In 1998 at Ars Electronica/OpenX, radioqualia began to research a system called the Frequency Clock; its aim is to amplify the dialogue between two FM and net.radio.

The Frequency Clock is (or perhaps was) a simple attempt to illustrate the distances, time zones, and boundaries that radio crosses using the timepiece as a metaphor for distance. Discrete net.radio streams: radioqualia, L'Audible, Interface, Radio Ozone, Convex TV, and Pararadio were located in separate geographical locations, and identified by their time signature. The time and sound of each radio station signifies their individual identity, a personality distinct from other radio entities, yet somehow linked by this principal of the network.

Frequency Clock set up a chain of nearby computers all broadcasting a different net.radio stream via mini-FM. The viewer was invited to mix his or her own personal space by walking through the "bandwidths" wearing a radio. Radio and net.radio overlap, the functions of both dissolve into each other, and the distinguishing factors emerge as reasons to diversify the methods of exploring air and wire waves.

It is movement and a metaphor for movements: the flow that is symbolized by the works that come out of groups and the Zeitgeist of practitioners coming together face-to-face or remotely. The autonomous members of the group use the power of their combined voice to target centers of communication or bandwidth.

Though the disparate streams of online audio have been christened "net.radio," most practitioners of internet audio blush at the deficiency of this term. While there may in truth be more contrast than resemblance within the scattered associations forming through forums like the Xchange mailing list, speculative definitions do serve to expand the dimensions for conversation. What many of these projects do perhaps share is a cognizance of a common genealogy, edified by the "communication art" of the sixties and seventies, Fluxus, the radio.art movement of the early nineties, and other networked threads. A conspicuously Deleuzian tendency toward the obliteration of hegemony, and the simultaneous deference for chaos and "noise," is also developing as a common element between these discrete projects.

Guattari once spoke of radio in the context of transmission, transversal, and molecular revolution. Quiet voices, small actions. It is possible to pull the loud voice onto the desktop and magnify a local region, infinitely, using the zoom tool. We are interested in permitting the local region to speak louder, loudest. In the grand structure, the voice on the field is invited openly and programmed into the timetable as a supreme noise particle.

"(humble under minded) psychic rumble," an audio surveillance project conducted at Code Red Sydney, by Zina Kaye, sought to articulate the structure of the net.radio identity by using the audience as generator of content. Defined by Denis Beaubois as "the accidental contract," the audience produces its own desiring loop via audio surveillance. The audience is a knowing participant, it has a microphone in full view into which it may speak. It may know, also, that this sound is being broadcast to a space beyond its own. How a device receives this information is always opaque, as in any surveillance situation.

The psychic rumble microphone used Cold War surveillance technology, a concrete microphone for music concrete. The sound that is heard is one experienced by the structure, the walls of the building, as they vibrate and mediate sound. What can the walls hear? Talk, of course: one person speaks as another surveills nextdoor at the listening post. Beyond this, the walls hear better than people. They hear airplanes and toilets flushing,

the wind as it rattles the chimneys, and dogs barking in the park.

The hidden ear, the severed ear, that says "we are not alone, and I am here to show you that." The paranoid ear hears granulated sound, interference, and accident. It is compelled to pick up everything for analysis. The mundane is dissected into smaller parts. It is the humble psychic that can pick the shape of the stream and pull it into meaning.

Is it so difficult to be fluid? Why is it that many parts can lurch forward in different tempos, and yet as an organism, activate the work into a whole? Surely this way of working compliments the dynamic fluidity and global dispersion of our time. It is not possible to put the names of the activities into a box under a magnifying glass and try to separate us, for we follow the path of least resistance. The work is unstable and may fall apart. Net.anything needs constant attention to rerouting. Indeed, we work at integrating the frailties of the format (error messages, disk buffering, dial prefixes, crashing, busy signals) into speculative art discourses, which too often may be co-opted toward the mystification of the abstract. In a period of what may be a formulation of a tentative aesthetic, many net.media practitioners, are attempting a synthesis of the grit of activism, the zigzag and abstraction of art, and the capabilities of cheap and accessible technology. Net.structure as it is now, may one day be seen as a technological snapshot.

The 1998 project at Ars Electronica by the Xchange collective in fact involved a number of individuals and groups that temporarily lost their production identity to enjoy free-to-air mixing. Most of the participants are plural or using the pluralist identity. Little organisms that replicate like a virus and are very much a part of this time. The traversal of space is fundamental to the notion of radio. We have always been intrigued by radio's metaphorical ability to collapse space, to expand face, to create an elastic zone where distance and identity become mutable.

The network emerges from a desire to evolve a virtual zone for sonic exploration, and it creates the latitude for musicians and artists to explore the superficial distance between understandings. Tools, such as live performance, audio streams of ebbs and skews, regular netcasts, are vehicles that survey

this region, remapping prescribed media territory. But our art is an inexact cartography. No matter how carefully we plot the journey, ours is a convoluted excursion, with many unscheduled deviations. While the rupture of intention and outcome can at first seem like an obstacle, these accidental stopovers have allowed a deciphering of the code of netcasting. Embedded with the convenient angles of percussion and recoil are multiple tiers of fragmentation, breakup and congestion. We celebrate the hidden spaces where the alchemic transference of intent and error happens. This irregular drift has then, paradoxically, proved to be a viable way of studying the feasibility of a collective net.radio aesthetic.

The works produced are simple, and are freely available to the user in a slippery network. Net.radio is the ultimate proof that you are never alone and that the broadcasting structure is malleable and not a monolith.

SUBJECT: POSTMEDIA OPERATORS

FROM: HOWARD SLATER (BY THE WAY OF JOSEPHINE BOSMA <JESIS@XS4ALL.NL>
DATE: THU, 24 SEP 1998 20:11:28 0200 (CEST)

The record industry is in the process of being out-flanked by means of the very practices it has come to rely on. Since the sixties, its continual efforts to create new needs has meant that it nurtured an ever-changing musical soundscape; that soundscape is now mutating at such a rate that the industry cannot keep pace long enough to harness these musical evolutions in the direction of profit.

Advances in technology have meant that all manner of equipment is now available for reappropriation by whoever has the time to learn how to misuse it. There can no longer be any “one sound” around which music is organized—so everything becomes potential source material for a practice that no longer calls itself music.

From the guitar we have moved through sampling technology, turntables, analog and digital keyboards, to an indiscernible melange that creates further possibilities for interaction—as well as for enhanced and delegitimated conditions of reception. Such practices escape the institutional control of the industry and the media, eluding the “dominant repressive models” of an inherited subjectivity. Music reveals individual consciousness as socially situated.

As a consequence there are more people making music now than at any time before, and awareness of this among composers has led to an international explosion of small-label activity. These people have heard the tales of music scene has-beens and, rather than choose competition, exposure, and the “labor of success,” they have chosen to operate outside these monetary and conceptual constraints. Inspired by the free-party scene, small-run pressings of records are passed around through underground distribution networks at a level that eludes even the most “specialty” of record shops.

In the slipstream of these phenomena there has been a rise in an experimental attitude: the end of the need to conform to what is expected and

“understood” means there is a renewed appreciation for the idiosyncrasies of sound and the transgression of perceptual habits they inspire.

Meanwhile, A&R men scurry from club to gig but never reach the parties. Attracted to a music that conforms to cash projections and reproduces the social imaginary, they can never hear the sound of conflictual desire. Similarly, the music press is increasingly losing its mediating role between unknown composers and the major labels—and its promotion of the “new” becomes ever-more laughable. The “new” is now passing by unnoticed; and these attempts to hold on to what’s been declared “new” become an indication that what we read is inflected by dispassionate opportunism—marketing. Postmedia practice has been accelerated by the internet, where obsessions can run rife and there is a noticeable desire for those miniaturized activities that thrive without giving a thought to the increasingly “calm perspectives” of a transparent medium. The media, like the record industry, has become a centralized zero. Where once magazines and labels may have acted as a filter or a means of dissemination, market forces have made them converge on the center ground: the public listens to what is made available... and what the audience happens to listen to, since it was being offered, reinforces certain tastes (M. Foucault, *Foucault Live*, NY: Semiotext[e], 1989, 393).

Innovation and quality? It is interesting to see how the media, which sees itself as operating in opposition to high art, comes to work in consort with this traditionalism, particularly through the way that it reinforces reactionary notions of subjectivity. Foremost among these shared techniques is the way in which music, like art, is more or less always portrayed as transcendental, isolated from the social conditions that produce, celebrate and receive it. This individualistic means of relating to music is accentuated by the reliance on “genius”: the eleva-

tion of certain individuals and the furthering of hierarchic devices in the supposedly “free space” of popular music. This accent on the unique can subdue others’ activities and, in a denial of interrelatedness, that tends to make invisible the practice and heterogeneous reception contexts surrounding music.

What’s more, this has the contingent effect of privileging the “solitary” moment of production over that of listening and dancing, which almost always imply the presence of others. These media inhibit—or even worse, remove—desire from music; in so doing, they collude with the “capitalization” of subjectivity.

Much postmedia practice has been stimulated by the growing sense that listening is not a subordinate activity but, rather, a process of making meaning.

And so, comprised of ephemeral organizations, postmedia become practices of a fiction that knows no bounds. It is a website, a zine, a record label, a

distribution network of unseen nodes...it is a dechanneled, metacategorical social practice of cultural creation made entirely for and on its own terms. It is driven by enthusiasm, search and connection toward a polyphonic subjectivity. Rational modes of discourse like journalism and writing theses, which act to stabilize and make things remain still long enough for them to become systematized, lack a sense of music as a fuel that traverses disparate regions.

In the past, one drawback of such affirmative practices is the perceived need to be delimited as regions where protagonists should be made visible to one another. The onset of the internet has put an end to this by extending our expectations of communication and transposing a virtual space of music into an actuality of intimacy and an ever-present potential for subjective change.

SUBJECT: THE BRASS ENTER INTO MUSIC: SEMINAR SESSION AT VINCENNES: “METAL, METALLURGY, MUSIC, HUSSERL, SIMONDON”

FROM: GILLES DELEUZE

DATE: 27 FEBRUARY 1979

“The brasses enter into music! What does this entail in music? If we succeed in posing the problem well, perceive this problem well, then perhaps we may perceive the resurgence of ancient myths with no connection to Berlioz or Wagner. Perhaps we will understand more clearly how a blacksmith-music link is forged. What happens when the brass burst into music? We suddenly locate a type of sonority; but in this type of sonority, after Wagner and Berlioz, we start to speak of metallic sonority. Varèse constructs a theory of metallic sonorities. But what’s odd is that Varèse straddles the great Berlioz–Wagner tradition of brass and electronic music, which he was one of the first to found and extend. There is certainly a relation. Music has been made possible only by a kind of current of metallic music; we need to

find out why. Couldn’t we speak of a kind of metalization? This doesn’t at all exhaust the whole history of Western music from the nineteenth century on, of course; but isn’t there a kind of process of metalization marked for us in a huge, visible way, made obvious by this eruption of brass? But that is at the instrumental level. Obviously, it wasn’t the entry of the brass per se into music that was “determinative”; rather, a whole series of things happened concomitantly: the irruption of the brass, a totally new problem of orchestration, orchestration as a creative dimension, as forming part of the musical composition itself wherein the musician, the creator in music, becomes an orchestrator. The piano, from a certain moment on, is metalized. There’s the formation of a metallic framework, the strings are metallic. Doesn’t

the metalization of the piano coincide with a change in style, in the manner of playing? Couldn't one correlate these things, even quite vaguely, with the irruption of brass into music? That is, the advent of a kind of metallic synthesis, the creative importance that orchestration takes on, the evolution of other instruments of the piano type, the advent of new styles, the groundwork for electronic music. And on what basis could one say that a kind of metallic line and musical line are wed, become entangled, even if it means separating anew. It's not a matter of remaining there since, in my view, it will lay the groundwork for the advent of an electronic music. Perhaps it was necessary to pass that way. Yet in that very moment there is no question of saying that the crystal is finished: the crystalline line in music continues. At no time is Mozart surpassed by the brass, that goes without saying; but it will reappear in a completely different form. Varèse is very much at a crossroads: he invokes at the same time notions like those of prisms, metallic sonorities, which lead on to electronic music. Just as the crystalline line passes by way of a whole com-

plex conception of prisms, the metallic line passes by way of a whole complex conception of "ionization," and all that will be entangled—it will be like the genealogical lines of an electronic music. Therefore, it's very complicated, and it all has interest only if you understand that these are not metaphors. It's not a matter of saying that Mozart's music is "like" a crystal: that would only be of minimal interest. Rather, it's a matter of saying that the crystal is an active operator in Mozart's techniques as well as in the conception of music that Mozart constructs for himself—in the same way that metal is an active operator in the conception of music that musicians such as Wagner, like Berlioz, like Varèse, like the "electronicians," construct for themselves.

[This text excerpts a transcript of a lecture given by Deleuze in a seminar at Vincennes on February 27, 1979. Every effort has been made to contact the copyright holders. Translated from French by Timothy S. Murphy. See <<http://www.imgaginet.fr/deleuze/≠TXT/eng/270279.html>>.]

SUBJECT: 12" AS MEDIUM

TECHNO: FROM YOUTH CULTURE TO CULTURAL CONSITUTION

FROM: MERCEDES BUNZ <MRS.BUNZ@DE-BUG.DE>
DATE: TUE, 06 OCT 1998 02:46:23 +0200

Electronic music in Germany never was just a new sound. Rather, it was a whole new composite of economic, medial, and artistic relationships which was incorporated into every record and every 12" single—into the smallest unit of the system. In the field of pop music, a recognizable shift occurred in three particular and distinctive nodes: in the infrastructure, and consequently the economic situation; in the role of the musical medium; and in the cultural ratio of author-to-composition. One might conclude that a new cultural pattern has emerged.

1. A MISCONCEPTION: CONTROL OF THE ECONOMICS

Let us begin with a reality of infrastructure and economics. As far as I have seen, Germany's largest newspapers having been writing sporadically about the Techno phenomenon for the last ten years. As dictated by the statutes of the information age, the term has been known to the public since 1988—therefore since its emergence. In the meantime, though, the phenomenon has demonstrated its aptitude for cloaking itself from the

widely acknowledged hypermedial world by hiding in the midst of information. “Hiding in the Light” was the term given to this subcultural trick by my personal idol and English subculture theoretician Dick Hebdige.

This phenomenon was not simply because the music was heard only in the deepest recesses or perimeters of urbanity; people simply regarded Techno as another fad, soon to pass, unworthy of any further attention—not, at least, serious attention. This situation was favorable for Techno’s development.

For media editors, Techno represented a music denied of any cultural or political relevance because it was only technology, not humanity, that was expressing itself. In the beginning of the nineties, Techno encountered an overwhelming lack of interest, and Germany’s cultural building sites were presumed to be located elsewhere. To the music industry, Techno was something that had made itself dependent on vinyl, and more precisely the 12”—a medium with no future, long regarded as dead. This meant that, initially, anyone who only wanted to exploit it or couldn’t accept it just wouldn’t touch it.

As a result, Techno is a pattern of youth culture in motion. But two forms of attention to Techno were lacking, at crucial points: the definition of its significance and the injections of cash. It was this failure of commitment by others that forced the music to train its own base and construct its own infrastructure; it was clear that nobody else would attend to it. At the beginning of the nineties, the acknowledged fact that records were being made but were impossible obtain was a pivotal cause for the opening of record stores and the establishment of distribution companies. This was a necessary step in enabling the music to become what it is today: a globally operative strategic network (or at least one might be inclined to say so, considering how privy one is to the chaos that reigns in the booking agencies and distributors).

Until now, musical youth culture operated on a tactical basis, amounting to a multitude of consumption models in repeated attempt to occupy the industry’s infrastructure: studios, record companies, and concert promoters. Aesthetically, one can try to define oneself in relation to the surrounding estab-

lishment, but economically this simply isn’t feasible. The enormous production costs involved in booking recording studios and so on will dispel any illusions one might harbor of independence in the face of a recording industry that both controls and adapts releases by forcing anything effective into specific technological artifacts. In this game, maybe surprisingly, Techno finds itself playing an altogether different role. On the one hand, the devices used to produce electronic music products were cheap at the time (they’ve become even cheaper since); on the other hand—and in a more crucial sense—Techno, in its role as an industry outsider and as manufacturer of its own infrastructure, finds itself in the remarkable position of actually profiting from its accomplishments and retaining its independence. It operates not tactically anymore but strategically, in that it now has a “place” of sorts “which can be named one’s own and which therefore serves as the basis for the organization of one’s relations” (Certeau). If subculture and pop music, as a tactical youth culture, were only considered a marketplace up to this point—money and jobs belong to the “establishment”—the difference is that we are now beginning to own the structures, the capital stock, and the work. From the cultural economics of youth culture a cultural constitution has formed.

2. FORGET VINYL: THE 12” SINGLE AS A MEDIUM

However, it is not as if electronic music—including all that clustered around the phenomenon—lingers in the midst of the business terrain, like an economic and cultural capsule. The connections are too numerous. It is not as if the music industry has discovered its own way of regurgitating Techno as song-based hits. It is not as if many producers compile albums for the music industry because, despite being able to live an individual lifestyle in Technoland, one cannot accumulate riches on an individual basis and one has to work harder for success. It would even be safe to state that the German beer-tent aesthetic, folk music being the very antipode of youth culture, now features traditional folksongs with Techno beats. Despite all of these acquisitions, Techno still seems to be able to make its own way and uphold its own set of rules. The

secret of its success is the 12" and the balance of powers it symbolizes. If the music industry is dictated by the album and sales charts, it is the 12" single that rule the turntables. The medium's advantage is the misunderstanding it fosters in the music industry and its low esteem as a relevant vehicle for the business side of things. To the DJ, the 12" is the core of his creation. A producer's esteem is straightforward: you are only as good as your last 12", regardless of your LP. The 12" single transports the musical innovation of the music that, even if it is sometimes considered "retro," is ever perpetual, and eternally addicted to the next release. The long-winded creation of an album represents a delay in the music and its constant drive for new impetus. In addition, the album poses technical problems for DJs as well as producers since pressing more than two tracks on one per side, or more than 12 minutes at 33 1/3 rpm or 9 minutes at 45 rpm, infringes the quality. (One should bear in mind that club sound systems are a lot more precise than home stereo equipment.)

3. SELF-ASSESSMENT

Both units, the 12" single as a medium and the self-constructed infrastructure, guarantee Techno's—and electronic music in the widest sense—artistic position. The direct connection between author and composition, which in modern European tradition is regulated by direct expression, has shifted. Where originality was the keyword of cultural constitution, now, with Techno, sampling and mixing, determine artistic relationship. Any available material is used. Producers make use of devices' sounds and samples from other records; DJs use producers' records as their tools. A myriad of voices is injected into any given track or set. The person, the author, the subject, the classical origin of the artistic work, is no longer the focal point: the piece or the composition takes its place. Because of this, producers use so many pseudonyms that even the specialists, the DJs, lose track of who produced which track. It can be considered one of the rules of the cultural constitution known as "Techno," that names are insignificant. The music is no longer the *medium*; it does not represent the expression of the artist behind it. Rather, it is the *center of attention*. One could define the new relation with the words of the

German philosopher Friedrich Nietzsche: "there is no perpetrator behind the act." Because only the act defines the perpetrator.

Nevertheless, Techno is being transformed into a well-behaved discourse, re-introducing the concept of the artist and the expression into electronic music. There is an attempt to maintain normalcy—alias, the "sell-out" of Techno. Perhaps the consequence is to embed the discourse in advanced cultural values; perhaps it is a case study on the ascent and fall of a classical subculture. To see Techno as a cultural constitution is not, however, tantamount to seeing culture as a reflection of society; instead, it refers to music as a part of society. If we can achieve this, traditional notions about the division of highbrow culture and subculture can be abandoned, thereby offering us not only a new and personal field of electronic music but also a new view of culture.