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Noise, Agency, and the Sound of Obsolete Technology

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NOISE, AGENCY, AND THE SOUND OF OBSOLETE TECHNOLOGY

In 1931 the Western Electric Company ran an advertising campaign to promote its new Noiseless Recording process for Talking Pictures. The advertisement **(fig.1)** reminds us that sound technology generates as well as reproduces sound: that is, all sound technologies produce noise. In the case of optical sound film – the system being promoted in the advertisement – noise is created by a number of factors, including the grain of the film stock on which the optical soundtrack is recorded and printed, electrical resistance in recording, projection and amplification systems, and the scratches that mark a film print over time. In the sound technologies that predated optical film, such as the wax cylinder and shellac disc, noise is generated during playback by the physical contact that takes place between the cylinder, or disc, and the needle. All such noises might be thought of as the sound of technology: the sound of each medium's physical substrate, or its mechanical and electrical components.



// Figure 1
Advertisement for Western Electric's Noiseless Recording process, published in Popular Science Monthly (March 1931).

Historically these sounds have been treated as a problem, and successive waves of technological innovation have been directed at repressing the sound of technology. As the Western Electric advertisement proclaims, "Soon you will hear talking pictures made with all the humming and scratching noises barred out." As a result of technological innovation, including the introduction of new recording and playback formats, the sound of technology begins to distinguish not only one medium or format from another, but also one historical period from another. Thus the sound of technology has a historical dynamic that impacts upon the audibility and affectivity of the particular forms of noise associated with obsolete technologies and dated formats.

Technological and institutional resistance to the sound of technology raises the question of what happens if the creative

decision is made to embrace these sounds rather than repress them. What happens when this sounding of a medium's material and technological bases is shifted to the foreground of perceptual experience, positioning the sound of technology as the focus of the listener's attention? My article aims to consider these questions by way of another, posed by Petra Lange-Berndt in a recently published collection on materiality in art: "What does it mean to give agency to the material, to follow the material and to act *with* the material" (2015: 13). Asking Lange-Berndt's question in relation to the sound of technology prompts consideration of what might be at stake when agency is given to sounds that are normally repressed, considered extraneous to the 'proper' content of films, records and tapes, and which are usually listened *through* rather than listened *to*.

Within established political discourse the notion of agency has traditionally been associated with human activity and human capacities. However, for Lange-Berndt agentive potential might also be attributed to matter itself: "Clearly materials have agency, they can move as well as act and have a life of their own, challenging an anthropocentric post-Enlightenment intellectual tradition" (ibid: 16). One of the effects of the tradition to which Lange-Berndt refers has been to construct certain forms of matter as raw material – a (passive) resource to be given form and meaning through human agency, and valued only to the extent that it might serve human needs. By attributing agency to the material with which an artist works, Lange-Berndt challenges this anthropocentric view and its associated drive for human mastery and control over the material world.

Lange-Berndt's use of the term agency would appear to owe a debt to recent new materialist scholarship, which, according to Diana Coole and Samantha Frost, "is posthumanist in the sense that it conceives of matter itself as lively or as exhibiting agency" (2010: 7). However, work undertaken within this field might at the same time appear to problematize Lange-Berndt's particular use of the term. According to Karen Barad agency is not something that someone or something 'has': "Agency cannot be designated as an attribute of 'subjects' or 'objects'" (1998: 112). Consequently, agency is not something that can be given or passed from one human or non-human body to another. Rather, Barad redefines agency as a matter of *intra-action*: a neologism signifying "the mutual constitution of entangled agencies" (2007: 33). Barad's formulation of agency might therefore seem to discount the idea,

suggested by Lange-Berndt's question, of an artist *giving* agency to the material with which they work. However, in some ways Lange-Berndt's question can be seen to chime with Barad's notion of intra-action in the latter's focus on agency as a relationship: Lange-Berndt asks, "what does it mean to [...] follow the material and to act *with* the material."

At the core of Lange-Berndt's question is a fundamental concern with the relationship between the artist and their materials, and it is in reference to this relationship that I would like to draw upon Lange-Berndt's own use of the term agency. While out of tune with Barad's formulation, and while perhaps running the risk of humanizing the non-human, I would argue that Lange-Berndt's proposition that agency can be *given* to the material serves an important political function. That is, it serves as a tactical resource that enables us to rethink and potentially realign the relationship between the human and non-human, between the human and the material world. While Lange-Berndt's use of the term may not adequately reflect the nuanced formulations and debates that circulate within new materialist writing, it nevertheless has a tactical value that lies in its capacity to challenge those notions of mastery and control that underpin particular traditions and conceptualizations of art practice. At the same time, in suggesting that an artist might give agency to the material, or share agency with the material, Lange-Berndt proposes that we no longer understand matter to be passive. Here, perhaps, we encounter the notion that "the world kicks back" (Barad 1998: 112): that matter can be 'resistant', 'resilient' or 'recalcitrant' when a human agent interacts with it. Thus when framed within the terms of a relationship, Lange-Berndt's question can be seen to support an understanding of non-human agency that dispenses with the humanist, humanizing and anthropocentric notion of intentionality: "Clearly materials have agency, they can move as well as act and have a life of their own" (2015: 16).

In what follows my aim is to reflect on this notion of agency within art practice through a consideration of sonic art and music that engages with the noisy sounds of obsolete technologies and dated formats. Central to this is a comparative analysis of work by John Oswald and Walter Ruttmann: specifically, Oswald's *wknd 58* (1998), and the original radio documentary that provides its source material, Ruttmann's *Weekend* (1930). In some respects the emphasis I place on the work of two male artists runs the risk of reinforcing what Marie Thompson has described as "a patrilineal 'dotted line' that characterises histories of musical

noise and sonic experimentalism" (2016: 85). As Tara Rodgers has observed, "existing electronic music histories [...] have thus far conjured a canon of male composers and writers" (2010: 5), while Thompson comments in relation to experimental music that "its dominant historical narrative and canon remain conservative insofar as they privilege the activity of individual male 'pioneers'" (2016: 98). Although my decision to focus on the work of individual male 'pioneers' does nothing to threaten the integrity of the patrilineal dotted line identified by Thompson, it does afford an opportunity to consider those notions of mastery and control that are strongly associated both with hegemonic forms of masculinity and with commonly held ideas about the nature of authorship in art practice. The construction of masculinity I refer to here is signalled by Rodgers in the proposition that "aesthetic priorities of rationalistic precision and control epitomize notions of male technical competence and 'hard' mastery in electronic music production" (2010: 7). The relationship between control, technology and masculinity is also touched upon by other feminist writers on electronic music, including Hannah Bosma, who proposes that control is of central importance to hegemonic masculinity (2016: 107). These views of masculinity also echo observations made by Judy Wajcman, who writing on feminist theories of technology, comments, "in contemporary Western society, the hegemonic form of masculinity is still strongly associated with technical prowess and power" (2010: 145).

An alternative to the relationship with and uses of technology associated with hegemonic masculinity is observed by Rodgers in the work of musician Clara Rockmore. Commenting on critical reaction to Rockmore's theremin performances in the 1930s, Rodgers proposes that, "Rockmore opened an 'elsewhere' within electronic music discourses [...] a space for mutual encounters between humans and technologies, between familiarity and otherness, that motivates wonder and a sense of possibility instead of rhetorics of combat and domination" (2010: 9). My own contention is that, like Rockmore's theremin performances, Oswald's *wknd 58* can be heard to present an opening onto an 'elsewhere' within art practice and discourse: one that offers other ways of thinking about the relationship between the artist and the sonic materials with which they work.

Created for the project *Walter Ruttmann Weekend Remix*, produced in 1998 by the Bavarian broadcaster Bayerischer Rundfunk, John Oswald's *wknd 58* reworks what was to be filmmaker

Walter Ruttmann's only venture into radio production. Ruttmann's *Weekend* (1930) is frequently referenced in histories of sonic art, primarily because Ruttmann's 'cinematic' approach to the organization of recorded sound seems to have prefigured what later became known within the field of art music as *musique concrète* (Concordia Archival Project 2008; Kim-Cohen 2009: 10). The program was described by Ruttmann as a "photographic radio play" (Eisner 1930), signalling the fact that it was produced using Tri-Ergon optical film sound technology. The Tri-Ergon system allowed Ruttmann to transfer the techniques he had developed while editing films to radio, and in particular the use of montage editing. This is most audible in the two lively *Jazz der Arbeit* sequences that open and close the program, in which various sounds of the workplace are edited together in what Ruttmann described as "strong rhythmic counterpoint" (Film-Kurier 1930).

What we observe in the cinematic manifestation of montage is the visible inscription of difference, whereby editing reveals rather than conceals the cut joining, and separating, two shots. Transplanting the technique to radio, Ruttmann creates audible sonic montage: sound that grabs the listener by the ear, sound organized by the inscription of difference. Unlike classical continuity editing, in which the organization of the film's material works towards transparency, montage presents itself as an *overt* demonstration of artistic mastery over material. Montage is thus an explicitly interventionist form, fundamentally concerned with controlling, shaping and forming its source material. In this sense montage finds its place within what Jean-François Lyotard characterized as the tradition of modernity, in which: "The relationship between human beings and materials is fixed by the Cartesian program of mastering and possessing nature. A free will imposes its own aims on given elements by diverting them from their natural course. These aims are determined by means of the language which enables the will to articulate what is possible (a project) and to impose it on what is real (matter)" (1985: 47).

The pursuit of mastery described by Lyotard is not only audible in *Weekend*, but is also clearly articulated in Ruttmann's own writing. A few months prior to starting work on the program Ruttmann published a manifesto for a new art of recorded sound, in which he proposed: "Everything audible in the world becomes material. This endless material can now be brought together and given new meaning in accordance with the laws of time and space [...] Thus, the way is open for an entirely new sound art – new in terms of both means and effect" (1929).

The desire for mastery over the material is clearly expressed in Ruttmann's manifesto in his references to meaning and law. Ruttmann's stated goal here is to reshape and reorganize sonic material in order to impose (new) meaning on it, and in addition to bring this material under the jurisdiction of "the laws of time and space" – which is to say, the linguistic and numerical systems that attempt to render material and phenomena knowable in human terms.

However, in a project fundamentally concerned with the precise control of sound, there was one sonic element over which Ruttmann would have had little or no control: namely, the sound of technology. It is precisely this sound that becomes the focus of John Oswald's reworking of Ruttmann's *Weekend,* as Barbara Schäfer's liner notes for the CD release of *wknd 58* indicate: "The basis for the remix by the Canadian John Oswald was the loud noise on the copy of the 1930 original. Oswald's remix conducted a digital material battle with the original, one which duplicated in Ruttmann's discontinuous rhythm the copying noises which had developed over time" (2000: n.p.).

Described as a "digital material battle," the liner notes construct Oswald's relationship with this noise in combative terms. However, this interpretation of the piece, I would argue, fundamentally misunderstands the nature of Oswald's work here, and thereby misses or obscures what I would contend is potentially the most radical aspect of *wknd 58*.

In some ways Oswald's approach to creating music shares important similarities with the work undertaken by Ruttmann in *Weekend*. Throughout his career Oswald has consistently drawn on montage as a key aesthetic strategy in his radical reworking of existing pieces of recorded music, and like Ruttmann, his use of the device is guided by a concern with precision and control. Thus while Ruttmann commented when editing *Weekend*, "With sound montage one-fifth of a second counts" (Eisner, 1930), Oswald has described how some of his pre-digital work was constructed using edited fragments of recording tape that contained a mere 10 milliseconds of sound time (2001: 8). Furthermore, although Oswald has acknowledged the influence of William Burroughs' cut-up technique on his work (in the process inserting himself into the patrilineal dotted line discussed earlier), it is clear that intentionality rather than chance is what drives his own use of montage: "Burroughs's search for the random aspect of juxtaposition and cut-ups was completely contrary to my attempt to control

the cut-up effect and make very careful choices as to which words go together" (Oswald, 2002: 48).

However, Oswald's use of montage demonstrates a certain sensitivity to his source materials that is not readily apparent in Ruttmann's *Weekend*. Plunderphonics, the term used by Oswald to characterize both the technique and approach adopted in his reworking of recorded music, has been interpreted and celebrated by some critics as an assault on his source recordings. However, according to Oswald, the motivation behind Plunderphonics is not a destructive desire to mutilate the original: "I love the music. In my mind, it's certainly not an act of vandalism" (ibid: 43). If this comment provides a general sense of the relationship between artist and source material, then another, made by Oswald specifically in relation to his composition *Dab* (1989) – in which he samples and radically re-edits Michael Jackson's *Bad* (1987) – offers an important insight into his creative approach to reworking existing music: "It all seems to be an intensification of qualities i [sic] found in *Bad*" (Oswald, 2001: 28).

This relationship with the source material, in which Oswald responds creatively to the qualities he perceives within it, is clearly evident in the way in which noise is treated in *wknd 58*. The piece is structured, in part, by the repetition of particular sounds sampled from the original program. Thus we hear musical sounds and 'concrete' sounds that have been removed from their original context and repeated within a dense, noise-laden mix. This mix serves to emphasize the noise in the source recording, so that rather than listening through the sound of technology we are invited to actively listen to it. In this way the piece can be understood, like *Dab,* to be an intensification of the qualities found in the original material: in this case, an intensification of the noise on the recording, and thus an intensification of the sound of technology. Oswald's foregrounding of this noise is uncompromising, and the most radical part of the composition features *only* the rumbling, hissing, crackling sound of analog noise. The more obviously 'representational' sounds of Ruttmann's original program are often relegated to the background, and rather than emphasizing the rhythmic pattern that might have been inherent in the source recording (e.g. metal being hammered) or subjecting that sound to rhythmic repetition through the application of montage techniques, Oswald's use of repetition makes these sounds difficult to hear as rhythmic musical material. Rather, they become part of a texture, part of the noise.

It is only the repetition of these 'representational' sounds, recognizable from the original program, that gives any indication that the material has been manipulated, reworked and remixed. Had Oswald been more radical in his removal of these sounds, working only with the noise from the original recording, there would have been even less evidence of manipulation or control. That is, an edited collection of the 'unmodulated' parts of the source recording would probably sound little or no different from the original noise itself, in which case, there would be no evidence of authorial intervention or mastery over the material – as is the case in that section of the composition which features only the sounds of noise.

One thing this might suggest is that this particular material is difficult to work with: it self-organizing, resistant, and resilient, reducing or even removing the artist's capacity to exert control over it. If, leaning on Barad, we hear this as the sound of the world kicking back, then here is one way in which noise might be understood to have agency. Importantly this agency emerges in the relationship that is created between Oswald and the material with which he works, in which the sound of technology is given space and time to be heard on its own terms: "There is constant noise on the recording, and that's what I had to *work with*. Instead of trying to eliminate it as completely as possible by technical means, I decided to do the opposite" (Oswald, 2000: n.p., my emphasis).

What we hear in *wknd 58* is an artist giving themselves over to the material, in the sense that the whole remix aspires to the condition of noise. The piece becomes noise, not in an abstract theoretical sense, but in the more literal sense that it is brought within the gravitational field of the crackle, hiss and hum of the original recording. This approach contrasts markedly with Ruttmann's *Weekend*, in which agency is undeniably attributed to the artist. This is most clearly demonstrated in Ruttmann's use of rhythmic editing, in which form is imposed upon sonic material with little or no regard for its inherent qualities. Indeed, it would be possible to achieve something of the effect Ruttmann describes as "rhythmic counterpoint" by rearranging the order of the sound samples, or even replacing some of them with completely different sounds. What we hear in Ruttmann's original program is a project, to use Lyotard's term, that seeks to reorganize the world through sound. It proceeds from an idea, articulated through language, which is then imposed upon sonic material. As Ruttmann states in his manifesto, "everything audible in the world becomes material,"

which is to say *raw* material to be given form by the artist. There is no recognition here of the materiality of the (sonic) world as it is, in an artistic approach that is fundamentally concerned with transformation: turning hammer blows into music. In contrast, Oswald's remix gives the sense that agency is shared with the material, that the material's qualities and properties play through the project and help to form it.

Although Oswald's piece may not represent a radically different methodological approach to Ruttmann's – it is after all produced by cutting up and reorganizing recorded sound – it does, however, propose a fundamentally different relationship with sound to that proposed by Ruttmann's piece. In *wknd 58* we hear an artist listening to their materials, acknowledging their materiality, and creating the conditions under which those materials might be heard on their own terms. To return to Lange-Berndt's question, here we have an example of creative practice that gives agency to the material, follows the material, and acts with it.

Oswald's project is separated from Ruttmann's by a period of almost 70 years, during which time the audibility of analog noise has undergone significant transformation. That is, as a result of technological change, manifested in the changing sounds of the sound of technology, forms of noise that we once familiar and inaudible are no longer so, and are thus heard and appreciated in new ways. Sounds that were once listened through may now be listened to: think, for example, of how the analog noise of vinyl has been fetishized in an age of digital technology. Thus the passage of time can be heard to reenergize the sounds of obsolete technologies and dated formats, and in increasing their audibility has the potential to given them greater agency. For an artist like Oswald, working with archive material – or for artists choosing to work with obsolete technologies and dated formats – temporal displacement of this kind materializes the sound of technology, materializing or rematerializing the sounds with which they work, and bringing noise from the background to the foreground of perceptual experience. In this way the sound of technology inscribes itself as an audible presence in video shot on obsolete or dated formats, as in the work of Peggy Ahwesh and Sadie Benning, or contemporary music recorded and mixed on cassette tape, like that produced by the Austrian artist Ana Threat. Working with this material presence, artists necessarily share agency with what is both a material sound, and a sounding of their chosen medium's technological and material foundations.

Asking the question "what does it mean to give agency to the material" returns us to the issue of what the political potential of the sound of obsolete technologies and dated formats might be. Within the arts the politics of noise has often been constructed in combative terms, as a form of attack or assault: thus Jacques Attali proposes "Noise is a weapon"(1985: 24). This indeed may provide a productive approach to thinking about some of the sorts of practice referenced above, in terms of the ways in which the contemporary use of obsolete technology might offer forms of audible resistance to the discourses of technological change promoted by corporations with a vested interest in technological change. There is also perhaps a Brechtian, anti-illusionist framework that can be applied to the sounds of technology, within which particular forms of noise might be understood to have political meaning and value. This is illustrated by the work of sound artist Helen Thorington, who commenting on her own use of the sound of technology in the article *The Noise of the Needle* comments: "I record the noise of machinery, the clicks of tape recorders, the spinning of the reel [...] I call attention to the sound of work by using it to create my work. It carries part of my meaning. And part of my meaning is just that simple: to call attention to work, and thereby to the fiction I create and how I create it" (1993: 179).

However, the notion of material agentiality presents another way in which the noisy sounds of obsolete technologies and dated formats might be understood as having political potential. If, as Lyotard argues, "the relationship between human beings and materials is fixed by the Cartesian program of mastering and possessing" (1985: 47) then this program is radically challenged by the simple act of sharing agency with the material. By relinquishing some degree of control and embracing the material presence of noise, creative practice is no longer about inscribing a project onto matter, and of mastering and possessing, but rather of acknowledging and listening. It is in this sense, then, that Oswald's *wknd 58* offers a radical alternative to the forms of mastery and control that have been seen as central to hegemonic masculinity, and thus to the models of the artist and artistic activity that derive from it. Of course, it could be argued that Oswald's use of noise simply bolsters his status as an artist, marking him out as a radical, iconoclastic figure in the terms understood, celebrated and privileged by those histories of electronic music and sound art which construct the patrilineal dotted line described by Thompson. However, while this may be the case, I would argue that those parts of the

composition which draw *exclusively* on the sound of technology point to an 'elsewhere' in electronic music discourse and practice: an elsewhere in which the identity and presence of the artist – if only for a moment – are no longer audible; an elsewhere in which the relationship between material and artist (rather than artist and material) might be described as 'radical indifference.' The political dimension of this form of practice lies precisely in shifting focus from the artist to the material. To do so is not merely to make a political *gesture*, suggesting some other field of activity in which 'real' political action might be undertaken, but rather it constitutes a political act in its own right – one that radically realigns the relationship between human beings and the material world, and offers an alternative way of being in the world.

// Image Credits

Fig. 1: Advertisement for Western Electric's Noiseless Recording process, published in *Popular Science Monthly* (March 1931). Courtesy of AT&T Archives and History Center.

// References

Attali, Jacques (1985): Noise: The Political Economy of Music. Theory and History of Literature, Vol. 16. Minneapolis, MN: University of Minnesota Press

Barad, Karen (1998): Getting Real: Technoscientific Practices and the Materialization of Reality. In: differences: A Journal of Feminist Cultural Studies. Vol. 10, issue 2, pp. 87-128

Barad, Karen (2007): Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning. Durham, NC: Duke University Press

Bosma, Hannah (2016): Gender and Technological Failures in Glitch Music. In: Contemporary Music Review. Vol. 35, issue 1, pp. 102-114

Coole, Diana and Frost, Samantha (eds.): (2010) New Materialisms: Ontology, Agency, and Politics. Durham, NC: Duke University Press

Concordia Archival Project (2008): The Concordia Collection Within Electroacoustic History. http://cec.sonus.ca/education/archive/elearning/module1/index_3_2_en.html#, last accessed October 1, 2016

Film-Kurier (1930): Ruttmanns photographisches Hörspiel. In: Goergen, Jeanpaul (ed.): Walter Ruttmann: eine Dokumentation. Berlin: Freunde der Deutschen Kinemathek, 1989, p. 130 [Originally published in: Film-Kurier, Berlin. Vol. 12, issue 41, February 15, 1930]

Lange-Berndt, Petra (2015): Introduction//How to Be Complicit with Materials. In: Lange-Berndt, Petra (ed.): Materiality. Documents in Contemporary Art. London: Whitechapel Gallery and Cambridge, MA: Art, pp. 12-23

Eisner, Lotte H. (1930): Walter Ruttmann schneidet ein Film-Hörspiel. In: Goergen, Jeanpaul (ed.): Walter Ruttmann: eine Dokumentation. Berlin: Freunde der Deutschen Kinemathek, 1989, p. 131 [Originally published in Film-Kurier, Berlin. Vol. 12, issue 53, March 1, 1930]

Kim-Cohen, Seth (2009): In the Blink of an Ear: Toward a Non-cochlear Sonic Art. New York and London: Continuum

Lyotard, Jean-François (1985): Les Immatériaux. In: Art and Text. Vol. 17, pp. 47-57

Oswald, John (2000): Untitled. In: Walter Ruttmann Weekend Remix [CD liner notes]. Erding: Intermedium Records

Oswald, John (2001): Untitled. In: Plunderphonics 69/96 [CD liner notes]. San Francisco: Seeland Records

Oswald, John (2002): Undoing Time. John Oswald interviewed by David Keenan. In: The Wire. Issue 219 May, pp. 42-49

Rodgers, Tara (2010): Pink Noises: Women on Electronic Music and Sound. Durham, NC: Duke University Press

Ruttmann, Walter (1929): Neue Gestaltung von Tonfilm und Funk. Programm einer photographischen Hörkunst. In: Goergen, Jeanpaul (ed.): Walter Ruttmanns Tonmontagen als Ars Acustica. Siegen: Universität Gesamthochschule Siegen, 1994, pp. 25-26 [Originally

published in: Film-Kurier, Berlin. Vol. 11, issue 255, October 26, 1929]
Schäfer, Barbara (2000) Untitled. In: Walter Ruttmann Weekend Remix [CD liner notes]. Erding: Intermedium Records
Thompson, Marie (2016): Feminised Noise and the 'Dotted Line' of Sonic Experimentalism. In: Contemporary Music Review. Vol. 35, issue 1, pp. 85-101
Thorington, Helen (1993): The Noise of the Needle. In: Radiotext(e): Semiotext(e) # 16. Vol. 6, issue 1, pp. 178-180
Wajcman, Judy (2010): Feminist Theories of Technology. In: Cambridge Journal of Economics. Vol. 34, issue 1, pp. 143-152
Various Artists (2000) *Walter Ruttmann Weekend Remix*. Intermedium Records. intermedium rec 003

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