

The Timbre of Trash

Rejecting Obsolescence through Collaborative New Materialist Sound Production

 Joe Cantrell

Abstract

Late capitalist production is highly dependent upon the continuous manufacture of new goods to be brought to market. The idea of obsolescence plays a key role in this process, as more recent commodities replace older, presumably less-effective products. This process is especially prominent in the technological sector, which routinely encourages the deliberate replacement of older devices— even when still functional. Digital audio technologies fall in line with these practices, and are often produced using exploitative labor practices. A serious consideration of these effects poses a difficult question for sonic artists who use electronic and digital equipment in their practice. Specifically, how can sound practitioners begin to account for and push against their tacit contribution to the detrimental effects of obsolescence entailed by the tools of their craft?

This article explores this question through the lens of new materialist discourse, which outlines modes of engaging with the physical world that reject the assumption that objects are static. Instead, they employ an understanding of objects as collective agents in constant active assemblage of shared material actions that include the presence of human bodies as part of a continuum of objects within larger systems of capital, labor, and politics. The electronic audio practices of American sonic artists who incorporate obsolete, broken, and discarded objects in their work will act as case studies for this exploration. Their work helps understand possible collaborative implementations of technological audio production that recognize the collective agency involved in their physical and aural production.

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The Timbre of Trash

Rejecting Obsolescence through Collaborative New Materialist Sound Production

Joe Cantrell

Late capitalist production is highly dependent upon the continuous manufacturing of new goods to be brought to market. The idea of obsolescence is vital to this process, as new commodities replace older, presumably less effective products.¹ Modern American conceptions of obsolescence emerged at the end of the nineteenth century, when mass production permeated the Western world. Previously, the idea of conservation and thriftiness was the norm. To dispose of something before it has completely worn out was a sign of wastefulness, akin to the sin of sloth. The purposeful production of disposable goods during this period cleared the way for radical change in American expectations of consumer products, as common items became more expensive to mend than to discard and replace. Economist Joseph Schumpeter focused on Karl Marx's conception of a continual process of consumption and deliberate waste as one that was necessary to the functioning of capitalism. Using the term "creative destruction," Schumpeter recast it in a positive light. His influence contributed to the contemporary assumption of obsolescence as a requisite part of a healthy economy.²

Digital audio devices also rely on obsolescence, falling in line with the production of other technological commodities whose manufacturers seek to increase consumption of their products.³ Like most electronics, they are often produced in conditions that are environmentally destructive and socially exploitative.⁴ This poses ethical questions for sound artists whose practices often demand consistent hardware consumption. How can sound practitioners account for this tacit contribution to the detrimental effects of obsolescence entailed by the tools of their craft?

I contend that new materialist philosophy affords a perspective on the physical world that can shift understandings of technological tools from being objects susceptible to obsolescence and disposal, to ones of self-reflection and respect. Key to this claim are the views of three authors: Karen Barad, Rosi Braidotti, and Jane Ben-

nett. Karan Barad presents a view of matter that understands the ontology of the physical world as consisting of phenomena, not particles. Her conception of objects complicates the nature of physical boundaries, rendering them as porous and active. In such a cosmology, the borders between humans and objects become moot.⁵ Rosi Braidotti's discourse on materiality extends this permeability to resemble global ecological structures, considering technological systems as the ecology of modernity. In other words, technology becomes nature, inclusive of wider systems of power and culture that are embedded in technological objects.⁶ Jane Bennett's conception of vital materiality assumes the Victorian notion of an immanent life force within physical things, offering a way of thinking about nonhuman objects that considers them part of the cycle of life and, in a broad sense, as being alive. Bennett describes this embrace of anthropomorphism as an affirmation that "so-called inanimate things have a life, that deep within is an inexplicable vitality or energy, a movement of independence from and resistance to us and other bodies."⁷ Collectively, these perspectives contribute to an understanding of technological objects that put them on a more equal footing with human beings, making it more difficult to consider them obsolete and disposable.

The emergence of obsolescence was in part a reflection of the effect of mass production brought on by the industrial revolution.⁸ These effects were also mirrored in the sonic arts throughout the twentieth century, and aural reflections of an increasingly mechanized world ran apace with technological developments. Although often violent and sexist, Italian Futurism and Luigi Russolo's *The Art of Noises* (1913) had a clear effect on the conception of sound and objects.⁹

Composer John Cage was introduced to Russolo's works through his connection with Edgard Varèse, for whom Russolo was highly influential.¹⁰ Russolo's fixation on the sonic nature of objects also had a huge impact on Cage, likely contributing to the development of Cage's prepared piano technique, among others.¹¹ Cage grappled with a sense that music in the traditional sense "could not reliably communicate emotion."¹² Instead, he opted for a methodology that would "let the sounds be themselves."¹³ Akin to contemporary new materialist thought, Cage sought to de-emphasize the personal role of the composer and performer, placing them on more level ground with sonic objects. The shift away from authorship and the influence of personal taste was augmented by his interest in the writings of Amara Coomaraswamy, who de-emphasized self-expression.¹⁴

The rejection of anthropocentrism also led Cage to be suspicious of audio recordings as representations of—or replacements for—sound performances. Instead, he engaged with recorded media strictly as a raw material for sound making.¹⁵ This deliberate re-direction of intended media use is also well documented in the work of

other sound pioneers throughout the twentieth century and beyond. It can be heard in the compositions of Halim El-Dabh, Pierre Schaeffer, Milan Knížák, and Nicolas Collins, to name a few.

It is clear that the broadening of Cage's philosophical horizons had a marked effect on his output. For contemporary electronic musicians, a reconfiguring of perspective similar to Cage's reassessment of sound objects can likewise offer a fresh view on their operation and meaning, specifically in relation to the process of obsolescence. Obsolescence relies on an assumption that objects exist as instruments of human action. New materialism can counter this by troubling the presumption of the dominance of human intentions and the inability of objects to have agency. Instead, it argues that the material world is ontologically made of phenomena—ontology, epistemology and ethics are intertwined.¹⁶ I maintain that new materialism can enable a sense of shared cooperation with objects that allows experimental musicians to push against the process of obsolescence in their practice. I will support this claim by presenting three currently active sound practitioners from the US who exhibit aspects of new materialist tendencies toward obsolete or disposable objects in their work. These artists are chosen specifically for their activity in a field of experimental practice that is increasingly becoming open to the incorporation of critical and philosophical theory as part of the creative process and product.

My examination begins with Reed Ghazala, whose practice of “circuit bending” envisions a sense of porous boundaries between objects and humans. In doing so, he posits technology as a part of the natural world, and technological objects as quasi-living collaborators. The view of technology as cooperative partner is further explored in the practice of Curtis Rochambeau, who utilizes the potential actions embedded within obsolete medical equipment as agential co-authors in his musical creation. Finally, the process of material decay is examined in the practice of William Basinski, who evinces a vitalistic sensibility toward the decaying tape loops in his work.

Qubais Reed Ghazala

American musician Qubais Reed Ghazala is widely known as the originator of an informal practice known as circuit-bending, which transforms disposable or obsolete electronic objects into electronic musical instruments. This is accomplished by deliberately creating short circuits and listening to the results. When an interesting effect is found, the short is noted and later permanently rewired, resulting in bespoke musical instruments crafted from mass-produced devices.

Ghazala stumbled upon the technique as a teenager when a small, open-backed amplifier shorted out onto a metal drawer, producing unusual sounds. He became fixated on creating the shorts himself, expanding the amplifier with components

pulled from any source he could find. This original instrument eventually became enclosed in a custom-made cedar box (*Illustration 1*). Ghazala describes the original impetus for the craft as one directly related to his social and financial status at the time. Being underage and lacking funds to purchase a synthesizer, he had to rely on the self-creation of sound technology via discarded or extremely inexpensive materials.¹⁷

Ghazala positions the development of the process as one based on a reciprocal ecology between human beings and things: that it is within human nature to “musicalize” objects.¹⁸ He likens this to coconuts washing ashore on a hypothetical deserted island. When found by human beings, they can be made into all manner of musical instruments depending on the identification of the physical sonic potentials between the object and the human being; a coconut can be fashioned into a percussion instrument, a wind instrument, etc., depending on how one imagines interacting with it. He extends this analogy to electronic waste products as well: “Our society’s electronic discards, like coconuts fallen to the sea, collect at the high-tide lines of garage sales and flea markets, second-hand shops and garbage bins.... These circuits are coconuts of our island. Adapt the coconut, adapt the circuit.”¹⁹ Ghazala likens the castoffs of obsolescence-driven technological production as the byproducts of the ecosystem of modernity. In this context, the conversion of obsolete objects to personal, creative ends is like the adaptation of any organism to its environment.

Feminist philosopher Rosi Braidotti advances a similar perspective. She projects a view of the material world in which self-organizing, living matter is fundamentally entangled with non-living inanimate matter, interpreting technological and informational systems as a relational part of that assemblage.²⁰ In this sense, technological objects and systems become part of what the environment; technology comes to be regarded as part of ecology. This perspective questions predominant utilitarian views of commodified technological objects: “The technological apparatus [becomes] our new ‘milieu’ and this intimacy is far more complex and generative than the prosthetic, mechanical extension that modernity had made of it.”²¹ She understands the electronic object as inhabiting a space that is a part of the same systemic process as all living things. She not only projects a kinship with the seemingly obsolete but also imparts technological objects with a sense of living animus.

This troubling of assumed boundaries between the natural and built environments in an auditory sense is not without precedent. In his text *Earth Sound, Earth Signal: Energies and Earth Magnitudes in the Arts* (2013), Douglas Kahn points up the sonic relationship of technological objects and the “audible world of nature.”²² He outlines Henry David Thoreau’s observation of the unintended consequences of the global instantiation of telegraph lines in previously untouched forested areas. Although



Illustration 1: Original circuit-bent amplifier.

Photo courtesy of Qubais Reed Ghazala.

the wires transmitted electrical signal, they also acted like aeolian harps and carried physical vibrations—often for miles—of the wind and other environmental actions.²³ In this way, Kahn can be seen as including artificial structures in his consideration of what counts as part of the ecosystem.

Jane Bennett's conceit of vital materialism aligns with the continuing practice of including objects within the ecological sphere, encouraging a strategic projection of anthropomorphism onto inanimate things. She provides a counter to the tendency



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for humans to consider themselves as separate from the ecological, political, and economic systems in which they live.²⁴ Her projection of human qualities into objects is not meant in a strictly literal sense, nor is it intended to promote obscurantism or to replace scientific inquiry. It is done, in part, as an effort to expand the understanding of humanity to a wider, systemic perspective that positions objects on a more equal footing with humans. By doing so, we can begin to include material objects, including technological waste objects, within our personal sense of self-interest: our fate becomes bound up with theirs.²⁵ With such a view, the conception of casually discarding a fully-functional device for an improved one is similar to disposing of an old friend. Instead, Bennett questions the production of waste and wonders how “would patterns of consumption change if we faced not . . . trash, . . . but an accumulating pile of lively . . . matter?”²⁶

Ghazala’s comments on his work seem to resonate with this inclusive understanding of electronic objects, identifying certain circuit-bent devices as being “living instruments.” Here, Ghazala describes the tendency of some circuit-bent instruments to change over time and cease functioning due to the extreme strain put on their components. He describes this tendency in a way that is inclusive of humans:

You and I are living instruments. We accept that our voice will change, become deeper over time, quieter in the end, and will someday fail. We accept that our friends . . . will change as they age. However, can we accept this in our musical instruments? Some bent instruments do age and sound different as time passes, as they consume their accelerated timeline. The instrument grows a little older, moves a little closer to early demise, every time you turn it on. Don’t play it to save it? Play it to let it sing?²⁷

Ghazala likens the electronic device with the bodies of loved ones. The perception of an impending end to the device in question is not one that embraces a disposability regarding the object. Instead, he imparts a sense of reverence and concern for the objects’ wellbeing, juxtaposed with his desire to experience their sounds. In doing so, Ghazala seems to embrace a sense of vitality in his instruments that pushes against any easy sense of utility, engaging Bennett’s call for “intelligent and sustainable engagements with vibrant matter and lively things.”²⁸

An empathy toward technological objects is also reflected in his conception of the direct physical interaction between the components of circuit-bent instruments and humans. Because the human body has resistance properties, it can act as a component in a circuit. By deliberately building metal contact points into a device, sound can be altered by merely touching the device with the human body. This touch-based interaction can be further expanded by contact with other humans, creating a sound situation that can be transformed by touching other people as well as the

object. Ghazala describes this extended instrument as a “BioElectronicAudiosapien,” or “BEAsape.” He describes the experience of participating in these extended interactions as collaborative and mutually transformative: “I was changed and the circuit was changed, and I had trouble deciding where each of us began and ended. I simply concluded we were something new, and we were one.”²⁹ For Ghazala, this body contact experience is ultimately one that troubles easy boundaries between objects, bodies, and technological waste. His understanding compels us toward a conception, through sound, of a more entangled place in the continuum of objects and being.

The consideration of a diffuse boundary between individual objects and subjects lies squarely within the wheelhouse of posthumanist theorist Karen Barad. In her perspective, material objects are not fixed, stationary, separate entities, but a continually shifting array of constant action. Barad describes matter as “a dynamic and shifting entanglement of relations, rather than a property of things.”³⁰ This is not merely metaphorical, but a literal condition of materiality. Drawing on particle physics, Barad demonstrates that the hard edges humans tend to see as bounding individual objects actually exhibit a great deal of fluidity. Upon close inspection, the clearly defined boundaries that humans perceive to form the outlines of physical things begin to exhibit the same diffraction patterns that particles produce when behaving as waves—revealing their ontological nature as phenomenal, not static. Their hard edges blur to an energetic, permeable flux, similar to the porous boundaries between objects and humans that Ghazala’s BEAsapes exhibit.³¹ In this way, Ghazala’s practice embraces the technological as part of a natural habitus that includes humans in a shared discourse, where separations between physical objects and human subjects is called into question.

Friedrich Kittler illustrates the complexities of the auditory potential for these diffuse bodily boundaries. When directly intermingling with audio technology, the sonic involvement of the human corpus does not produce results that align with established tonal sensibilities. Far from creating what might be desired from traditional Western musicians’ ears, the body itself creates noise when directly sonified. Specifically, Kittler describes Rilke’s fascination with sonifying the sutures of the human skull, as he saw the similarities with the grooves of a phonograph record.³² Of course, if actually played, the sutures would produce irregular, “noisy” sounds. As such, Kittler associates the body with noise, and contemplates the sonifying act as one of transgression.³³ For those seeking to mimic the standards of Western music, such noise is unacceptable—something to be eliminated. Inhabiting a more inclusive stance on bodily soundings, as Ghazala does, instead allows practitioners to meet the body on its own terms in tandem with technology—noise and all.

Adopting this sort of sensibility compels an understanding of technological



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objects that affords a more cooperative interaction. This stance pushes against any presumption of obsolescence in favor of a more equitable, respectful treatment of objects. New materialism extends the concept of shared physicality to be also expressed as expansive material assemblages that include the socio-political and economic spheres as well. As matter is enacted by the differential commingling of varying states of phenomena, political and economic power can likewise be seen as being produced by a differential interchange of bodies and objects on a larger scale. Like objects, power is also a “mattering”: a doing that is physical as well as social.³⁴

Curtis Rochambeau

Experimental musician Curtis Rochambeau creates dense, often punishing sheets of noise. In his performances, he uses a variety of electronic equipment, although many of them were never designed for sonic purposes. Specifically, Rochambeau uses mid-twentieth-century electronic medical devices such as nerve and muscle stimulators to create sound. After receiving an old piece of test equipment from his uncle, Rochambeau immediately began experimenting with the generated voltages to alter the sound and function of his synthesizers. Rochambeau was taken by the heft and history of the unit and was soon scouring online auctions to buy other obsolete equipment to alter his sounds.³⁵

Eventually, instead of using the machinery to control the modulation and frequency of his synthesizer, he plugged the output of the medical units directly into the audio inputs of his mixer. The equipment was designed to send electrical impulses over 100 times stronger than standard audio signals. This mismatch of use values embedded in the technological objects produced sounds totally different from those of his audio generators. In addition to the extreme voltage difference, the advanced age of the components in the machines caused them to behave erratically, changing their activity over time and in response to their surroundings.

Like Ghazala, Rochambeau imparts a perception of anthropomorphic agency to the actions of the failing, misused equipment; seeing them as friendly co-workers:

[They] have a mind of their own... I can leave it on... go putter about and come back and it's something different. I find that endearing. It is kind of like a trusted bandmate. They are going to do their thing, while I'm doing something else, and it will continue to work itself out?³⁶

For Rochambeau, the reactive tendencies built into the obsolete devices he uses become the raw materials with which he molds his aural aesthetic. In other words, his practice is reliant upon the semi-autonomous actions of the misused equipment, which have become a vital part of his creative engagement. By leaning upon the

agency embedded in these devices, Rochambeau is enacting an anthropomorphically cooperative assemblage in which human intention is on more equitable terms with physical objects.

The conception of non-human objects as inhabiting and enacting physical agency in the world is a central tenet of Karen Barad's perspective. For Barad, matter is an agentive factor in iterative materialization and an active participant in worldly becoming. This becoming is based upon a constant differentiation between entangled actions. In other words, the material world is ontologically made of constant movement, and things within it appear as they do because of the difference between the active agential states of objects relative to one another.³⁷

If matter is ontologically based on activity, then it enacts influence on, and in relation to everything else. That is, objects have agency because they are made of agency. Extending this understanding of the agential association between objects also changes the relationship of ownership and utility between humans and the material world. Collective agency as seen in this manner transforms objects into doings, calling into question their status as inert possessions and enabling an acceptance that agency is not just human. This is not to say that humans do not have a significant part to play in the physical world, but the role they do play should allow for a conception of the human body as but one site in a constant co-construction of a materiality with fuzzy borders.³⁸

Karen Barad's outlook is comparable to the more sound-oriented positioning of Salomé Voegelin's sonic materialism—in which objects move from static and inert matter and become sonic events: things in the noisy process of “thinging.”³⁹ Although closely aligned, Barad contributes an additional subatomic perspective to the mix. In so doing, she grounds and extends Voegelin's phenomenological observance of material interaction into the ontological, projecting action as an inherent physical property of all objects including the human body. As such, both perspectives may be of use as a window into the effects of extended materiality as a collective sonic activity that is inclusive of the agency of bodies and objects.

Rochambeau's practice exhibits these agential boundary-questioning qualities. His performances not only allow for but also rely on a positioning in which human agency is not primary, and highlight the active material state of the machines involved. The inherent drift of the changing physicality of the devices, their advanced age, and their re-directed capacities all contribute to patterns of agential difference that eventually become expressed sonically. At the same time, the boundaries between performer, composer, and musical instrument become blurred as their collective agencies create sound.

Curtis Rochambeau's extension of agency into obsolete equipment highlights



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the potential for audio technology to impart its own actions on sound and meaning, which can have a drastic effect on creative practice. In William Basinski's case, this material agency played a crucial role in a years-long process of preservation, memory, and decay.

William Basinski

In the early 1980s, William Basinski began the practice of experimenting with a variety of methods of recording onto handmade analog audiotape loops. With limited funds, Basinski purchased inexpensive tape recorders and began making tape loops from a variety of sources, bouncing the recordings between recorders to create endless layers of dense sound. He describes the process as one that plays with a sense of personal understanding and agency imparted to the materials and technologies that he utilizes. He relates the unexpected qualities of working with physical loops of tape:

There's something about the sound of analog tape . . . They have wow and flutter. Sometimes, . . . if it gets a little bit loose, . . . there will be a little bit of a fade out or a drop out[,] . . . it might even pick up the reverse bit that's on the other side of the tape, which I always love. . . . Throw in a little bit of a surprise.⁴⁰

He emphasizes his lack of absolute control in the process as “exciting” and that a major point of the work is a sort of collaboration with the machines themselves, pointing out a milestone in his technique when he “learned how to stay out of the way and see what happens.”²⁴¹

He eventually directed his efforts elsewhere and put the loops away, storing them in whatever they would fit into. The loops remained in this state for years until he decided to digitally archive them. During the transcription, Basinski noticed that because of the advanced age of the audiotape, the iron oxide particles embedded on them had started to drop off as the loops were played. As the tape went around, it lost more of its magnetic material and some of its sound as well, fading away until he was left with clear plastic tape that transmitted only silence.⁴²

Through the process of physical decay, Basinski gained a new understanding of the materiality of the media, as well as its potential effect on his sound practice. The tapes had exhibited another form of agency he had not counted on. This change reflected not only his own personal archival gesture, but how the results of material action had recombined with the physical traces of his previous creative efforts. Over time, the physicality of the magnetic tape had formed a new type of work, whose operation was not entirely human, nor entirely machinic.

Like Ghazala and Rochambeau, he regards these objects as though they had a sort

of inherent spirit contained within them. When asked if there was a spiritual connection with the technology he uses, he responded:

Of course there is! That's why I . . . let the spirits come into the work. . . . There's always a spirit within the stuff! There's a spirit within the machine. Last night, my brand new big old Mac studio computer . . . just decided to reboot. There's always spirit in the machines somewhere, even in the crazy digital machines. It might be a nefarious one, I don't know.⁴³

Basinski seems to project a friendly spirit onto analog media and a malevolent one onto digital. He intimates a sense of being more closely connected to the analog medium and its tangible physicality. His sense of mistrust toward digital media reflects what he seems to view as a sort of inauthenticity, derived from the failure to recognize the preservational qualities of physical sound recordings. When questioned on whether he felt that digital technology seemed somehow hostile, he projected some misgivings about the totalizing and concentrated nature of digital archiving.⁴⁴

Considering his intimate relationship with magnetic tape, it is not unreasonable that he might take such a stance. Lisa Gitelman contends that historical misgivings about the introduction of new media technology result from shifting relationships to its materiality, and it is this unsteadiness that can make it difficult to fully grasp.⁴⁵ Media in general are preservational at their core. Despite this, degradation is intrinsic to recording. Jonathan Sterne points out that the idea of permanence in recorded media is less of a description than an aspiration.⁴⁶ This is especially true in light of the difference in the types of decay experienced by magnetic tape and digital files. The changes undergone by analog media are more localized and gradual than those of the digital realm. To similarly damage audio information stored on a hard drive, for example, would likely not allow any sort of material decay to express itself, but instead result in a catastrophic failure of the device and its stored sound data. Basinski's mistrust of the digital and his sense of a living presence permeating analog technology again points to the perception of a kind of embedded animus expressed in part by obsolescent decay.

William Basinski's focus on media entropy contrasts with Curtis Rochambeau's embedded electrical potentialities, and with Qubais Reed Ghazala's more explicit connection with the human body. What they have in common, however, is a prevailing sense of the object as a shared partner in the creative act that complements the boundary-challenging discourse of new materialist thought. These artists rely on their material counterparts for vital support in the crafting of sound, often enacting perspectives that countermand the drive for obsolescence that has for so long been a part of American culture. In aligning these and similar actions with the specific philosophical perspective of new materialism, this sense of creative resistance to obso-



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lescence through sound can be augmented by an ethical framework that may act as a catalyst for further creative acts.

Notes

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- 21 *Ibid.* 83.
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- 24 Bennett, *Vibrant Matter*, xvi.

- 25 Ibid., 12.
- 26 Ibid., viii.
- 27 Ghazala, “Folk Music,” 101.
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About the Author

Joe Cantrell is a sound artist and scholar whose work is inspired by the implications and consequences of technology. His practice addresses the incessant acceleration of technology and media, its ownership, and our interactions with the waste these processes produce. Joe holds a BFA in music technology from Cal Arts, an MFA in digital arts and new media from UCSC, and a PhD in Music from UCSD.

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