REACTIONS TO ANALOG FETISHISM IN SOUND-RECORDING CULTURES

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ABSTRACT

Analog fetishism, a highly visible trend in the popular discussion of digital-age sound recording, embodies a technologically deterministic understanding of music and presumes a fundamental split between digital tools and their analog predecessors. This study situates the phenomenon in the context of sonic categories from which musical value systems draw their signifiers and to which digital-age advancements pose a disruption. The case of lo-fi music and home recording is given special consideration as an example of a musical genre ethic embedding specific relations to recording technologies. An examination of online sound-recording forums, alongside careful consideration of the technologies involved, reveals a strong tendency among recordist communities toward the rejection of technologically deterministic attitudes and toward the reemphasis of performative work as driving musical creation.

ANALOG NOSTALGIA HAS LONG BEEN VISIBLE, EVEN MEASURABLE, IN DIGITAL-AGE POPULAR culture: while sales of CDs have steadily declined since the development of portable MP3 players, sales of vinyl records have experienced a resurgence.[1] Music marketers display an awareness of analog nostalgia in advertising that touts, for example, the absence of digital tools in a record's production or emphasizes the authenticity of an artist's sound. Joseph Auner investigates the significance to musical activity of purportedly obsolete technologies in general, citing the digital/analog divide as one aspect of the trend: "The resurgence of interest in old and out-moded media, sounds, and machines goes far beyond any simple 'retro' aesthetic or nostalgia, but raises issues 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."[2] Auner argues that "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."[3] Here Auner raises authenticity as a key facet of the attachments recordists form to aging technologies, providing a compelling but incomplete answer to the question: What quality of musical recordings do analog fetishists believe these technologies to impart?

Within the scope of music production (but still universal enough to have found voice in a feature-length documentary by Dave Grohl),[4] intense praise and nostalgia for predigital recording devices veers into what Karl Marx identified as commodity fetishism: "The productions of the human brain appear as independent beings endowed with life, and entering into relation both with one another and the human race."[5] This analog fetishism depends on the same "imputed characteristics" that Paul Théberge, citing William Leiss, sees in the adoption of digital sound tools.[6] Leiss defines imputed characteristics as "those that people believe to be present in things" (guided in this belief by advertising and other social activity under the umbrella of consumerism)

DOI: 10.7560/VLT7405

and argues that "commodities are not straight-forward 'objects' but are rather progressively more unstable, temporary collections of objective and imputed characteristics—that is, highly complex material-symbolic entities."[7] The work of recordists engages intimately, as we will see, with recording devices as such entities.

At the same time that Théberge sees digital audio tools taking on imputed characteristics, the phenomenon happens perhaps even more strongly in a resistive push toward predigital tools and practices. The symbolic functions of analog recording tools, and a major justification for the fetishistic view that they impart value to the music in whose recording they are utilized, derive from the audible marks left by the technologies on those recordings. Nowhere is the centrality of these machine-imprints to the values of a musical culture more evident than in the lo-fi aesthetic. Developments in consumer recording technology, a decade before digital systems entered professional studios, helped a movement based in home recording flourish. Subsequent genres and creative ethics placed home recording in a central role and prized the subversion of industry standards like sonic fidelity and commercialized distribution. Indeed, lo-fi music celebrated the idea that untalented—or rather, unconventionally talented—people could make records long before Pro Tools came along; some of it, incidentally, helped lay crucial social infrastructure for Grohl and other musicians.[8] Digital disruptions of these subverted sociotechnical categories have presented crises not only for the subcultures themselves but in the more widespread recording practices in which their values have come to be reflected by way of aesthetic and social musical influence.

This article investigates how present-day recording practices engage with the fetishization of analog technologies and identifies what this engagement reveals about the creation of musical value in the age of digital recording's predominance. Amateur and professional recordists frequently contend with analog fetishism on the part of their clients, their collaborators, and in some cases themselves. Their reactions reveal a trend of resistance to such fetishism that decries technological determinism and emphasizes musical value as conceived in the performative work of musician and engineer.

Online communities present a vital resource to this project in their capture of the problem solving and opinion airing that inform the real recording practices of their members. Crucially, these forums exist within a long trajectory of knowledge sharing among sound engineers, presenting an Internet-age venue for the pre-Internet and predigital modes of the craft's development. Susan Schmidt Horning explores how the role of the professional recording engineer has evolved alongside advancements in recording technologies, finding that "recording practice has retained craft skills and informal knowledge systems despite the steady growth of, and increasing dependence upon, complex technological systems."[9] Horning maintains that tacit knowledge and mentor-protégé modes of learning have retained a central place in the way recording engineers acquire their aesthetic and technical expertise. In these online communities, tacit knowledge occurs through collective problem solving and through the case-by-case transmission of proven solutions into new contexts. In their commingling of technical advice, opinion, and anecdotes, online recording communities produce what Carolyn Marvin describes as "a secondary content of social news, editorial comments, and short anecdotal articles that provided a less earnestly self-conscious arena of discussion" in her study of eighteenth-century electrical engineering. "The casual tone and location of this material, at the interstices of the strait-laced technical and professional documents which announced that electricians were busily engaged in their calling, made it ideal for expressions of the concerns closest to their hearts."[10]

Analog fetishism is realized on the side of music's creation through the belief that predigital sound technologies can add value to the recordings they generate. This project examines how that belief affects the work of digital-age recording engineers and what it reveals and changes in the way value is granted to musical recordings. More than the technologically mediated transcription of a musical performance, sound recording is itself a performance, in which engineers work actively to translate a musical conception into a reproducible entity. Analog fetishism, to the frustration of engineers who encounter it, ascribes the vivacity achieved by great engineering to the tools of recording rather than to the engineer. Digital sound technologies, while acknowledged as a threat to the aesthetic qualities that have come to distinguish certain cultural values, maintain and in many cases bolster the performative status of recording. In resisting analog fetishism, recordists have emphasized a digital-age value system that ascribes deterministic power to the song rather than to the machine and that reconciles the technology of digital recording with the communication of artistic vision.

These values set the stage for new possibilities in digital-era aesthetics, politics, and participation as artists move beyond nostalgic conceptions of sound and technology.

RECORDIST COMMUNITIES AND DIGITAL DISRUPTIONS

Scholars have portrayed the sudden propagation of digital and networked sound technologies in as extreme a light as "what may be the most fundamental change in the history of Western music since the invention of music notation in the ninth century."[11] Timothy Taylor justifies this claim by pointing to the erasure of physicality and degradation from the storage of sound recordings but also to the possible disappearance of performance from digital-era music: "This music can be realized by a single person with a home studio consisting of a computer and a few electronic musical instruments, and much of it is. No performers are required; indeed, there is no 'performance' in a conventional sense."[12] Taylor's definition of performance excludes the work of this software user and, by implication, requires in performance a temporally distinct activity that is absent from the atemporal sound building he describes. Prevailing opinions among present-day recordists indicate a broader definition of performance, welcoming the (often atemporal) choices of the producer as performative work. Additionally, live performance of physical instruments remains strongly coupled to certain musical genres, especially those around which recording-centric cultures have developed. These cultures, having arisen prior to the advent of digital technology, acknowledge and contend with digitally enabled practices. Their reactions to "the digital" span resistance, caution, acceptance, and innovation.

In observing the fetishization of predigital recording technologies, we must understand the ways that cultural and aesthetic relationships have coevolved with the technologies in question. The concepts of fidelity and production provide two particularly active loci. These terms are invoked and understood quite differently in contexts that fall variously along a line from purely technical concern to the vocabulary of casual listenership. They lie in complex and often confused relation to the work of musicians, audio engineers, and listeners. As Aiden Evens contends, such polysemy is a "productive ambiguity" that "connects disparate disciplines" and is thus key to the work of sound studies as a highly interdisciplinary field. The insight-giving benefits of juxtaposing different uses do not derive from simple conflation or confusion but from a careful study of "phenomenologically verifiable" interactions among meanings.[13] These interactions, and the disparities in understanding among listeners, artists, and engineers, form a critical context to the firsthand study of recordist accounts.

For the purposes of this study, the archives of two web forum sites—the Pro Recording Workshop and the Tape Op Message Board—were sampled as representations of opinions held among professional engineers and recording enthusiasts. The sampling was keyword-driven, with terms identified as indicators of potential crises in sound engineering perspectives both during literature review and during the forum analysis itself. This set of terms, including "authenticity," "lo-fi," and "analog," was used to select conversations that centered on issues directly pertaining to disparities between digital and analog tools and the negotiation of musical or sonic authenticity. Findings from the analysis of these conversations and their related materials were grouped by the focuses of their arguments or contentions, as the material that connects a given conversation to the research questions of this study often emerges from the refinement of a central problem later in a discussion thread rather than immediately from its initiating post.

LO-FI, CREDIBILITY, AND CONTRADICTION

In the Pro Recording Workshop group of forums, the term "lo-fi" appears more often as a descriptor of a desired sound than of an undesirable quality. In one thread under PRW's music production forum, users asked engineer Brad Wood questions about his recording of the first albums by the indie rock musician Liz Phair. One user inquired, "How did the lo-fi-ness of the debut come about? Did you deliberately hold that up as an aesthetic, or did it just seem like the best way to capture what was going on for the artist at the time? That sort of thing is very fashionable right now but was much less so than [*sic*]. Did you have any fear (as I often do today) of the record being perceived as 'poorly engineered' when you chose from the lo-fi sonic palette?" This user's definition of lo-fi treats it as an aesthetic category of sound qualities. His concerns over fashionability situate the topic squarely in the field of artistic choice, though by describing a threat to perceived quality of *engineering* rather than of *production* he ties these concerns to technical work. Later in the thread he

specifies that what he means by "lo-fi" is a "lack of slickness or artifice" that he considers "much harder to achieve than the polish that many people seem to expect from a 'recording studio' experience." For him, the sounds in question are characterized by immediacy and adherence to the musical artist's real character or presence.

Oddly enough, this definition drifts strongly toward *high* fidelity in a technical sense. While the user understands the "fi" in question to refer to conventional norms of studio enhancement, in the technical sense fidelity is maximized by lack of interference with the captured sound, whether via mechanism noise or studio manipulation. Wood's reply reflects this confusion over the term when he states, "I don't for a second think that [Phair's first record] Exile In Guyville is lo-fidelity in any way. The microphones we used were/are the best the available . . . and the recording format was a robust analog."[14] Wood's definition of lo-fi is strongly grounded in a technical understanding of fidelity, determined largely by the precision of the equipment and media used; the questioning user's definition tends much more toward the aesthetic. Their exchange sharply highlights two divergent aspects of fidelity and its applicability to music production.

Different attitudes toward fidelity embody fundamentally different relations to sound technologies. Paul Théberge, commenting on fidelity and what others identify as audiophile culture, suggests that "the aesthetics of 'high-fidelity' have reinforced the idea that microphones, amplifiers and speakers are *reproductive* technologies, that they are, by design, transparent in their operation."[15] The idea of certain technologies as reproductive and transparent emphasizes a correlation of high-fidelity values with Walter Benjamin's *tekhne* and stands in opposition to the values of lo-fi. Lo-fi aesthetics depend on the nontransparent imprints left on recordings by the equipment used to produce them as signifiers of the music's origin and legacy. Noise (e.g., the distinctive "hiss" left by cassette systems) is the most salient of these signifiers, tangibly reflecting the imputed characteristics of recording technologies.[16] Jonathan Sterne, rebutting Jacques Attali's claims as to the disruptive power of noise in its artistic use, finds the technology of perceptual coding to have achieved a "domestication of noise."[17] The transition into a recording culture predominated by digital tools has placed noise at the center of the cultural fetishization of predigital technologies. "Digital recording technologies may do just as much to standardize the sound of music—through the proliferation of standards and presets and the tastemaking done by mastering engineers—as to challenge those standards. . . . Far too often artists still fetishize noise as transgression or a challenge."[18] New technologies have required the reassessment of noise (and, by extension, the role of recording technology's sonic imprints), yet old conceptions carry over.

Greg Hainge (quoted in *Noise Channels*) argues that "the history of the development of different audio formats from wax to vinyl to tape to CD, indeed, seems itself to be driven by a single-minded, stubborn desire to render the communications system or medium entirely transparent (or inaudible, rather) and to eradicate entirely any interference coming from the system or the medium itself so that we can instead focus solely on the pure audio content of our choice."[19] For the adherents of glitch and noise music whom Hainge investigates, a compelling subversion lies in exploiting these purportedly transparent new media at the points where error makes them audible. Technonostalgia pursues value by looking in the opposite direction: seeking to preserve the audibility of older media. Both tendencies run counter to the goal of fidelity, which in its technical definition is bolstered by the increased transparency of a sound's containers.

Thomas Porcello identifies a tension between perceived fidelity and recording practice in a sound that is live in feeling while heavily mediated in construction. "The Austin[, Texas,] sound exists both at the level of musical genre and at the juncture of the performance practices and sonic characteristics of the music. More than an aesthetic, however, it is also a deeply political stance toward the value of local music practices"—we can understand the Austin sound much in the same way as lo-fi, as a politically directed genre ethic. In this case, "live performance is the hallmark of this valuation," and the artists and engineers behind the sound must confront the predicament of "how to maintain the sincerity/liveness link despite a recording process that rarely relies fully—or in most cases even predominantly—on live, uninterrupted ensemble performances."[20] Porcello goes on to describe a similar set of seemingly liveness-removing practices yet ultimately concludes that the particular technological and social mediations enacted by Austin recordists "vigorously guard the social value of liveness, in ways that often render the boundary between 'mediated' and 'live' indistinct," in that "both can be used to mark a local musical identity resistant to the hegemony of the record industry."[21] The social ends

toward which liveness and fidelity work can operate in unison with seemingly contradictory technicalities.

While digital technologies greatly increase the ease of high-fidelity transmission in the purely technical scope, a similar phenomenon to noise's fetishization in the face of perceptual coding occurs: cultural attachments to fidelity linger, both granting added value to the remaining parts of the chain and conflating the loss of fidelity's relevance with a loss of fidelity itself. The cultural positioning of fidelity, to which noise and distortion are opponents, helps us understand it as an antithesis to a kind of aura, and thus noise and distortion as the bearers of this aura. The work these qualities perform is the "productive loss" of the aura Benjamin identifies in regard to the mechanically reproduced artwork.[22] Fidelity, meanwhile, is closely linked to the presence-granting *tekhne* that mechanical reproduction grants artwork. A truly high-fidelity system, with as little distortion (intentional or otherwise) introduced, promises to a large extent the same benefit of *tekhne* as Benjamin saw in photography: an increasingly accurate communication of certain realities.[23]

With fidelity in its relation to lo-fi music, digital's shortening of the mediating chain between source and listener allows us to understand a particular angle of what is lost when the physical, degradable storage medium vanishes. If we understand fidelity as a quantity that can distance copies from the original, the prominence of medium-driven aura making in the shaping of the music itself becomes clear. A vivid example is provided by Bela Koe-Krompecher in Marc Woodworth's book on the Guided by Voices album *Bee Thousand*: a sound in the first track of the record that listeners presumed to be intentionally crafted was actually the result of a faulty cassette machine at Koe-Krompecher's record store damaging the only existing recording of the song.[24] A recorded song's legacy is thus imprinted sonically on it by the machines and events involved in its recording, storage, and reproduction. When storage and reproduction are handed over to digital mechanisms that preclude such imprinting (and that, by the nature of digital files, render the original indistinguishable from reproductions), a key component of the lo-fi value-making system is jeopardized.

While engineers often discuss lo-fi and analog sound aesthetics as desirable ends, many are also sharply aware of what they consider irrational attachments to analog technologies. One forum thread titled "Analog tape madness" began with a user complaining that a group he was working with seemed to adhere to "the quasi-religious 'Analog is better' school" but had sent him improperly recorded tapes. Other users quickly joined in, expressing their frustration with the uninformed attitudes toward analog machines they had encountered in their work, as well as their frustration with some of the analog technologies themselves. One commenter stated, "People (musicians) often assume that analog will provide them with a sound that the engineer couldn't provide for in the first place, as if 'analog' was synon[y]mous with 'better engineering.'" This user's particular frustration results from a transfer of agency away from him, the engineer, toward the fetishized technology.

A sense emerges from the thread in general that many engineers have worked with musicians who place higher value in the capacities of a particular device or medium than in the ability of the engineers who operate these machines. Another user wrote that "I know analog can sound amazing. Great analog sounds amazing. . . . But I almost wish the creaky old A-80s and other cranky sounding machines would just all break so I can concentrate on making music sound as great on playback as it does in input."[25] These engineers portray a sociotechnical environment in which relationships are formed toward analog technologies out of an incomplete mythology—a mythology in the sense that the devices are said to grant authenticity to the recordings they produce, and incomplete in the sense that many of these musicians have not been informed about the imperfections and limitations of analog recording. Such relationships are in some cases so strong as to obstruct the operating dynamic among musician, engineer, and machine.

As in the PRW forums, many of the Tape Op Message Board discussions that touch on conceptions of lo-fi and analog fetishism begin with specific inquiries from frustrated engineers. One thread from 2005 started with a user addressing a question to "the guys here who play in bands": "The artist Im [*sic*] working with is unhappy because in his words 'you did too good of a job.' Im [*sic*] not quite sure how to approach the situation but its [*sic*] brought up bigger questions about where people's aspirations are really at. If you guys are wearing your lo-fi ethic on your sleeve, are you afraid of a good sounding recording ruining your street cred?" Again, we see the engineer's understanding of technical quality and fidelity clashing with the musician's aesthetic aims. The vocabulary that describes these different ends is

central to but not responsible for the disconnect. The key confusion, as the same user states more powerfully later on, is not over the terminology of lo-fi but over the disparity between its aesthetic claims and its technical realization: "Is lo-fi something you get because all you could afford was not the most expensive gear so you went with it and like it, or is it something you go out of your way to achieve?"[26] This question could be restated numerous ways: Is it truly or *credibly* lo-fi if you go out of your way to create that effect?

Credibility becomes a matter of canonized sounds and styles, which translate into production desires. As Philip Auslander finds in his exploration of liveness and its bearing on authenticity in rock music, the careful construction of a recording amidst the greater scheme of live performance and visual culture is vital to a record's reception.[27] By imitating the sound of certain culturally iconized musical artifacts, a musician might hope the listener will confer upon his music any number of qualities associated with the making of these canonized works: independence, originality, and opposition to corporate or systemic norms are all likely candidates under the lo-fi ethic. But credibility is largely an object that exists in interaction between musicians and listener, and even in Auslander's argument for the importance of live performance, the musical recording serves as the central platform for the cultural activity of the credibility-defining genre. For music fans accustomed to home-engineered recordings and culturally attuned to the workings of the music industry, highly produced recordings—that is, recordings relatively free of noise and marked by heavy use of electrically (or digitally) added effects—may rouse suspicion. This possibility sets production as a concept at odds with credibility.

PRODUCTION AS PERFORMANCE

Production, as used in the discussion of recorded music, refers in general to the work of making musical recordings, encompassing anything from musical arrangement to direct engineering. Implicit in the referral to this work as production is an understanding of the musical recording as a commercial object, as well as of the recording as the end toward which musical activity in the era of reproducible sound strives. Production encompasses a whole range of practices that depend not only on the reproducibility of recorded sound but also on the capitalist environment under which music is conceived, performed, recorded, distributed, and consumed. The involvement of the recording studio as a site of production depends strongly on the commodity status of recordings, and the practice of home recording creates itself in relation to the recording studio. At the same time home recording began to rise to prominence, digital sound technologies began to disrupt the commodity status of musical recordings, removing a medium from the domain of production and trivializing the work involved in replicating recorded sound. Digital-age efforts have counteracted this disruption by reintroducing a digital medium, just as analog nostalgia counteracts it by resisting digital technologies entirely; both have done so in ways that locate production and engineering at the center of a crisis in musical value.

In Amy Spencer's documentation of DIY culture, lo-fi appears as a productive ethic under which specific methods of music production attach strongly to cultural values, authenticity being foremost among them. The musical genres in question evidence a shift from performance-based to recording-based subversion as their means of deriving meaning: "For punks, getting up on stage with little rehearsal was admirable. To many post-punk bands it was important to carefully construct a lo-fi sound, which could be just as authentic."[28] Lo-fi is responsible in at least this regard for linking authenticity to music production and thereby to recording technologies. While the term "production" tends to connote professional, label-funded studio recording, it is fully applicable to home and amateur recording. Spencer notes that lo-fi practices have been in many cases a deliberate choice in the production not just of music but of a musician's cultural standing: "For many musicians at the time, sticking to the 'real' underground was the preferred option. Some were not willing to lose the sense of credibility and the authentic that DIY culture gave and so played the game of becoming successful, but not so successful as to be labeled a 'sell out.'"[29] Lo-fi music presents a striking example of how a whole set of cultural decisions are embodied in an aesthetic category best identified simply as a "sound." In the case of lo-fi, the authenticity-bearing "sound" is one characterized by the audibility of the recording tools.

Théberge identifies a key aspect of production and its relation to technology's bearing on musical development with the discussion of this definition-eluding aesthetic category. Théberge claims that "in the age of electronic reproduction, the achievement of a unique 'sound' has become one of the means through which new musical genres are created in

the first place." The salient machine imprints of lo-fi music fall under this category, and the claim is supported by the rise of lo-fi sounds (or their simulations) in genres such as indie rock that have drawn heavily on DIY traditions as influence and instantiation. Digital tools, as Théberge points out, become "the perfect vehicle for a music industry based simultaneously in fashion and nostalgia" by aiding both the creation of new sounds and the emulation of old ones. The nostalgia for old sounds, then, is coupled with a conflicted but intense attachment to the technologies that supposedly and in reality produce them. The vocabulary used by musicians to identify qualities of sound in this genre-level aesthetic sense reveals that "even musicians who reject digital technology" are "betraying their preoccupation with technologically reproduced sound."[30] In the greater scheme of Théberge's argument—that musicians increasingly act as consumers of technology in a way that structures their musical production—these attitudes toward "sound" and technology fuel analog fetishism on the part of musicians and producers alike.

Marketers of recording products are keenly aware and active in the propagation of analog nostalgia, and sound engineer perspectives reflect a good deal of discomfort with this trend. In a 2012 post titled "Are 'Vintage' Type Compressors Relevant in Today's Music?" a Tape Op forum user notes: "Everywhere I go, I hear 'vintage' this and 'warmth' that and 'classic' that. . . . Every plug-in maker seems to be emulating the greats of yesteryear."[31] Yesteryear's great compressors are electrical hardware devices that perform dynamic range compression—the narrowing of the difference in amplitude between the loudest sounds and quietest sounds in a recording. Dynamic range compression serves a number of potential purposes, as Jay Kadis notes: "This can be for musical effect, to make a sound stand out more in a complex mix, or for the purposes of noise reduction in noisy recorders or transmission systems."[32] This compression is easily achieved by signal-processing software, which can adjust the amplitude across a digital audio file according to any number of rules. Hardware compressors, without the ability to analyze any more audio than is currently passing through them, have certain characteristics by necessity—for example, a compressor's attack refers to the quickness it responds to a loud sound's onset by reducing the amplitude of the signal that follows. The hardware-emulating plug-ins to which this user points include these parameters, and their makers advertise them as conferring the same desirable characteristics onto recorded music as the hardware versions purportedly would.

Some responders in the "vintage compressors" thread were quick to caution against the subjectivity of the question while also defending the value of hardware compressors. The first reply began with "no, we can do it *differently* with our current technology" and noted that "software is great at some stuff. . . . Hardware is great at other stuff." Between these statements was a defense of hardware: "I also enjoy the visceral experience of adjusting a real knob on a piece of hardware to just . . . there, not a quantum approximation of 'there.'" While ignoring the original question as to the usefulness of emulating hardware devices in software, this reply touches on a central rationale for analog preference among technicians: the difference between discrete and continuous values. The replacement of continuous analog signals and controls with discretely quantizing versions essentially defines digital audio; however, modern digital recording systems offer such tiny value intervals as to overcome any perceptible effects of digital quantization. In the case of signals, this is done through standardizing sampling rates high enough that all frequencies perceptible by the human auditory are reproduced; for interface controls, designers might in theory limit a simulated analog control to broadly rounded steps but in practice can easily spare the computing resources needed to give the control subperceptible finesse.

This fact is presumably understood by the above forum user when he specifies that he enjoys the experience of precisely adjusting an analog control to obtain a value that feels correct. He is not claiming to be able to perceive the difference between the value he selects on an analog control and the minutely rounded value digitally emulated control would produce. Rather, he finds that his awareness of digital rounding detracts from his experience as an engineer. Arguments from music listeners in favor of analog formats over digital often reflect a similar concern: that while no audibly perceptible difference exists due to the magnitude of the digital medium's sampling rate, the experience of listening is impinged upon by awareness that, at some level, the digital signal goes through processes of estimation and representation that are absent in the analog format. This experientially rationalized take on analog nostalgia is voiced more colorfully by the second responder, who claims: "There is a certain alchemy that occurs when you run a signal through gizmos

a certain way." The tangible fact of hardware, in concert with the engineer's intuitive level of familiarity with the hardware's signal-processing methods, creates an experience that in contrast to the use of digital tools takes on a magical quality for some engineers. Here we see a more honed visage of the imputed properties that in analog nostalgists evidence commodity fetishism; the experience of using the machine, rather than the machine itself, bears magical value.

Opposing opinions in the same thread defended the use of plug-ins, arguing for determinable quality of sound rather than quality of experience. The first response to explicitly address the question of authenticity in the compressor plug-ins discussion approaches authenticity as a technical and quantifiable value: "I figure that if the plug-in, or program within your multi-effects processor gets you 95% of the sound of the original . . . then really, are you working at a level where you need more authenticity than that? Isn't the whole point just to get a good sound?" This user points out that these software plug-ins emulate specific hardware devices not in order to achieve the stated goal of compression more effectively than otherwise possible but rather to re-create the unintended sonic imprints left by the original machines. He notes that "the reality of the outboard gear that attempted to control levels in the analog domain is that the process of controlling that level brought with it all sorts of artifacts. Some of those artifacts sound 'pleasing' and others don't." His claim, which resonates across a broad range of recording technologies and their attachments among users and listeners, holds that imperfections or limitations in the equipment create "coloration," which becomes desirable. Emergent from this argument is an interesting position on fidelity: from a technical standpoint, coloration is in effect the carefully selected introduction of noise and distortion to a signal, which opposes its fidelity to the sound source. Responding to the original post's observation of words like "warmth" and "vintage" recurring constantly in the marketing of emulator plug-ins, this user explains that "if the manufacturer said of their hardware or software items, 'we add distortion' or 'we make unfaithful recordings' then it would take a lot more explaining. Instead we use fun terms for the coloration of sound that nobody can really agree on. Ask a dozen people what it means to sound 'warm' and you'll get about 20 different answers."

The process by which those specific machine distortions are selected as desirable—and by which such euphemisms for distortion as "warmth" become signifiers of authenticity—is understood to depend heavily on the music whose production involved the devices. Another user posited that "over a few decades of use and abuse by pop engineers, those compression artifacts developed into a vocabulary for modern music. So when someone like the OP [original poster] here asks if 'vintage' sounds are still relevant, the answer is hell yes, because whether you know it or not, that's part of the vocabulary of pop you grew up hearing." In this argument, the success of the music is responsible for the propagation of the equipment used to record it, not the other way around; that is, the user does not claim, as he easily could, that the use of certain compressors with now-sought-after coloration helped certain pieces of music become popular. Despite the basis of the Tape Op forum community in engineering and production, this latter perspective is absent from this particular thread, with other users supporting the more music-deterministic explanation. Another responder, adding his opinion that software makers have not yet been able to adequately emulate desired hardware compressors, says that the plug-ins "don't do what big old pieces of analog outboard do, and people are very attached to that sound. I imagine that over the next few decades (actually it's pretty clear to me that it's already happening) people are going to grow more attached to the sound of digital audio manipulation and it will become less and less of an issue."

These musical-deterministic tendencies correspond to a portrayal of music production as an effort that strives to communicate the integral qualities of the original musical performance but simultaneously threatens them. A PRW post titled "What Is 'Overproducing'?" highlights uncertainties not only over the definitions of "production" and its modified forms but also over the fundamental nature of production as a reductive versus additive project. The post asks, "Is overproducing making sure every single word in a vocal is perfectly in tune? Are we supposed to stop at 80%? Is it taking away too many distortions or mistakes? Is overproducing when a record gets changed to the point where the 'feel' gets put in 2nd place to technical perfection?"[33] This first voicing of the user's confusion exposes a problematic temptation, when manipulating music with technical tools, to view music as itself a technical and quantifiable object. Engineering, production, or music performance each bears its own level of technicality, and the poster's deliberately oversimplified suggestion addresses the problem of trying

to apply a quantitative approach from one category to what should be a more qualitative object from another. Digital tools, built on more strictly quantizing technologies than analog devices, strengthen the fear that technical principles forcefully imprint their technicality on music production and so diminish its artistic aspects.

The more prominent concern raised, though, centered on whether certain production techniques, exemplified by the stridently digital-domain Auto-Tune software, contradict the goal of communicating an artistic intention. The poster questions, "Doesn't [using Auto-Tune] interfere with the original direct expression of the artist?—or is it just enhancing what the artist can envision (if they imagine that performance as perfect as possible) . . . so the autotuning is only the realization of imagination? I wonder if that qualifies as overproducing." The question is still constrained by the idea that a line can be drawn between appropriate production and overproduction. Where this threshold should stand depends, in his eyes, on the interfering capacity of production. Two quantities are held up as potentially compromised or enhanced: the "direct expression of the artist"—that is, the performance—and the artist's imagined recording—that is, the song as a conceived object. One understanding of production would hold that its responsibility is to aid the transformation of the former into the latter. This song-centric view is reflected by one user's definition of overproduction as "a sonic imprint resulting from production techniques/tools that gets between the listeners and the song. It upstages the song rather than supports it." In this model, both performance and production exist as detractive processes through which the imagined song must pass in order to become a recording.[34] Such an understanding of performance calls into question the rationality of performing in the first place and not instead synthesizing and arranging sounds with the precision and control that software systems allow.

To explain the continued work put into performance in the studio, then, we need to either decry the practice as irrational, argue that software tools have not yet met their potential in this regard, or identify performance as a value-giving process that confers qualities upon an imagined song that it could not otherwise gain. The same consideration can be given to production as a process that mediates song and performance into recording—as work that is not only potentially detractive but also additive. The uncertainty in the PRW and Tape Op communities surrounding these aspects of production, juxtaposed with the paucity of suggestions that performance might detract from value, ties into discomforts surrounding new tools and practices. A contributing factor, of course, is a focus in these message boards on the responsibilities of engineers and producers; that focus tends to treat the intentions of the artist as material formed prior to the recording process—an online community of performing musicians might similarly identify overperformance as a concern. Still, the debate as to the meaning of "overproduction" and the origin of an overproduced sound highlights the degree to which song- and performance-centric views treat production as inherently opposed to musical authenticity.

One user addresses production from an additional angle, saying that in his own work he must "constantly watch myself to make sure I'm not taking the 'life' out of something while 'improving' it." This voicing touches most directly on the notion that music as conceived and performed bears a quality approximate to vitality, to which technology poses a threat via passing its constraints through the producer. The user qualifies his claims with a typical nod to aesthetic subjectivity, noting that "it's just sonic entertainment. . . . Some people are entertained by 'authenticity,' and they love the rough edges. There is no pleasing them if you accidentally get better at your craft. You will no longer be 'cool.'" While the version of "authenticity" cited rather derisively here is categorized as an aesthetic appeal to specific tastes, the "life" preserved by effective production seems itself a form of authenticity. The difference between the two usages stems from the prevalence of "authenticity" seen in a context of technological and aesthetic fetishism, which consistently presents a headache for engineers. As with the discussion of a musician feeling the engineer had done too good a job and deprived his recording of this type of authenticity, the realization of this lo-fi aesthetic is seen to run counter to the inherent goals of production and engineering. Yet a shared quality is evident between the "life" producers seek to preserve and the "authenticity" elevated by lo-fi purists in their mutual reverence for the expressive value that originates with the musician and performance.

The key difference seems to stem from the divergent ways this value is mediated by the recordist and by the recording technology. The lo-fi mentality seeks out the imprints of recording tools, while the purely technically minded studio engineer typically seeks to render them inaudible. The two approaches are united, however, in a practiced reverence for

expressive fidelity. The pitfalls of analog fetishism resemble those of the all-quantizing "overproduction" warned against by the PRW contributors, in that both originate in a misguided concession of agency to technology: the conception, on the one hand, that low-fidelity tools create the type of expressive power prized in lo-fi music or, on the other, that studio production should follow the types of rules that govern studio technologies.

This picture of production evidences that engineering a recording is as much a performance as the musical performance that it captures. To successfully preserve the vivacious quality of performed music, which is threatened on either side by analog fetishism and overproduction, the engineer must be attuned to the musical moment in the same way that instrumentalists attune to the conceived moment in realizing it as sound. Such a sentiment evokes Brian Eno's depiction of the recording studio as an instrument whose ideal qualities foster an intuitive dynamic between engineer and equipment. While Eno complains that the transparency-chasing, antilimitation philosophies behind digital tool design have resulted in devices that detract from this relation,[35] the testimony of engineers reveals the performative nature of good production to hold true even with the use of digital tools. In doing so, these accounts confirm that the temporality that some scholars see digital sound as removing from recording is in fact preserved, as production leans upon the musical moment, which leans necessarily on music's temporality.

The treatment of production as performance opposes technologically deterministic attitudes toward music creation, with analog fetishism foremost among them. Analog fetishism ascribes the vivacity found in great recordings to the tools of their recording, leaving engineering as a layer between musician and medium that is necessary but solely detractive in its effect on the music. Recordists, reacting against such views, tend to portray engineering and production in general as value-additive work that is just as essential to realizing the conceived song as the song's musical performance. An additive approach to production is still subject to the dangers of technological paradigms imposing themselves on the performative work of engineering; the sound of overproduced recordings is traced to an overly mechanical, quantitative approach to production. Reactions to analog fetishism, inasmuch as they contend socially with the propagation of a new and more quantizing paradigm, amplify such concerns. In doing so, these reactions shed light on the way recordists see value originating among musical conception, performance, and recording.

Musical value is termed differently in the many contexts that receive and transform it: *vivacity*, *authenticity*, and *vision* might crop up variously in discussions of production and fidelity, for example, but all point back toward the same fundamental quality in music whose successful transference is the goal of sound recording. In the way qualities like vivacity and authenticity are conferred upon cassette recorders and hardware compressors, we see both proof of analog fetishism and the frustration it poses to the recordist. Yet the technological determinism enacted by analog fetishists is not merely an opinion as to where credit should be given for the quality of a recording; it is an argument for the predominance of technical innovation in shaping musical creativity at large. The recording communities studied here stake the opposite claim: great performances create great recordings, which cement the cultural status of the technologies (both tool and technique) that went into the making of those recordings, and in turn they drive the technological attachments of musical trends. Performance, here, is understood to include the work of the engineer and producer; still, the expressively powerful live performance from the musician herself emerges as an unquestionable prerequisite to great recording. This relinquishing of credit on the part of the recording engineers is perhaps the most surprising consequence of the performance-determinism finding and speaks to the prevailing self-conception of these engineers as conduits for, rather than originators of, musical value.

The tendency toward elevation of performative value shows one way in which, rather than erasing performance from music as some scholars have claimed, digital sound technologies enable the reemphasis of performance. In a case study on the students of an audio technology program, Jan Marontate finds evidence of new ways in which "digital technologies and their attendant creative practices have allowed for the reemergence of musical works as practices rather than objects."[36] Marontate's work identifies digital intertextuality as lending new performative possibilities to the field of recorded music; a reemphasis on performance in response to technonostalgia provides another, less readily apparent avenue toward the same end. Additionally, Marontate claims that "digital recording technologies have also expanded options for participation in creative processes. Listeners and creators (e.g., musician, sound technicians)

have the potential to become active agents in mediation and dissemination processes."[37] While the politics of lo-fi and cassette culture accomplished a similar, predigital participatory expansion, analog fetishism must be overcome as an obstacle to the translation of these politics to digital settings.

About the Author

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Notes

1. Jonathan Sterne, *MP3: The Meaning of a Format* (Durham, NC: Duke University Press, 2012), 184.

2. Joseph Auner, "Making Old Machines Speak: Images of Technology in Recent Music," *Echo: A Music-Centered Journal* 2, no. 2 (2000): 2, http://www.echo.ucla.edu/Volume2-Issue2/auner/auner.pdf.

3. Ibid., 2.

4. Larry Crane, "Sound City, Dave Grohl, and the Changing Business of Recording Music," *Tape Log* (blog), *Tape Op*, February 23, 2013, http://www.tapeop.com/blog/2013/03/22/sound-city-dave-grohl-and-changing-business-record/.

5. Karl Marx, *Capital, Volume One*, in *The Marx-Engels Reader*, trans. Samuel Moore and Edward Aveling, ed. Robert C. Tucker (London: W. W. Norton, 1978), 321.

6. Paul Théberge, *Any Sound You Can Imagine: Making Music / Consuming Technology* (Middletown, CT: Wesleyan University Press, 1997), 140.

7. William Leiss, *The Limits to Satisfaction: An Essay on the Problem of Needs and Commodities* (Toronto: University of Toronto Press, 1976), 82.

8. Michael Azerrad, *Our Band Could Be Your Life: Scenes from the American Rock Underground 1981–1991* (Boston: Little, Brown, 2001).

9. Susan Schmidt Horning, "Engineering the Performance: Recording Engineers, Tacit Knowledge and the Art of Controlling Sound," *Social Studies of Science* 34, no. 5 (2004): 704, doi:10.1177/0306312704047536.

10. Carolyn Marvin, *When Old Technologies Were New: Thinking about Communications in the Late Nineteenth Century* (Oxford: Oxford University Press, 1988), 11.

11. Timothy Taylor, *Strange Sounds: Music, Technology & Culture* (New York: Routledge, 2001), 3.

12. Ibid., 4.

13. Aiden Evens, *Sound Ideas: Music, Machines, and Experience* (Minneapolis: University of Minnesota Press, 2005), xii.

14. "Hey Brad Wood—Care to Talk about Liz Phair Recording?," *Professional Recording Workshop*, January 29, 2011, http://prorecordingworkshop.lefora.com/2011/01/29/hey-brad-wood-care-to-talk-about-liz-phair-recordi/.

15. Paul Théberge, "'Plugged In': Technology and Popular Music," in *The Cambridge Companion to Pop and Rock*, ed. Simon Frith, Will Straw, and John Street (Cambridge: Cambridge University Press, 2001), 4.

16. Jay Kadis, *The Science of Sound Recording* (Boston: Focal Press, 2012), 129.

17. Sterne, *MP3*, 124.

18. Ibid., 125.

19. Greg Hainge, "Of Glitch and Men: The Place of the Human in the Successful Integration of Failure and Noise in the Digital Realm," *Communication Theory* 17, no. 1 (2007): 28, doi:10.1111/j.1468-2885.2007.00286.x.

20. Thomas Porcello, "Music Mediated as Live in Austin: Sound, Technology and Recording Practice," in *Wired for Sound: Engineering and Technologies in Sonic Cultures*, ed. Paul D. Greene and Thomas Porcello (Middletown, CT: Wesleyan University Press, 2005), 104–5.

21. Ibid., 114.

22. Warwick Mules, "Aura as Productive Loss," *Transformations* 1, no. 15 (2007), http://www.transformationsjournal.org/journal/issue_15/article_05.shtml#10.

23. Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," in *Illuminations: Essays and Reflections*, ed. Hannah Arendt (New York: Schocken Books, 2007), 217–52.

24. Marc Woodworth, "Bee Thousand," in *33⅓ Greatest Hits, Volume 2*, ed. David Barker (New York: Continuum, 2007), 301–2.

25. "Analog Tape Madness," *Professional Recording Workshop*, December 16, 2011, http://prorecordingworkshop.lefora.com/2011/12/16/analog-tape-madness/.

26. "Just Curious . . . ," *Tape Op Message Board*, February 12, 2005, http://messageboard.tapeop.com/viewtopic.php?t=27657.

27. Philip Auslander, *Liveness: Performance in a Mediatized Culture* (London: Routledge, 1999), 65.

28. Amy Spencer, *DIY: The Rise of Lo-Fi Culture* (London: Marion Boyars, 2005), 261.

29. Ibid., 275.

30. Théberge, *Any Sound You Can Imagine*, 213.

31. "Are 'Vintage' Type Compressors Relevant in Today's Music?," *Tape Op Message Board*, June 20, 2010, http://messageboard.tapeop.com/viewtopic.php?p=655739.

32. Jay Kadis, "Dynamic Range Processing and Digital Effects" (lecture notes, Stanford University, Stanford, CA, 2008), 1, https://ccrma.stanford.edu/courses/192b/192b_Lecture_1_06.pdf.

33. "What Is 'Overproducing'?," *Professional Recording Workshop*, August 19, 2012, http://prorecordingworkshop.lefora.com/2012/08/19/what-is-overproducing/.

34. This model, which in some cases is enacted by musicians, points to the completion of recorded sound's supplanting of performance as the end outlet for musical expression—which in turn suggests that the next truly disruptive event in music's technological history will be the ability to directly record imagined sounds, erasing production entirely.

35. Brian Eno, "The Revenge of the Intuitive," *Wired*, January 1999, http://www.wired.com/wired/archive/7.01/eno.html.

36. Jan Marontate, "Digital Recording and the Reconfiguration of Music as Performance," *American Behavioral Scientist* 48, no. 11 (2005): 1422, doi:10.1177/0002764205277647.

37. Ibid., 1434.