
Making Old Machines Speak: Images of Technology in Recent Music*

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1. Narratives of progress and innovation have dominated the story of music and technology throughout the twentieth century. The pursuit of ever-greater expressivity, control, responsiveness, clarity, and power, can be charted in instrument design, the whole story of hi-fidelity audio equipment, and the digital revolutions that are transforming musical production, distribution, and reception.¹ Referring to the visual arts, Leo Marx has identified a rhetoric of the "technological sublime," in which images of technology are invested with "the capacity to evoke emotions—awe, wonder, mystery, fear—formerly reserved for images of boundless nature or for representing a response to divinity" (qtd. in Jones, 631). In music as well, technology has been both used and represented as the embodiment of the modern, of authority, and of the future. One need only think of the celebrations of the railroad, the factory, speed and motion in works by the Italian and Russian Futurists, the role of the machine in the Weimar era *Zeitoper*, and Boulez's high-tech utopias of modern music at IRCAM.
2. The corollary to notions of technological progress is a rejection of what is out of date, a sense of repulsion of the outmoded. Writing in 1930 in *Reaktion und Fortschritt* Theodor Adorno described surrealistic montage techniques as depending on the "'scandal' produced when the dead suddenly spring up among the living" (qtd. in Paddison 90-91). Adorno was describing the use of tonal materials after the supposed breakdown of tonality, but his words hold just as true for dead technologies.² Indeed, few things in our culture are as vilified and detested as an obsolete machine: the skeletons in our closets are most likely old computers and printers. Music technology has been particularly marked by this dynamic. A note on the record jacket of Michael Oldfield's 1973 recording *Tubular Bells*, makes the following claim: "In Glorious Stereophonic sound. Can also be played on mono-equipment at a pinch." This tolerance disappears, however, in another note at the bottom of the jacket. "This stereo record cannot be played on old tin boxes no matter what they are fitted with. If you are in possession of such equipment please hand it in to the nearest police station."
3. One of the clearest signs of how deeply ingrained these narratives of progress and obsolescence have become is the strength of the counter-reaction that has emerged in the last few years. A broad range of contemporary music now draws on the sounds of old recordings, lo-fidelity sound equipment, vintage electric and electronic instruments, and other ostensibly outmoded technologies. The linkage to old machines and obsolete technologies ranges from groups like the Lo-fidelity Allstars, Mono, or Stereolab for whom it is a defining feature—inscribed even in their names, to bands like REM that have used old sounds as an isolated special expressive

effect on a few songs (see, for example, the song "Hope" from *Up* [1998]). An entire "authentic instrument" subculture has sprung up around instruments like the Mellotron and old synthesizers, with the requisite collectors, museums, restoration experts, and recorded anthologies. This is, of course, just one manifestation of broader cultural trends, a sounding of which might be taken in an article like, "Technology's Golden Oldies," in the May 1999 *Yahoo*, which lists internet sites such as "8-Track Heaven," "The Obsolete Computer Museum," and "The Dead Media Project."³

4. In a short essay entitled "The Revenge of the Intuitive," from *Wired* magazine, the producer and composer Brian Eno writes:

Since so much of our experience is mediated in some way or another, we have deep sensitivities to the signatures of different media. Artists play with these sensitivities, digesting the new and shifting the old. In the end the characteristic forms of a tool's or a medium's distortion, of its weakness and limitations, become sources of emotional meaning and intimacy. ("Revenge of the Intuitive")⁴

But what sorts of meanings are produced and how? The resurgence of interest in old and out-moded media, sounds, and machines goes far beyond any simple "retro" aesthetic or nostalgia, but raises issue about how musicians and listeners use music to generate meaning, to locate themselves in a tradition, as well as to produce and transform that tradition.

5. In this essay I will discuss how the sounds of old machines can be made to speak in a variety of interpretative frameworks: authenticity vs. artifice, modern vs. postmodern, blackness vs. whiteness, and human vs. mechanical.⁵ In reference to a group of pieces that foreground the technological dimension to the point of making it an integral and at times dominant part of the musical material, I will be charting some of the modes in which this revival of old sounds and old technologies is being used in recent popular music, from pastiche, to the recuperative or nostalgic, to the elegiac. I will conclude with a discussion of ways in which the use of old sounds might achieve a critical potential. While my examples are taken from a fairly narrow generic slice, primarily dance and electronic genres that feature sampling and the manipulation of preexistent materials, the phenomenon is prevalent in a wide range of contemporary popular and concert music.
6. Fundamental to this study is the question of how instruments and media become marked as "old" or "obsolete" in the first place. Perhaps in music above all, age does not have to imply obsolescence or inferiority, as in the case, for example, of a 300 year old Stradivarius or a 30 year old Stratocaster guitar. While it is clear that technologies develop and change, the linkage of older technologies with the idea of obsolescence is not self-evident but is created by economic and social factors, the power of

advertising, and shifts of fashion that are at least partly uncontrollable. Yet music is not limited simply to reflecting these more general narratives concerning technology and progress. An example from Pink Floyd's 1975 album *Wish You Were Here*, illustrates how individual pieces can—in their own material—inscribe, produce, and in some cases even transform these progressive narratives linking technological change to stories of power, innovation, authenticity, and expression.

7. Technology figures significantly in Pink Floyd's music, marked by the early virtuosic use of synthesizers, elaborately recorded and produced albums, and lavish stage shows. Many songs explicitly reference the world of machines, significantly adopting modernist techniques of *musique concrète* such as "Money" from the album *Dark Side of the Moon* (1973), with its rhythmicized sounds of cash registers and change, or "Time" with its clock-store-gone-berserk sound effects. As is evident from these examples, the images of technology in Pink Floyd's music often lean toward the dystopic. But at the same time, these representations ultimately operate within an essentially modernist teleology.
8. This is brilliantly staged in the transition between "Have a Cigar," a bitter attack on the corrupting influence of the music business, and the song "Wish You Were Here" from the album of the same name. As if to enact the threat of commercialization, the raucous hard rock jam that concludes "Have a Cigar" sounds as if it is sucked out of the speakers into a lo-fidelity AM radio broadcast. The radio is evoked first through the cramped, tinny sound quality and static, and then confirmed as the radio is retuned through several channels—in what is itself a striking trajectory through newscasts, discussions, and excerpts of symphonic music—before settling down on a station broadcasting a mellow guitar accompaniment. As the radio continues to play, we become directly aware of the person in the room who has been tuning the radio, as he clears his throat, sniffs, and then starts to play along on an acoustic guitar.
9. This intimate private moment enacted for us on the public stage of the record, no doubt is meant to evoke a host of responses. Clearly to some degree the peculiar thin scratchy sound of the radio is meant to be nostalgic, reminding listeners of a certain age of a similar experience of listening to the radio. And the qualifying "listeners of a certain age," is important, because the particular sound quality created here would only be recognizable to someone who had listened to a portable AM transistor radio. In keeping with the modernist framework, the historical location of the old technology is clearly marked both in place and time by the sound quality and the range of sound materials that are assembled. Similarly, Brian Eno notes how the characteristic limitations of a medium such as "grainy black and white film, or jittery Super 8, or scratches on vinyl," communicate "something about the context of the work, where it sits in time, and by invoking that world they deepen the resonance of the work itself" ("The Revenge of the Intuitive").

Many striking examples of this process were aired as part of National Public Radio's series of reports entitled "Lost and Found Sounds," which used a range of old recordings to explore both personal and national pasts.⁶

10. Eno's remarks suggest an understanding of the function of media—one more limited than media theorist Marshall McLuhan's—that is particularly useful in this context. The Pink Floyd example demonstrates how media shapes its message, comparable to the way language shapes a communication ranging from the addition of an accent to outright translation into another tongue. When a technology is current we are trained to overlook its limitations and believe the promises of transparency and fidelity. The story has been dominated by the dialectic of music and noise, with the battle lines drawn over frequency range, distortion, scratches and pops, hiss and rumble. Yet rather than a battle, it was more of a cold war: reducing and eliminating these imperfections was a major concern, but it was never possible. Listeners have always had to learn to listen past these sounds, to filter them out, to keep the medium distinct from the message. At each stage of the development we are told that we are finally being given the truth: the authentic sound and performance just as if we were in the concert hall, or the musicians there in our living room. But when technology is replaced the limitations come to the fore; the veil of transparency is lifted and we are forced to start listening to the accent as all the repressed characteristics of the old emerge with shocking clarity. Before color television came along most viewers probably learned to not notice that they were watching black and white. The hype around high resolution TV promises a similar revelation of a whole sphere of detail, depth and reality we don't yet know that we are missing. In musical terms, this process has been repeated over and over again in the progression from wax cylinders to Digital Audio Tape.⁷
11. In "Wish You Were Here," the hierarchy of technologies and the march of progress are by no means questioned; indeed the special sound quality of the AM radio serves to underscore the immaculately recorded acoustic guitar, engineered to sound as if it were immediately before us. The clarity of the sound, together with the conjuring up of the body through the sounds of breathing and the physical act of tuning the radio, all combine to offer us an authentic human presence. Thus the song presents the old technology of the AM radio as limited and implicated through the link with the previous song as corrupted by commercialism. By the same token, this passage depends on and even fetishizes the capabilities of current recording techniques; the particular sonic effects of old machines used here demand in turn the new technologies of FM radio and high-end stereos. In other words, much of the effect of this passage would be lost if you were only able to hear it on the AM radio it represents. Yet in "Wish You Were Here" this framing technological dimension is disguised; we are not meant, I believe, to be aware that we too are listening to a recording or to think about the record executives who helped to bring it about, but rather to imagine ourselves there in the room

playing the guitar.⁸

12. The lyrics of the song deal directly with the problem of presence and absence, authenticity and artifice, asking us to distinguish "heaven from hell, a green field from a cold steel rail." Yet the doubts raised in the lyrics are countered by the sonic narrative of the song which clearly locates its technological materials in a developmental plot, which places the listener in a specific temporal and national space, and which mystifies its own technological apparatus.
13. To illustrate the emergence of different ways of perceiving old technologies in the quarter century since *Wish You Were Here*, the Pink Floyd example can be contrasted with a range of more recent pieces that present the combination of old and new technologies in ways that reconfigure or undercut such assurances about the relation of past and present, and that call into question notions of progress, of location, authenticity, and expression. The song "Undenied," by Portishead, from the album *Portishead* (1997), uses a similar opposition of technologies as in "Wish You Were Here," but reduced down to a single element and to a very different effect. Both the music and lyrics of this band are highly referential and stylized, constructed from a broad range of samples and allusions to outmoded styles, old musical instruments like the Theremin, and old movie sound tracks. Lead singer Beth Gibbons similarly adopts very different personae in each song—reflected in some cases by extreme modifications to her vocal timbre—which has led Simon Frith to describe her as a "torch singer without the anxiety," and "feminine without tears" (277). But in spite of a certain ironic distance in the words and actual musical materials, Portishead can produce a very strong emotional charge. In many cases, I would attribute this directly to the way the band foregrounds recording media and musical technologies to engage tradition and to manipulate memory and time.
14. A crucial element in the march of progress in recordings was the problem of turntable rumble and surface noise with vinyl LPs. With the marketing of CDs the main emphasis was on the total silence of the background. In "Undenied," the opposition of the sound of a very scratchy record and digital silence become an integral part of the composition. After a short introduction of soft static electric piano chords, a noisy rhythm track suddenly begins, marked by a bright cymbal rhythm embedded in a haze of vinyl noise. These background scratches and pops continue throughout much of the song, providing a tense, highly-charged backdrop that underscores the obsessive nature of the sexual attachment described in the lyrics. But at two key moments this veil of noise abruptly drops out; first just before the voice enters and then at the restrained climax of the song—with the lyrics:

For so bare is my heart, I can't hide
And so where does my heart belong
Now that I've found you
And seen behind those eyes

How can I carry on.

15. These moments when the digital and analog collide are particularly marked because the other musical materials in the piece are intentionally so limited and repetitive. The effect is very different than in Pink Floyd's "Wish You Were Here," where the flawed sound of the radio was contrasted with the purity and presence of the guitar sound and the careful construction of the sound space of the room. Here when the scratchy noises and cymbal hiss drop out we are confronted with a desperate emptiness. Through the lyrics the vinyl noise becomes the embodiment of the obsession; the thought of absence results in the moment of absolute emptiness represented by the digital silence, now made horrible and empty.
16. The way "Undenied" invests so much emotional energy into the contrast between the fractures and defects of the old sound while at the same time exposing the hollowness of the framing technology, also points to a surprisingly uneasy fit between such examples and Frederic Jameson's notion of postmodern pastiche. To be sure, the fashion for old sounds and "retro" technologies repackaged in new eclectic contexts has significant points of contact with Jameson's formulation of pastiche, in which any sense of pastness or history and thus of innovation is no longer possible: "all that is left is to imitate dead styles, to speak through the masks and with the voices of the styles in the imaginary museum" ("Postmodernism and Consumer Society" 115). The music of Beck, or Coldcut, for example, could illustrate such a claim with their extreme eclecticism, and mixtures of genre and styles. Beck's song "The New Pollution" from *Odelay* (1996) starts with a bizarre collage of electronic bleeps and machine noises that sound as if they were taken from a primitive video game, combined with music that might have come from a television commercial or a game show. This cuts suddenly into a "cool" dance track featuring melodic and timbral allusions to every decade of pop music; later there is a quintessential "cheesy" sixties organ solo. That this solo includes a small mistake might be taken to underscore its function as a generic placeholder for an "organ solo" rather than some musician's "authentic" musical utterance. The emotionally flat singing style is matched by lyrics that present a sort of surreal linkage of advertising phrases, with disconnected human, natural, and technological images:

She's got a cigarette army charm
She's got the lily white cavity crazes
She's got a carburetor tied to the moon
Pink eyes looking to the fruit of the ages.⁹

17. Yet such explicitly ironic approaches to old sounds are rarer than one might expect, at least in the main stream of popular music where the emphasis is more often than not on generating an emotional response. Far more common are pieces in which old technologies and machines figure in a search for authenticity and wholeness. Such techniques are particularly common in the world of advertising and the mass media where yellowed photographs or

grainy home movies with washed-out colors evoke the baby boomer's lost childhood. A particularly relevant example of such a practice was the ad campaign for the Dean Witter investment house (aired 1998-1999), which recreated 1950s archival footage supposedly presenting Dean Witter himself laying out sound financial policies. Such modes of representation of old technologies can be linked to Jameson's category of nostalgia films—which significantly includes both *American Graffiti* and *Star Wars*. For Jameson, nostalgia films attempt to restore a missing past through old aesthetic artifacts. He describes George Lucas's complex representation of the future in *Star Wars* through the stylistic lens of the past, as with the design of Luke Skywalker's landspeeder, which resonates with the classic 1950s car in *American Graffiti* ("Postmodernism and Consumer Society" 116). Cameron Crowe's recently released film, *Almost Famous*, provides a particularly relevant example of this technique. The title sequence evokes the early seventies rock scene by slowly panning over an assemblage of LP album covers, concert paraphernalia, and eight-track tapes. Notably, the production company that produced *Almost Famous* is called Vinylfilms.

18. Such nostalgic and recuperative intentions are evident in a great deal of music that samples old sounds and recordings, or more directly with bands like Counting Crows that attempt to restore the sound of classic rock by returning to "authentic instruments" current in the sixties such as the Hammond B3 organ. Significantly, this trend has continued across the divide from vacuum tubes to transistors with the revival of interest in the "quirky" sounds of an earlier generation of analog synthesizers from the seventies. In this framework the defining characteristics of the older technology are valued over the new, rather than brokenness or obsolescence, musicians speak of the warmth, authenticity, humanity, and even sexuality of analog sounds, tube amplifiers, and vinyl LPs, as compared to the coldness, inauthenticity, and disembodied character of digital recording, integrated circuits, and compact discs (Goodwin 1988 265, Théberge 207-13). Eno describes how the apparent "weaknesses" and limitations of instruments and media, these aspects regarded as "most undesirable," become "their cherished trademark." (see fn. 6) There are, to be sure, genuine demonstrable acoustic reasons for the strength of feeling on this subject—digital media do have certain limitations in contrast to analog—but the terms in which the debate is carried out suggests that the issue goes far beyond the aural dimension. In a 1999 *Spin* magazine interview Matt Sharp of The Rentals remarked, for example,

Analog synths are a lot more sexual than digital synths. I definitely have a relationship with them that goes beyond man-and-machine. They'll work for one take, but on the second one they'll change completely. They're like "Fuck you"—like a stuck up cat. ("Man in the Moog" 52)

19. Perhaps the most common way the "warmth" of analog is evoked is through the use of the sound of scratchy surface noise in the background. The approach is similar to what happens in the Portishead example above, but without the

disruptive intrusions of silence. Instead, the sound of vinyl provides a soothing blanket of noise, giving the other musical material a patina of age and physicality—as if to restore Benjamin's lost aura to the work by reembedding it in the fabric of tradition.¹⁰ The way the sounds of old machines are used in this recuperative or restorative mode can be compared to what happens in Pink Floyd's "Wish You Were Here," in that both depend for their meaning on the presentation of an earlier sound world while rendering transparent the modern apparatus that makes it all possible. Indeed the effect of authenticity depends on investing the old technologies with the illusion of reality, through techniques that can be compared to the "reality effect" in film theory.¹¹

20. Trip hop band Alpha created a similar sort of "reality effect" in the song "Over" from their 1998 release *Pepper*. Here the sound of a scratched record is at first foregrounded and then absorbed into a rhythm track with which it remains perfectly synchronized and integrated for the rest of the song. What in the age of vinyl would have been interpreted as a flaw, as a sign of brokenness, is here reinscribed as "antique" and located in a sphere of comfort defined by the band's use of samples by Herb Albert and other soft music of the seventies. Only at the very end is a disturbing element introduced with a distorted vocal sample that undercuts the preceding calm.
21. Significantly, this synchronized scratch effect could only happen with a sampled record scratch. If this were an actual scratch on an actual vinyl disc the inward spiral of the tracks would not allow the scratch to stay in rhythm with the music.¹² This manufactured defect is typical of what can be done with hardware and software tools now available to musicians, which, as Stan Link has described, make it easy to introduce the non-linear response of analog instruments, all aspects of turntable noise, and the blurring, static, and distortion associated with the sound of lo-fidelity.
22. The character of "Over," which contrasts sharply with the more manic dance pieces earlier on the CD, can be explained by its concluding function as the last track, bringing the listener down to a contemplative state. A similar technique is used at the end of *Mezzanine* by Massive Attack (1998) which recreates the silent scratchy bands at the end of a record, thus capturing the moments of afterglow when an album was over before you lifted the needle. The last track of the 1999 release *Play* by Moby uses a related effect in the song "My Weakness." The piece features a grainy sample of choral singing, as if overheard across a great distance of space and time. Significantly, as the source for the sample is not identified in the liner notes, it enters into the vague and timeless category of "historic field recordings" of African-American music from the first half the century from which many of the samples are drawn on the CD.¹³ We hear the sounds through a dense mist of scratches, hiss, and added echoing effects, and gradually the choral sounds are swallowed up in synthesized strings and resonant piano chords evoking a Coplandesque Americana.

23. It is not coincidental that all three of the preceding examples of an intensely nostalgic and restorative use of old sounds are the final tracks on the recordings, thus embedded from the start with a sense of endings, memory, and the past. It is as if the intentionally faked antique character is understood and acknowledged on some level as a sort of imperfect and ultimately futile consolation. In comparable terms, Paul Théberge cites Jonathan Crane's commentary on the "interpretative instability," produced by "Golden Oldies," as "the airing of past hits ultimately mak[ing] us even more aware of our affective place in the present" (205-6).
24. The underlying elegiac character of Moby's "My Weakness" and many other pieces that sample old sounds—as if mourning for what is irrevocably lost in the past—has a significant racial dimension. The search for authenticity and wholeness has often been bound with notions of whiteness and blackness. Many of the compositional techniques discussed here originated in hip hop music, and pieces draw explicitly on a range of African-American styles. Tricia Rose has described rap music's involvement with "faulty, obsolete equipment" and the deconstructive techniques of using machines against their original purposes: "Worked out on the rusting urban core as a playground, hip hop transforms stray technological parts intended for cultural and industrial trash heaps into sources of pleasure or power" (22). While acknowledging the critical and oppositional aspects of these reconfigurations of technology, she emphasizes the recuperative intent of hip hop sampling by linking it to black poetic traditions and cultural forms. Rose describes the prevalent sampling of Motown recordings, and rhythm and blues within hip hop as "paying homage, as archival research, as school" (74-75).
25. The situation is more complicated when, as is often the case, hip hop techniques and samples are taken over by white DJs or musicians. Certainly there is still a concern with paying homage, of archival research, of capturing something of the presence of James Brown. The liner notes for DJ Shadow's *Entroducing* from 1996, proclaim "This Album reflects a lifetime of vinyl culture," and "All respect to James Brown and his countless disciples for inventing modern music." The cover illustration shows a record store with customers flipping through stacks of vinyl LPs. FatBoy Slim's *You've Come a Long Way Baby* similarly shows a wall full of sagging shelves stuffed with vinyl. But there are inevitable anxieties that seem to accompany this pursuit of the real through the sampling of African-American music. This is dramatized in many pieces through the opposition of black voices, with recordings of stereotypical white voices, often explicitly linked to main stream media, corporate America, educational films (see, for example, FatBoy Slim's "Rockafeller Skank.")
26. Anxiety about the ultimate failure of efforts to capture a sense of wholeness or reality through old sounds and samples strongly marks the music of The Lo-Fidelity All Stars. On their *How to Operate with a Blown Mind*, (1998) the

British band makes extensive use of scratchy records, and old instruments, and samples, many of which are taken from African-American music. But their treatment of the borrowed materials emphasizes their artificiality and age, their status as quotations. Simon Reynolds has written of the poignant effect of this "Dance Music from England with a Dark Side," as reflecting "the plight of the contemporary musicians whose memory is overloaded with echoes from the past (40). This is particularly clear in "Nighttime Story," again the final track on the album, which is assembled from layered loops of a drum track, distorted African-American voices, and a soul singer. Underlying it all is an antiquated melodramatic organ, alternating between two chords with an intense soap opera/funeral home tremolo.

27. The sampled musical elements initially seem incompatible with the verbal images in the spoken text that introduces the piece:

Bombers rip across the screen
laying waste to city's dreams
and what's it all going to mean/
when audio psychosis spills
from the speakers' cones
and you can hear the music tear
tearing through your bones.

Each sample by itself would seem expressive, affirmative, and hopeful as they repeat, "Peace brother Peace," "Keep on, keeping on," and "Come on back to me." But the obsessive mechanical repetitions of the loops and their superimposition prevents the listener from accepting them as genuine or grasping hold of them—with every repetition they slip further away. The process culminates when the loops suddenly stop and a recorded white voice, with a "square" American accent as if from some '50's film, says, "I had no idea it had to end in such tragedy." The CD thus ends with a real sense of loss, but it is as if no one remains to feel it.

28. But the use of old sounds and old technologies does not have to end in such tragedy. In the emotional intensity with which technological obsolescence and broken machines are invested there is simultaneously a possibility of moving beyond irony or uneasy dissembling. Although he was operating in a very different context, Adorno's commentary on Walter Benjamin's claim that history needed to be written from the standpoint of the vanquished rather than the victor is relevant in this regard. Along with the "fatally rectilinear successions of victory and defeat," Adorno writes that knowledge "should also address itself to those things which were not embraced by this dynamic, which fell by the wayside—what might be claimed the waste products and blind spots that have escaped the dialectic. It is in the nature of the defeated to appear, in their impotence, irrelevant, eccentric, derisory" ("Bequest" 151). The sounds of broken down and discarded machines, I believe, offer just such an example of "cross-grained, opaque, unassimilated material," that concerned Adorno, but I see them not as signs of failure but as evidence

of survival. That there is an subversive potential inherent in old technologies—made explicit as Rose shows in hip-hop music—might be anticipated already in Michael Oldfield's opposition of glorious stereophonic sound against an old monophonic tin box, criminalized and thus somehow very threatening.

29. The Portishead song "Cowboys," can illustrate this critical potential. Embedded in a tense sonic environment, gritty with the noise of vinyl, the song features a very peculiar guitar solo that is based on the central icon of rock authenticity: a highly distorted guitar chord. But as we listen on it become clear that the guitar sound is a sample as it is looped again and again. Its revelation as artificial, even a mechanized hoax, resonates with the text:

Did you feed us tales of deceit
Conceal the tongues you need to speak
Subtle lies and a soiled coin
The truth is sold, the deal is done.

30. "Cowboys" marks a clear contrast to the recuperative mode of the Alpha example that presents the old as authentic and whole, and the framing contemporary mechanisms as invisible. The treatment of the guitar sample within the noisy space not only foregrounds the fragility and imperfections of the old materials, but exposes their artificiality. Thus there is no question that the guitar sound is a fake. Yet the song does not lapse into the elegiac character of the Moby piece or the resignation of the Lo-Fidelity Allstars example. Rather, and with explicit appeal to hip-hop techniques, a barrage of virtuosic and almost maniacal turntable scratching reanimates the copy with tremendous energy and intensity. The point is not that Portishead is working here with "white" materials—though this aspect of their range of stylistic references is significant¹⁴—but rather that their approach stresses the artificial quality of all the borrowings. Inauthenticity thus becomes part of the compositional material, recalling Adorno's remarks about Mahler's use of obsolete and second-hand material: "The enemy of all illusion, Mahler's music stresses its inauthenticity, underlines the fiction inherent in it, in order to be cured of the actual falsehood that art is starting to be" (*Mahler* 30).
31. By shattering the reality effect and "coming to consciousness of themselves as media," such a piece might be thought of as approaching what Jameson calls the possibility of a new political art. Such an art, he writes,

will have to hold to the truth of postmodernism, that is to say, to its fundamental object—the world space of multinational capital—at the same time at which it achieves a breakthrough to some as yet unimaginable new mode or representing this last, in which we may again begin to grasp our position as individual and collective subjects and regain a capacity to act and struggle which is at present neutralized by our spatial as well as our social confusion. (1991, 54)

32. No doubt this is quite a lot of weight to place on such a brief and peculiar musical passage as this excerpt from "Cowboys."¹⁵ And certainly, any sort of political potential in such techniques should not be overstated. Such music, as Andrew Goodwin says of Philip Glass, Brian Eno, and Laurie Anderson, would seem to call for listeners who have the "cultural capital" to decode its broad range of references ("Popular Music" 88). But I would argue that with this "guitar solo," patched together as it were from a single surviving fragment of sound, an instrument that has been too often deadened and soiled through decades of cliches and artificial emotion, has been brought to life once again.

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ENDNOTES

* Early versions of this essay were presented at the Humanities Institute at the University at Stony Brook (April 1999) and the "Revival of Obsolescence" session at the International Association for the Study of Popular Music, Murfreesboro, Tennessee (October 1999). The session included two other papers that dealt with closely related material, "John D. Seibert Davis, "Not Quite Dead: Vinyl Records and the Consumption of Obsolete Media," and Stan Link, "The Work of Reproduction in the Mechanical Aging of an Art: Noise and the New Nostalgia." Special thanks to Lloyd Whitesell, David Brackett, Timothy D. Taylor, and the two readers from *ECHO* for their comments on the manuscript. Many thanks as well for ideas and recommendations to Lisa Barg, Theo Cateforis, Jason Hanley, Margaret Martin, and Kirsten Yri. I am particularly grateful to Erik Robinson for technical help with the examples.

¹ See especially Théberge, *Any Sound You Can Imagine*.

² There is, of course, a close relationship between Adorno's ideas of the development of compositional technique and material in music and more general technological developments. See Paddison, *Adorno's Aesthetic of Music*, 127. For a more focussed study of technology that uses the Frankfurt school as a starting point, see Andrew Feenberg, *Critical Theory of Technology*.

³ For a wide-ranging study of the social and cultural contexts for how technology and music have interacted see, Timothy D Taylor, *Strange Sounds: Music, Technology, and Culture in the Postwar Era*. See also Theodore Cateforis, "Are We Not New Wave? Nostalgia, Technology, and Exoticism in Popular Music at the Turn of the 1980s."

⁴ Many thanks to Tim Taylor for bringing this article to my attention.

⁵ I do not address here the significant gender issues connected to music and technology, particularly the striking popularity of genres that combine female voices with electronic dance music, often in contexts that feature old sounds. See, for example, Portishead, Lamb, Mono, Broadcast, Massive Attack, and Björk. Among the recent studies that do focus on gender, see Barbara Bradby, "Sampling Sexuality: Gender, Technology, and the Body in Dance Music."

⁶ The series is described on the NPR website as follows: "Beginning Friday, January 29, and continuing on Fridays through January 2000, NPR's® All Things Considered® presents "Lost & Found Sound," a series of stories and sonic snapshots that capture American 20th century life through recorded sound. A collection of richly layered stories, "Lost & Found Sound" explores the ways recorded sound captured and changed the course of history, and how the sound of daily life has changed over the last hundred years."

⁷ Though with special significance for the present context, the rise of the MP3 format, which depends on the widespread acceptance of a lower sound quality, is further evidence of the extent of the transformation in attitudes towards audio technology.

⁸ Edward Macan cites band member David Gilmour as saying, "the effect was meant to suggest a fan playing along with his or her radio on acoustic guitar" (122).

⁹ For more on the relationship between sampling and music as commodity see Théberge, *Any Sound You Can Imagine*, 204-205.

¹⁰ For a detailed exploration of related issues, see Link "The Work of Reproduction in the Mechanical Aging of an Art: Listening to Noise."

¹¹ Ann Kaplan has discussed related techniques in music videos: techniques such as "shot/countershot, continuity editing, the 180 degree rule and so on, give the spectator the illusion of creating the images, suturing him/her into the narrative flow. Theories have claimed that it is the very "reality effect" produced through these devices that ensures the texts remaining safely with the dominant ideological constructs" (40).

¹² Thanks to my colleague Dan Weymouth for making this observation.

¹³ In a June 1999 interview with *Rolling Stone*, Moby was asked about taking "samples of black music from the first half of this century" and binding them to hip-hop and dance rhythms. In his response he speaks of finding "old field recordings," including some by Alan Lomax. See Rodd McLeod, "Moby Makes His Latest Play," *Rolling Stone.Com*.

¹⁴ Andrew Goodwin makes a related point about how British bands like Portishead have refused "the particular version of funkiness" in the early 1990s with the dominance of rhythm samples from James Brown (1998 127).

¹⁵ Frith writes of another Portishead song, "Sour Times," from *Dummy* (1994) in strikingly similar terms: "The sampled sound from a Lalo Schifrin *Mission Impossible* LP places the track in space, not time, in the suspended space of the traveler, caught between West and East, past and future ... I decide that no record better captures the pop aesthetic at this time, in this place—not for its utopian or dystopian vision, but for its determination to be heard, to give cultural confusion a social voice" (278).

Auner, Joseph. "Making Old Machines Speak: Images of Technology in Recent Music." *Echo: a music-centered journal* 2/2 (Fall 2000). <http://www.echo.ucla.edu/volume2-issue2/auner/aunerframe.html>. Google Scholar. Chang, Jeffrey. *Can't Stop Won't Stop: A History of the Hip-Hop Generation*. - No HTML tags allowed - Web page URLs will display as text only - Lines and paragraphs break automatically - Attachments, images or tables are not permitted. Please enter your response. Your details. technologies"those that have computer hardware, software, and networks at their core. These technologies are not brand-new; businesses have been buying computers for more than half a century, and Time magazine declared the personal computer its "Machine of the Year" in 1982. But just as it took. Spread has been increasing in recent years. This is a troubling development for many reasons, and one that will accelerate in the second machine age unless we intervene. The final section"chapters 12 through 15"discusses what interventions will be appropriate and effective for this age. What is it about their work that makes it harder to digitize than what human computers used to do? Computers Are Good at Following Rules . . . The advancement of technology has made communication unbelievably fast and convenient. It's incredible to look back and see how much easier communication has gotten over the years. Communication tools offer one of the most significant examples of how quickly technology has evolved. This makes the whole process easier for seniors with mobility issues with writing or who would rather speak out loud than make a list on a phone. Many of these devices even integrate directly with online shops. With the Amazon Alexa, you can immediately make Amazon purchases without ever having to go online. Machining is a process in which a material (often metal) is cut into a desired final shape and size by a controlled material-removal process. The processes that have this common theme, controlled material removal, are today collectively known as subtractive manufacturing, in distinction from processes of controlled material addition, which are known as additive manufacturing. Exactly what the "controlled" part of the definition implies can vary, but it almost always implies the use of machine tools...