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Four experiments in broadband auralneirics

I

One night, I dreamt my head was 1,000 feet wide. The expansion was executed between the outside edge of each of my eyes and the inside edge of each corresponding ear; the distance between my eyes remained the same, but that between my ears increased greatly.

In the dream, I'm sitting dead centre in the Alix Golden Hall in Toronto listening to a pianist (I can't say who it is) play Bach's Goldberg variations, specifically the *Aria*. The playing is beautiful, perhaps the more so because there is a half second delay between the visible actions of the pianist and the music I am hearing. The delay is unsettling: I feel at once as though I am acutely present and strangely distant. Present, because I'm buzzing with the new configuration of my senses, my eyes scrambling for a purchase that would let them skip the beat that insists on separating them from what I hear. Strangely present, too, because there are weird congruencies of timing when what I'm hearing *does* seem to line up, a temporal coincidence that isn't really that surprising given both the world of "continuous multiscalar transition" that we live in (Hansen 2012) and specifically the performance space of the concert hall which (insofar as it acts as a space of inscription) increases the "probability of capturing instances of differential repetition" and therefore also the discovery of coincidences (Hansen 2012).

And yet, there is also a certain self-dissociation that comes with hearing everything in delay: what is experienced temporally as a deferral is also experienced spatially as a gap within myself that is widened by the heightened reflexivity of

hearing myself seeing. That is, to the extent that my senses can be categorically differentiated from one another—which is limited, but not altogether nonexistent—the temporally non-coincident experience of watching the pianist play a half second ahead of what I hear is parsed as a temporally continuous experience of bodily non-coincidence: I hear that what I am hearing has somehow lagged behind my vision without ever ceasing to hear and see. My seeing is no less visual for having been heard.

The delay, then, feels specifically *technical*, but it is a kind of autonomic technics, a machinic weirdness that therefore I am wherein I am not-technical because I am technical.¹ As Steven Connor notes, "it seems less natural to us [humans] to think of listening as tied to or requisitioning characteristic postures"(Connor 2008) so that what is audible in the delay is—among other things—precisely the machinations of perception, the “‘originary’ coupling of the human and the technical” (Hansen 2006, 9) that grounds experience as such and that “can only be known through its effects” (Hansen 2006, 9). Thus, this feels weird not because it isn’t natural and not even because this technical element is explicitly sensible, but rather because the ongoing-ness of this coupling—the ‘coactivity’ of the mutual inclusion—is somehow both conscious and nonconscious. That is, this autonomic technics teaches me that conscious and nonconscious thinking are not experientially opposed to one another

Importantly, then, the strangeness of the experience persists even as I close my eyes (and thereby disintegrate the categorical sensory dissociation); when

¹ See (Derrida 2002).

synchronization is no longer even a sensible question, its ludic contrivance remains. That is, in closing my eyes the "what" of the sensory disjunction—the purported site of the strangeness—is deemphasized in favor of the "how," and specifically the manner of execution (or 'style') that Deleuze calls the "power of the false in that it 'posits the simultaneity of impossible presents' in its instantaneous back-and-forthing between [...] disparate domains of activity" (Massumi 2014, 25–26). In short, the weirdness isn't simply—i.e. categorically—differential but is instead a revalencing of the contrivance—the performative fusing without become confused (Massumi 2014, 34)—of the senses that *is* mediation, be it that of human/animal bodies or that of technical systems (or both; always both).² With eyes closed and ears wide, the previously categorical differences of my bodily sensory apparatus are rendered *modal*, which is to say as "differentials between *tendencies* that are variably *coactive*" (Massumi 2014, 34).

This coactivity—which "iteratively express[es] itself in an emergent line of continual variation" (Massumi 2014, 34)—raises the question, which admittedly distracts me from the *Aria*: will a perceptual adaptation akin to that demonstrated by Stratton glasses in the 1890s take hold? After wearing image-inverting glasses for four days, images appeared upright to George M. Stratton until he concentrated on them; then they became inverted again. That is, Stratton found that he had to concentrate on his vision to turn the image upside down again, especially when he

² As Marc Couroux likes to point out (via Morgan Fisher), from the perspective of analogue film production *synchronization* is (in a sense) the *most contrived* sound/image relation because there is a significant technical awkwardness to combining sounds and visuals on a film strip. This changes in the metamedial context of digital computers.

knew images were hitting his retinas in the opposite orientation as normal; which is to say that he had to concentrate to flip the image back to the unnatural orientation that is natural to the technical apparatus of the glasses. Thus—specifically by having to concentrate—Stratton deduced his brain had reprocessed his vision and adapted to the change in visual orientation. So I'm curious: if the concert stretches on for more than four days (roughly 96 iterations of the complete set of variations, or 1900 repetitions of the *Aria*) will the audibility of the delay become collapsible subject to my concentration?

Unfortunately, it is precisely this thought that wakes me.

II

Another night, I again dreamt my head was 1,000 feet wide. In the dream, I'm sitting at a piano elegantly playing my way through the *Aria* of the *Goldberg Variations*. I sound remarkably skilled—much more so than I'm accustomed to—but still have to track my playing visually, cocking my head left and right to look at the keys that my fingers will next depress. As I look almost 90 degrees to the left, my right ear is practically brushing up against the piano and my left is nearly 1,000 feet away, so what I hear almost immediately in my right ear reaches my left ear nearly a second later. Looking next to the right the effect is inverted, with varying delays at different points in the middle. As I play my eyes shift targets rapidly, their saccadic movement flitting about the keyboard, so these shifts are frequent, intermittent, impulsive, and rather noticeable.

Given my physiology, my movements also produce something like a Doppler effect in my listening.³ The width of my head—which is gigantic, really—means that each twist of my neck results in a profusion of bizarre glissandi something like an approaching siren, though in my case it is the receiver that is moving rather than the sound source. Of course, as I rotate my head one ear approaches the piano at the same rate that the other moves further away thus producing two Doppler shifts that are inversely directional with respect to one another. Like many people I've a remarkably symmetrical head in this respect, although it is worth noting that this symmetry is literally axiomatic in my listening rather than optical, in that my neck is a centered axis of rotation. In this way—as Connor would have me anticipate (Connor 2008)—whereas the triangulating perspective of my vision suggests a (Cartesian) point of view, the doubled doppling of my very wide head insists that at least two points of audition are in play.

As one might expect, at a certain point the turning itself becomes more interesting than my playing and I begin to explore variations of this gesture in their aesthetic possibilities, an exploration that is made technically possible by the magic of dreaming that allows me to at this point completely ignore my shortcomings as a pianist. I practice turning my head slowly: almost 180 degrees from completely left-facing to the right over 15 seconds, back to the left for 30 seconds, to the centre for

³ A Doppler shift is, basically, created by sound waves 'piling up' on one another: in the classic example of an approaching siren, for instance, the emergency vehicle is emitting a frequency at a fixed rate at the source, but the waves don't arrive at a fixed frequency to the listener because the distance they have to travel decreases as the vehicle approaches. The motion at the source thus redounds to increase the frequency as the vehicle approaches, resulting in a higher pitch at the point of reception than that which was sent. The frequency of course then decreases as the vehicle recedes

30 seconds, and (a relatively quick turn) midway to the right for 5 seconds. When I move *very* slowly, from just right of centre to just to the left, I can hear the delays changing ever so slightly without really hearing the Doppler shifts, which is rather lovely. Indeed, I'm even tempted to claim that this inaudible doppling is one portal into the loveliness of hearing itself, in that it suggests the Doppler effect as a condition of hearing that persists independent of one's consciousness of it.

As my head moves the *Aria* sounds unmoored from its normal pitch centre. While tonal vagrancy is typical enough within the rhetoric of music, the modal difference in its being executed within that of frequency is unusual (particularly with a piano as the sound's source). When I stop moving the Doppler effects also stop—or rather settle into the ongoing vibratory rhythm that characterizes my quotidian auditory life—leaving me with sounds arriving at each of my ears at slightly different times. Remarkably, each time I move it feels as though the pitch-center of the piece is moving—I'm experiencing it shifting, after all—but when I cease moving it doesn't so much sound as though it *moves back* as it sounds like it *settles*. This non-mobile motion is a sessile modulation of the piece, then, less a modulating from one key to another (as is conventional in music) than a non-modulating (in the musical sense) vitality within the key itself (or, put differently, an intra-modulation).

And then a thought hits me: in addition to the changing arrival times and the inversely complimentary Doppler effects, there is a dynamic difference in volume between what I'm hearing in each ear. This, in itself, makes sense; but is it really possible that a sound as quiet as a piano—played at a mezzo-piano dynamic, no

less—can still be heard so clearly when my one ear is, for example, a distance of 800 feet away? I think, while still playing the *Aria*, of how the inverse square law—the law that describes the relation between distance and sound pressure intensity—would apply in this case and can't shake the feeling that what I'm hearing can't be right, since even a 15 degree turn of my head should dramatically attenuate the volume in my more distant ear (while increasing that in my more proximate ear). This change in volume should be quite dramatic; what is comfortable when I am facing the piano center should be intolerably loud in my right ear when I turn leftwards, and pretty much inaudible in my left. While the changes in volume that I am hearing are prominent enough to sustain the sensation of a change in distance that accompanies each turn of my head, they nonetheless seem to be happening much more moderately than this basic physics would determine. In short—and really, quite simply—I'm flummoxed as to why playing the piano with a 1,000 foot wide head isn't much louder/quieter than it is...I look down at the piano keyboard and it has been replaced by a calculator, flickering dimly. I listen for a few more moments, contemplating this, before I wake up.

III

Another night I dreamt my head was *100* feet wide, still rather wide by conventional standards but more slender by a factor of 10 than I'd become accustomed to in my dreaming life.

In the dream, I'm again in the concert hall listening to a pianist—Gould, I think—play the Bach *Aria*. The music is lovely and I'm utterly captured by it, unable

to really move beyond the minute rotations of my head keeping up with my rapidly tracking eyes, which dart swiftly and wildly in so far as eyes do, but which move very little in actual space because I am seated some distance from the pianist (and they are, of course, triangulating). That is, my head hardly moves at all. One experiences a coddling warmth when sitting still and listening with a 100 foot wide head—the caress of an almost (in)audible resonance—but other than that specific but fleeting affective memory of a slightly more lenitive world nothing else from the dream is remarkable...nothing *takes hold*, and that evening I don't even really remember waking up.

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In *The Five Senses*, Michel Serres argues that "listening is rooted in silence and deafness" (Serres 2008, 139). As Steven Connor recounts in the context of tinnitus, Serres notes that if "one understands hearing as the conversion of energy into information, of materiality into intelligibility, [...] then hearing must be thought of as a black box, in that we know what goes in and we know what comes out, but do not know precisely what happens in the middle" (Connor 2010). He continues: "But if we ask what happens in the brain, which we are content to see as the simple seat of audition, then we are compelled to imagine another black box, for in the brain too, there is specifiable input (electrochemical impulses) and output (the experience of sound), without the process of transformation being visible" (Connor 2010). The point, though, is that while the box receives, "the reception itself is not transmitted.

We must therefore be located inside the supposedly closed box, the walls of which must as a consequence be moved" (Serres, quoted in Connor 2010).

What we have from Serres, then, is a model that treats audibility not as a threshold, but as a vanishing act of communication itself. As he outlines, "either there *is* a private dimension, in which case there are not objective messages; or the latter are in fact in circulation, in which case there is no private dimension"(Serres 2008, 139). Indeed, in binaural listening the intensive vanishing act performed in and as the moment and point of reception skitters over to the other ear to deafen it extensively: it does so physically by "shadowing" certain frequencies (which is partially how sound is spatialized in binaural animals, including humans), but more importantly literally because when the same sound is heard binaurally such that a certain degree of difference obtains with respect to volume, the quieter "channel" becomes inaudible. That is, one ear's endless string of black boxes precludes, under certain conditions, the emergence of the initial conditions for even the *question* of communication in the other ear. Stereo ears, then, are a collective system predicated not just on a difference between its component parts (i.e. each of the ears), but also on an inhibiting mechanism between them: I know that my ears are working when, under certain conditions, I do not hear in one ear what I know I should have.

The point is, a sound's audibility is not just relative to the sensitivity of the receiving apparatus but also to something in that apparatus's relational framework, from which it follows that audibility cannot be understood in terms of isolatable properties. More than this, though, this irreducible relationality is constitutively

obscured in that it operates precisely in and as a black box of intra-cochlear communication.

As one's head widens, this obscurity becomes clear insofar as it becomes sensible, which is to say in so far as it palpates through the symbolic affordance of sound's organization. That is, listening directs us towards sonic activity that is felt in sound as a quality of aliveness or abstraction of feeling (Priest 2013a). Thus, by expanding the technical condition of listening's black box—of listening's *absolute* relationality—what is felt is "non-sound, an extra-sonorous semblance of aliveness that appears in sound through a technical mode of listening" (Priest 2013b).

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IV

One night, I dreamt my head was a thousand feet wide. I'm in the Alix Goolden Hall listening to Gould again—I'm sure it's him this time—play the *Aria* from the Goldberg variations. I'm not certain how I got here, but the *Aria* is ending and it seems that the performance will end with it, rather than going ahead with the *Variations*. The audience applauds, Gould goes through the usual machinations of post-performance bows and ovations, the lights come up, and we all mill about and chat as we exit the hall.

I'm aware of, though not particularly surprised by, the dream logic that is at work in my surroundings: the basic Mary Poppins-style conceit that it is somehow possible for my head to be wider than the space that I'm in. What really strikes me, though, is the sound of the concert hall's transition from a "concentration machine"

to something else.⁴ As the dominant soundscape expands (to almost match that of my head) from the single point of Gould's playing to the ambient sounds of the applause, conversation, and the various conflagrations of an exiting crowd, my own proprioceptive sensibility expands with it. When I was listening to Gould alone, I felt in an important sense centered and agential: I could compose the volume and delay of the *Aria* for myself, within constraints, simply by turning my head. My massive cranium was something of a private inselberg, an isolated mountain with lobed outcroppings on each side. As this (simulated) aural focus dissipates though—as Gould leaves the stage and the concentration machine becomes simply a *room* (if not a *space*)⁵—it feels to me as though my mountainous head is itself returning to dust: there is no longer the sense of inversely proportional changes in volume and delay times because what I'm hearing in one ear bears virtually no resemblance, at the local level, to what I'm hearing in the other. I'm tempted to say I *am* the din, but that might be hyperbolic; in any case, I'm literally in the midst of it and outside of it, and I'm utterly addlepatated by my incapability of telling the difference between a sound that has traveled across the room and one that is proximate but quiet. It is the aural equivalent of holding two different spyglasses, one over each eye, pointing in

⁴ The concert ritual is a kind of technology "whose several parts together function as a concentration machine to actualize the idea (virtuality) of music as a pure aesthetic object" (Cecchetto and Priest 2013, 214). That is, the concert music paradigm can be characterized as "a 'concentration machine', which serves as a synecdoche for music whose experience is organized around the perception of its internal formal relations" (Cecchetto and Priest 2013, 209).

⁵ "Space is a background phenomenon; it is that against or within which things may take place. Room allows for no background, for no distinction between figure and ground, for it is the taking of place itself" (Connor 2008).

disparate directions: there is no perspective, and when there is no perspective a daschund could be mistaken for a miniature pony that is simply further away.

Except, my eyes remain relatively close to one another, so I still have vision as a means of verification. Unlike when I was listening to Gould, though, when my ears lagged behind my vision, this time it is my eyes that lag...not at a rate determined by distance as in my hearing, but rather at one determined by the speed at which I can swivel my chin atop my neck. But more than that: it is in a real sense myself that is not so much lagging as diffusing in a bureaucracy of sound which, like every bureaucracy, impedes agential force not by attenuating the speed of one's activities, but rather by routing one's actions along circular, obscure, and repeating paths. When Gould leaves the stage, then, *listening* with my very wide head becomes bureaucratic and tedious in direct correspondence with the increasing complexity of what I am hearing. It is a crushing sensation. I hope that as I become more skilled in the techniques of dreaming I will find a lenitive technique to live and listen in this setting in a sustained fashion, to listen with my very wide head outside the context of a concentration machine. On this night, though, I linger for a few moments listening instead to my own inadequacy before simply waking up.

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