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Sound Studies

An Interdisciplinary Journal

ISSN: 2055-1940 (Print) 2055-1959 (Online) Journal homepage: http://www.tandfonline.com/loi/rfso20

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To cite this article: Michael C. Heller (2015) Between silence and pain: loudness and the affective encounter, Sound Studies, 1:1, 40-58, DOI: 10.1080/20551940.2015.1079071

To link to this article: http://dx.doi.org/10.1080/20551940.2015.1079071

SOUND STUDIES, 2015
VOL. 1, NO. 1, 40–58
http://dx.doi.org/10.1080/20551940.2015.1079071

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Between silence and pain: loudness and the affective encounter

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ABSTRACT

As an axiomatic condition of sound, loudness is implicated at all levels of aural perception. Ever in contest, loudness asserts its importance in noise ordinances and stage whispers, on the battlefield and by the infant's bedside. Yet despite its pervasiveness, loudness remains among the least-analyzed components of the sonic encounter. Focusing on musical applications and listener accounts, this article considers the role of loudness as a generator of sonic affect, situating it within a matrix of psychoacoustic and phenomenological processes. The essay distills three (non-exhaustive) types of commonly reported loudness-effects, which are dubbed 'listener collapse', 'imagined loudness', and 'noise occupation'. A final section applies these effects to two recent theories of musical aesthetics: Michel Poizat's operatic 'cry' and Fred Moten's discussion of 'Aunt Hester's scream'. Though multiple levels of loudness experience are considered, the analysis pays particular attention to the force of high-intensity sound, which foregrounds the physical – and sometimes painful – aspects of sonic experience.

ARTICLE HISTORY
Received 13 May 2014
Accepted 31 January 2015

KEYWORDS:
Loudness; volume; noise; affect; listening

Prologue

In 1937, physicist George William Clarkson Kaye delivered the presidential address for a meeting of the British Association in Nottingham, England. The speech, entitled 'Noise and the Nation', aimed to evaluate 'the impact of [noise] on everyday life and the methods available for the abatement of the noise nuisance'.[1] Kaye took exceptional pains to make the speech engaging, even producing a short film to accompany his remarks. In addition, he presented a diagram that mapped the perceived loudness of various sounds using a recently developed unit called 'phons'.[2] This diagram is reproduced in Figure 1.

Unlike the better-known decibel – a physical measurement of air pressure – the phon sought to measure loudness as perceived by living listeners. Kaye was not its inventor, but he designed the diagram to give his audience a general field of reference within the new perceptual system. Depicted somewhat like a thermometer, the image is designed to bolster

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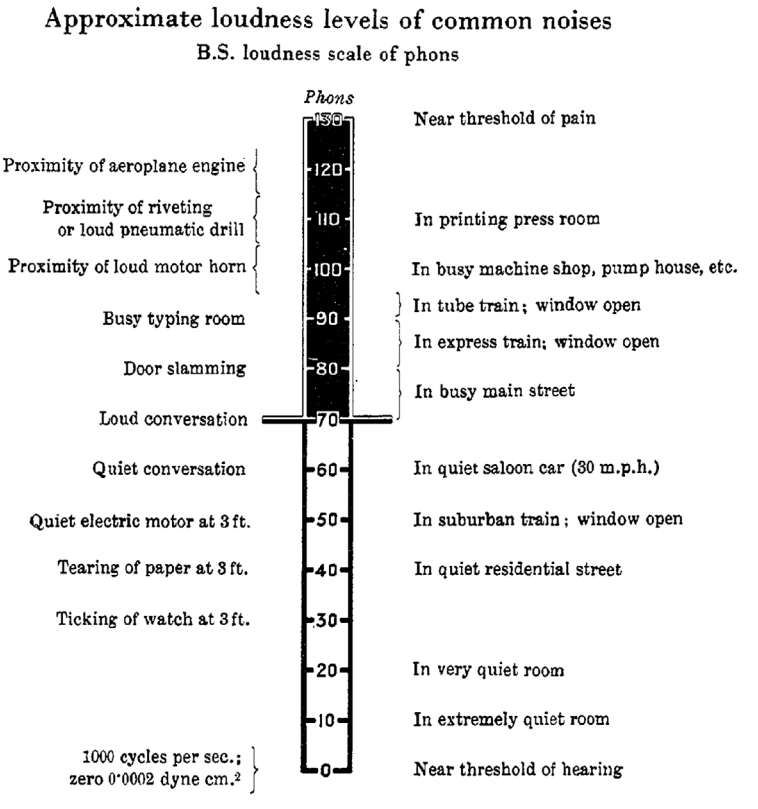

Figure 1. Kaye's phon scale. Kaye, "The Measurement of Noise," 141. doi: http://dx.doi.org/10.1088/0,034-4,885/3/1/309.

his arguments about the growing danger of environmental noise. In the lighter sections near the bottom, one finds calming, domesticated sounds: a quiet conversation, a suburban train, a residential street. Above 70 phons, however, feverish threats appear in black: doors slam, horns blast, drills cut into rock. Through the trappings of scientific precision, the image dramatizes and quantifies modernity's mechanized assault upon the ears of the living. Kaye's diagram is by no means unique. Similar charts pepper anti-noise literature of the 1920s and 1930s, often employing a similar rhetoric of measurement and threat.[3] As several recent studies have shown, the period's rapid advances in sound measurement technology – including both the decibel and the phon – were catalyzed by strong alliances between science and the anti-noise movement.[4] By emphasizing concrete statistics regarding loudness, activists sought to shift the conversation about noise out of the realm of subjective distaste, and recast it in terms that were objective, dangerous, and legislatable.

Over time, however, loudness charts began to migrate into very different discursive spheres. Today, they are a common sight in standard textbooks on physics and acoustics. Stripped of their political connotations, such charts now purport to illustrate fundamental truths about sound and the human hearing apparatus. While there are often small changes in their specific reference points, two nodes remain constant in nearly all versions: the limits. The lower end, at 0 phons, is labelled 'Near threshold of hearing'. This level is perceived as

silence, a point where no sound is experienced. Vibrations may be present, but they are too weak to be registered by the human ear. The upper limit is somewhat more intriguing. It is labelled 'Near threshold of pain'.

Though the reference to pain certainly bolstered arguments against noise, the label was more than merely a rhetorical device. Fifteen years before Kaye, physicist R. L. Wegel observed that there was no maximum level at which a sound became too loud to hear. Instead, it simply passed a point at which hearing seemed to transform into something else entirely: 'A sound much louder than [the ear's upper threshold] is painful … *While this point of feeling probably has no relation to the auditory sense it does serve as a practical limit to the range of auditory sensation.*'[5] Although some researchers initially referred to this level as the 'threshold of feeling',[6] the term 'threshold of pain' has gradually superseded it since the 1930s. Today, this has become the standard terminology to describe the limits of loudness in a wide range of contexts. Some clinicians also employ the slightly less polemical 'uncomfortable loudness level' (or UCL) in a similar capacity.[7]

Pain. Feeling. Discomfort. However one terms it, such a threshold constitutes a curious upper limit to measurements of sonic loudness. Above this point, sound waves are no longer experienced as intangible or detached objects of hearing, but confront the body through an experience of direct physical touch, force, or torment. It represents, to borrow another phrase from Wegel, 'a point where the hearing and feeling lines appear to intersect, [making it] difficult to distinguish between the sense of hearing and that of feeling'. [8] Beyond the edge of the quantifiable, Wegel, Kaye, and their successors encountered a limit that was decidedly physical, experiential, and potent.

Loudness – a fundamental parameter of sound itself – exists as a continuum bounded on either side by silence and pain.

Introduction: intensities and in-between-ness

Just as amplitude is a necessary component of any wave, loudness is a necessary component of sound. Yet despite this fundamental role, the experiential and aesthetic potentials of loudness are rarely considered in music or sound studies literature. The omission is jarring, as loudness seems to impact our everyday listening practices in relatively intuitive ways. Imagine, for example, trying to fall asleep to a lullaby sung at the level of a jet engine, or attending a sporting event where the stadium is as quiet as a library. Expectations of certain loudness experiences are built into the way we encounter sound on a daily basis, and are closely intertwined with other aspects of aural perception. While these expectations may be tempered by interpretative frames that extend outside the sound event as well (the quiet stadium, for example, may indicate a nervous crowd), it is through loudness that much of their impact is felt and registered.

The goal of this essay is to explore the impact of loudness (and the associated, though not identical, concept of volume)[9] as an under-theorized generator of sonic affect, particularly in musical settings. In considering loudness through its affective potential, I draw from models broadly outlined by Melissa Gregg and Gregory Seigworth, who refer to affect as the operation of 'intensities that pass from body to body (human, nonhuman, part-body, and otherwise), in those resonances that circulate about, between, and sometimes stick to bodies and worlds, *and* in the very passages or variations between these intensities and resonances themselves'.[10] Affective encounter arises in spaces of 'in-between-ness',[11] in forces

that move into and through a range of corporeal and non-corporeal realms: aural and haptic, subjective and social, conceptual and embodied, drastic and gnostic. Reports of powerful loudness experiences often draw upon strikingly similar language. Such descriptions depict moments in which normally distinct perceptual realms are merged and perforated, especially the division between sound and the body. Appreciating the impact of loudness requires attending to these transmissions into, through, and between bodies – to loudness's tenuous physicality between silence and pain.

These fascinating limits bounding loudness experience are especially instructive in the way that they point to such drastically different registers of sonic non/encounter. They are, in a sense, limits that sit *beyond the limits*, with neither conforming to what we commonly understand – and what Wegel identified – as the auditory sense. Curtis Roads similarly describes them as outside the realm of conventional audibility, instead referring to them as subsonic (below sound) and perisonic (dangerous sound) intensities.[12] Yet by emphasizing issues of touch and withdrawal, of presence and absence, silence and pain serve as reminders that the aural is always already physical. It is these moments when bodies reveal themselves – rather than a fetishistic concern with 'pain' as such – that I wish to draw out. Silence and pain mark the limits of our ability to conceive of listening as detached or distant. In between the physical and the perceptual, loudness makes sound's presence felt.

The discussions that follow make no attempt at being comprehensive. Rather, they offer preliminary attempts at grappling with several specific loudness effects. The text is divided into two sections. The first explores various attempts at describing loudness experience, culled from a variety of perspectives. It begins with a very brief overview of the role of loudness in the field of psychophysics – a discipline rooted in studying the boundaries between physical and perceptual stimuli. I go on to consider listener accounts of experiencing loudness, drawn primarily from literature on rock and noise music. The discussion here is structured around three commonly reported types of loudness effect, each of which centres around affective transfers of intensity across perceptual boundaries. Using the terminology developed here, the second section then steps back to apply these effects to two recent theories of musical aesthetics: Michel Poizat's operatic 'cry' and Fred Moten's discussion of 'Aunt Hester's scream' in African American music.

Part I: loudness effects

The physical properties of sound were studied and systematized extensively by acousticians starting in the nineteenth century. During this time, scientists began to measure sound in terms of several basic properties of waves: frequency, waveform, and amplitude.[13] Introductory physics courses tend to portray each of these properties as mapping neatly onto a single parameter of how we hear: frequency corresponds to musical pitch, waveform to timbre, and amplitude to loudness. While this works in a rough sense, in practice the relationships between physical waveforms and perceptual experiences are complicated by a vast array of contextual factors. The study of relationships between how sound waves exist in the world and how they are perceived and made sense of by the ear and brain eventually blossomed into an entirely new field known as psychoacoustics – a subset of the larger discipline of psychophysics.[14]

Loudness played a germinal role in early psychophysics, due primarily to the work of Gustav Fechner. Like several predecessors, Fechner noted that increases in wave amplitude

were interpreted by the ear as increases in perceived loudness. However, he also observed that the ratio between these increases was not linear. Two violins playing in unison, for example, do not strike us as sounding twice as loud as one. Fechner instead proposed that these increases were based on a base-ten logarithmic formula. Thus, to double the perceived volume of one violin required the use of ten (10^1); tripling it required one hundred (10^2); quadrupling it required one thousand (10^3), and so on. The discovery, which became known as Fechner's Law, was a watershed moment in the field. Although later researchers would improve upon the exact formulation, the law's elegant approach to quantifying a relationship between physical and perceptual realities provided an important model for subsequent research. To the present day, the International Society of Psychophysics celebrates the discovery with a yearly 'Fechner Day' celebration at their annual conference.[15]

In contrast to the quantifiable data sought by psychophysicists, non-scientific descriptions of loudness tend to rely on more qualitative accounts that oscillate between individual and social interpretations. In each of the examples below, the force of loudness is predicated on the interplay of direct material confrontation (bodies pressing against bodies) and culturally mediated expectations, with neither fully reducible to the other. By pointing to loudness's ability to transfer and transduce sonic intensity into various modes of physical and (pre)personal potentiality, these descriptions can begin to sketch the affective outlines of loudness as it confronts listening communities. For obvious reasons, such accounts are more common within sonic traditions that foreground loudness as an aesthetic parameter, including rock and noise music.

In order to interrogate this idea further, I offer brief examinations of three commonly reported phenomena associated with loudness, which I refer to as 'listener collapse', 'imagined loudness', and 'noise occupation'.

Effect #1: listener collapse

> To be listening is to be at the same time outside and inside … the sharing of an inside/outside, division and participation, de-connection and contagion. (Jean-Luc Nancy)[16]

Jean-Luc Nancy shares a crucial insight with psychophysicists. In his book *Listening*, the philosopher also describes how aurality acts as a meeting point between exterior/physical and interior/perceptual worlds. To listen is to encounter an exteriority, yet it elicits an experience that is located firmly within the body of the listener. He conceives of sound as being identical with its emitter (be it instrument or person), whose vibrations not only create sound, but, in a real sense, *are* sound. Source, space, and listener(s) are brought into intimate contact through a single shared vibration – a shimmering together that, nevertheless, is always experienced individually.

While Nancy's proposition is simple enough to understand in the abstract sense, the everyday act of listening often feels quite different. Vibrations may very well be conceived as a form of touch, but in practice sound tends to be experienced as travelling from a remote source to our ear. This process delineates a perceptual distinction between world and self by locating the sound source at a defined, distant point in space. It is this perception that has allowed researchers since Wegel to postulate on the boundary between the auditory and haptic senses, a boundary that only becomes recognizable at moments when it is transgressed. One of the most common ways to provoke this transgression is through extreme loudness.

In his 2013 study of Japanese noise music, David Novak describes a conversation with a friend regarding the power of noise performance:

> At the beginning of a good Noise show, [my friend] said, the volume 'just sucks all the air out of the room', leaving the listener suspended in sound: 'You can feel your whole body react [he snapped his body back as if suddenly startled] when they start – the sound fills your mind completely and you can't think. At first you're just shrinking back, until you overcome that and let it go, and then you're in it and you're just being blown away.'[17]

This description provides an example of one of the most common effects associated with extreme loudness, an effect I refer to as 'listener collapse'.[18] An experience of listener collapse occurs when loud sound dissolves the ability to distinguish between interior and exterior worlds, especially in regard to sound and self. Sound does not only touch, it saturates and fills mental and physical consciousness, eliminating the possibility of detached listening. In a sense, listener collapse acts as a forced imposition of the type of sonic experience proposed by Nancy; it is a moment in which penetration erases our ability to distinguish between exterior/sound and interior/self, bringing both together in a single inescapable vibration.

In sonic communities that value extreme loudness, the experience of listener collapse can be a powerful source of pleasure. Describing rock music, Theodore Gracyk writes:

> For a receptive audience, volume bridges the sense of distance between the audience and the performers by erasing the gap between the self and the music … [L]oud music can break us out of our sense of detached observation and replace it with a sense of immersion, for it is literally around us (or, with headphones, seemingly inside our head). Where traditional aesthetic theories have often offered an ideal of disinterested contemplation of 'psychical distance', the presence of noise can overcome the respectful, reverential aspects of distancing.[19]

Here, loudness provides the basis of an alternative aesthetic that seeks out immersive physio–aural–haptic experience. This desire can be traced in numerous rock and noise music communities. We can see it in bands like My Bloody Valentine, whose fans gleefully describe them as 'The Loudest Band In The World', and who often cap their performances with an extended high-volume noise section dubbed – tellingly – the holocaust.[20] An even starker example can be seen in the Seattle drone metal group Sunn O))), whose performances blast audiences with slow moving sub-bass frequencies at 120 dB. Describing her experience at one of the group's concerts, Olivia Lucas writes: '[T]he sound envelops my body, cutting me off from other sensations, making me safe. Closing my eyes, I sway slowly from side to side to the slow beat of the vibrational pulses. I am touching sound.'[21]

But how does loudness initiate this powerful dissolution of boundaries between self and other, between the material and the reflective? I would suggest that the process turns upon a unique double-movement that simultaneously transforms how both sound and selfhood are processed. First, sound projected at high levels generates vibrations that resonate in bodily locations other than the ear. The feeling of sound rumbling in one's chest, for example, is a familiar sensation at rock concerts, operas, sporting events, lightning storms, and in any number of other contexts. Lucas' encounter with Sunn O))) makes repeated references to feeling sound in her stomach, her sternum, her sinus, her hands.[22] This somatosensory shift transforms sound into a tangible presence, reminding us of sound's identity as a tactile object that operates in, around, and through the body. While this is easy to forget in standard (low volume) contexts, loudness makes it impossible to ignore.

While this first movement emphasizes materiality by elevating the sonic to the level of the physical self, the second does the exact opposite. Here, high volume works to destroy

the experience of selfhood by approaching the upper limit of the loudness scale: physical pain. As Elaine Scarry details in her path-breaking work on torture, experiences of extreme pain work to dissolve the most basic concepts of self and world. For the body in pain, neither self, nor world, nor choice exist, as torment becomes the only perceivable content of consciousness.[23] Scarry's account speaks to the ways that pain breaks down fundamental categories of sensory experience:

> Although vision and hearing ordinarily reside close to objectification, if one experiences one's eyes or ears themselves – if the woman working looks up at the sun too suddenly and her eyes fill with blinding light – then vision falls back to the neighborhood of pain.[24]

By approaching the threshold of pain, high-level sonic experience affects a similar collapse of interior and exterior, dissolving self and other into an undifferentiated experience of sound and/as pain.

The frighteningly destructive potentials of listener collapse are noted often in scholarship on musical torture[25] and sonic weaponry.[26] However, it is also important to recognize that this powerful form of affect can provide an important source of fulfilment within some listening communities. Even references to pain are not always in opposition to such aesthetics. Novak comments upon how many noise performers choose stage names that foreground pain and destruction, while positive descriptions of shows often use terms like 'brutal' or 'painful'.[27] Lucas likewise analyses her experience in terms of 'masochistic submission' and 'ritual domination', drawing from the work of Fred Maus.[28] Both authors make reference to listener collapse's ability to evoke experiences of the sublime – an encounter with an object of such force and power that it defies attempts at measured or detached comprehension.

One final question might ask whether listener collapse functions primarily as an individual or as a social experience. Novak emphasizes the former, writing: '[V]olume flattens out the scene to foreground the idiosyncrasies of individual sensation … This immersion in volume is not a moment of social collectivity, but a personal encounter with the overwhelming presence of sound.'[29] In light of the preceding discussion, however, I would suggest a somewhat different interpretation. Volume's act of flattening is not simply a matter of drowning out the social in deference to the subjective. Rather, the flattening itself enacts an erasure of the basic line between individual and social. When one can no longer distinguish between interior and exterior worlds, parsing individual versus collective experience becomes a fruitless exercise. As Gracyk suggests, sound becomes a bridge that brings multiple actors (human and non-human) together in an experience that is profoundly personal, but also profoundly shared. Reverberating Nancy's dictum, all vibrate together, connected by sound, unable to distinguish where my vibrations end and another's begin.

Effect #2: imagined loudness

Imagined loudness refers to listeners' ability to re-interpret the level of perceived sounds in order to meet certain requirements or expectations that are not fulfilled by a sound's physical characteristics. This allows the listener to compensate for sonic encounters that fail to meet the aesthetic demands of a particular tradition. Take, for example, the following statement on heavy metal from Robert Walser:

> The complete electronic control of sound reproduction that characterizes modern music allows metal to be reproduced, theoretically, at any level. However, the nature of metal and the needs and pleasures it addresses demand that it always be heard loud. Even when it is heard from a

> distance, or even sung softly to oneself, metal is imagined as loud, for volume is an important contributor to the heaviness of heavy metal.[30]

The ontological status of imagined loudness is somewhat unclear. Is it a desire? An association? A delusion? A projection? Though it cannot be described as physical, its phenomenological potency is sufficient to satisfy a metal fan's aesthetic requirement for loud experience (and, perhaps, listener collapse), even at moments where further amplification would be impractical. Once again, the observation finds loudness operating at the intersection between individual and social experience. Here, aesthetic expectations established by listening communities impinge upon the affective experience of individual listeners, even when those listeners are removed from social settings (e.g. 'even sung softly to oneself'.)[31]

To be precise, the effect described by Walser is not entirely imagined, but results in part from other associations noted elsewhere in his text. Timbre, for example, is perceived as being closely intertwined with loudness, especially through the sound of distorted (overdriven) electric guitars. For much of rock's history, distortion was only obtainable by pushing amplifiers to the point of overloading their electronic components. Through this connection, distorted timbres can arouse a perceptual impression of loudness even when reproduced at softer levels, evoking the haptic memory of pleasurable listener collapse.[32]

As a critical tool, imagined loudness provides a productive way to unravel certain issues surrounding volume and electronic manipulation. For example, it may help to explain Gracyk's confusion regarding a quote from writer Sheila Whitely:

> Sheila Whitely says of 'Purple Haze' that its 'sheer volume of noise works towards the drowning of personal consciousness.' This should give us pause; Whitely is discussing a recording, and *any* recording can be turned up to a level where it might 'drown' personal consciousness through sheer volume … Surely Whitely herself decided that high volume is particularly suitable for 'Purple Haze', more so than for 'Little Wing' or 'Spanish Castle Music [*sic*].' Listening to recordings and the radio, the audience controls the volume level. Yet different musics seem to demand different volumes.[33]

Imagined volume can help shed light on Whitely's quote. For her, 'Purple Haze' can always be experienced phenomenologically as a high-volume event, even when the recording is turned down to low levels. The timbral effects of distortion again play a major role; it is not surprising that 'Purple Haze' utilizes heavy guitar distortion, while Gracyk's two contrasting examples do not.

This should not imply that certain sounds intrinsically possess or imply a fixed loudness perception. The conditioning process that links sounds with volumes is undoubtedly established through repeated exposure and learned expectations within a given culture. Yet we should also note that these associations, once established, are quite resilient, persisting long after technological change renders them outdated. Electronic effects pedals, for instance, have allowed guitarists to play distorted sounds at low levels for decades, yet their association with high volume remains largely intact – a notable phenomenological inertia. Eventually, however, all such associations are vulnerable to shifting, a disjuncture that is especially notable across generations. Whitely's imagined loudness experience of 'Purple Haze', for instance, might not resonate with a child of the 1990s whose musical upbringing affixed very different associations to the sound of Jimi Hendrix. For such a listener, the sound of Hendrix's guitar might evoke only the low-level playback of family car rides, not the overwhelming intensity of late 1960s rock bacchanalia.

Unlike listener collapse, imagined loudness does not only operate at extremely high volumes. It can be attached to softer sounds as well. Take, for instance, John Szwed's description of Miles Davis's delicate trumpet sound, played through a Harmon mute:

> Miles … pulled the tube out and played the mute straight, shoving the bell of his horn into the microphone to gain volume and resonance.
>
> The Harmon had a certain mystique to it because it was hard to record. It muted so well, in fact, that trumpet players blew harder, and it subdued the fundamental of the tone, as the engineers might say, giving off high-frequency transients … The mute also allowed Miles to play the way he spoke, in that grainy whisper that compelled others to lean toward him – a wisp of a musical tone that could suggest delicate intimacy but also a force barely under control.[34]

This account offers a compelling inversion of the rock writers. Where Walser's volume knob allows him to turn down a record while still imagining it as loud, Davis's microphone and mute allow him to project tones that are loud enough to be audible while nevertheless suggesting intense softness. Timbre again plays a major role, as Szwed observes. By subduing the fundamental, the muted horn emulates a whisper, evoking low-volume associations of closeness and intimacy.

The paradoxical power that can be generated through low loudness (imagined or otherwise) is similarly explored by Anne Karpf in her writing on the human voice:

> Among those who have been silenced historically … volume can be a sign of defiance … But volume can also be inversely related to status. To compel total attention some powerful people speak so softly that their listeners are obliged to lean forward to hear … Reversing the norm can be powerful, too. Since loudness is traditionally associated with rage, and softness with intimacy and confidentiality, quietly expressed anger can be devastating.[35]

Read in dialogue with Szwed, these observations allow for a provocative reading of Davis's musical allure. Note, for instance, how both accounts reference an audience's submissive need to 'lean forward/toward' the soft utterances of dominant figures. What is striking about Szwed's image of 'a force barely under control' and Karpf's suggestion of quietude's ability to 'compel total attention', is the paradoxical intimation that low loudness can exert a power that rivals, if not mirrors, that of high loudness. As will be explored further below, the impact wrought by the extremities of the loudness spectrum often commingle and converge in unexpected ways.

Effect #3: noise occupation

Noise is generally defined in one of two ways: (1) a sound that is not desired, or (2) a sound that distracts from another sound that is desired (a signal, or code).[36] Like a weed, its designation is rooted in a metaphysics of un/desire that is fluid and subjective. This fact has been well-known to experimental artists (rock, jazz, classical) since the early twentieth century, who have continuously worked to emancipate various sounds from the label of noisiness – to alter their meaning through the simple act of focusing attention upon them. As Paul Hegarty describes:

> Noise itself constantly dissipates, as what is judged noise at one point is music or meaning at another. As well as this disruptive element, noise must also be thought of as constantly failing – failing to stay noise, as it becomes familiar, or acceptable practice.[37]

While noisiness and loudness might seem like very different properties of sound, in practice they are closely implicated. Studies of noise music, for example, frequently reference

loudness as a technique used to provoke noise's sonic un/desire.[38] Though extreme loudness may not always be a necessary prerequisite for creating noise, it is certainly a powerful tool. By provoking physical responses that approach pain, loudness acts as a catalyst. It initiates the affective economies of desire, penetration, and resistance through which noise becomes (more) noisy.

Perhaps not surprisingly, the political ramifications of noise have been a recurrent theme within the recent history of sound studies.[39] Debates over noisiness (both its nature and its presence) call our attention to the many ways that sound is assessed, valued, contested, and manipulated. An ever-shifting discursive construction, noise shines light on the ways that social power is articulated in the sonic realm. As Karin Bijsterveld writes:

> The right to make noise as well as the right to decide which sounds are allowed or forbidden has long been the privilege of the powerful, whereas those lower in rank (women, children, servants) were supposed to keep silent, or were under suspicion of intentionally disturbing social order by making noise.[40]

By focusing attention on sound as a staging ground for debates over value, the study of noise highlights a central goal of the sound studies enterprise: examining what aurality has to teach us about social dynamics, mediation, control, and listening bodies.

A key foundational text in the contemporary study of noise is Jacques Attali's *Noise: A Political Economy of Music*. Attali argues that control over sound has long been essential to the operations of hegemonic power, and takes place through the imposition of various codes that 'analyze, mark, restrain, train, repress, and channel the primitive sounds of language, of the body, of tools, of objects, of the relation to self and others'.[41] For Attali, 'noise' is defined as any sonic event that arises from outside of these codes – the sounds that are undesired by the powers in control. To make noise is therefore a deeply political act, since noises are, by definition, the sounds that hegemonies wish to suppress. The tendency of sound to expand outward into public space therefore provides a formidable tool for both the hegemon and its resistors. Noisiness offers a means for claiming and reclaiming public space in the interest of various competing sonic ideologies. I refer to this process as noise occupation.

Attali's theories have resonated strongly among certain rock music writers, including Gracyk. Although he takes issue with certain aspects of Attali's model, he connects with the theorist when discussing the political potentialities of music played at high levels. Through noise occupation, loudness and volume embolden music by enabling it to permeate more deeply into contested spaces. Volume increases the distance that sound can travel, allowing it to impose itself upon others and (re)claim public space through the saturating force of sonic presence. Such deployment creates the potential for 'turning music into a weapon'[42] that can be used to either reinforce or resist systems of control. Insofar as it emerged in post-war America as a high-volume genre that self-consciously opposed mainstream power structures, the historical trajectory of rock music can perhaps therefore be considered 'noisy' in the Attalian sense.

But other accounts may complicate this heroic countercultural narrative of hegemony and resistance. Instead of focusing exclusively on oppositional binaries, William Echard argues that rock's unique aesthetic systemization of sound (including the desire *for* loudness) makes it difficult to consider the music as pure noise in the manner outlined by Attali. Instead, Echard proposes a model of 'relative' noise that operates by blurring the boundaries between noise and code:

> There are many ways in which the balance between noise-as-noise and noise-as-code may be enacted. For example, a performance may be understood as being *about* noise even when it is highly conventional … Or listeners may choose to pay special attention to features of the music which are more noisy and disregard factors that suggest regulation, in effect suspending their disbelief and allowing a temporary enactment of noise as a phenomenological event … Or an event may be noisy relative to other kinds of events. Rock music may have conventionalized noise within its own practices, but it can still be noisy when compared to traditions which have not undergone this exercise.[43]

Echard's relativization of noise suggests a crucial corollary. While Attali's original text is concerned primarily with macro-level, post-Marxian models of late-capitalist hegemony, Echard deconstructs the model further by fragmenting noise and code into more localized networks. Within this de-centred framework, questions regarding what types of sounds objectively constitute 'noise' or 'code' become meaningless. Rather, noise's discursive contours remain fluid, subjectively delineated by the preferences and cultural engrained belief systems held by each listener. Expanding this idea outward, musical genres can likewise never be cast as solely oppositional to (or in alliance with) a single mainstream power – despite frequent attempts to frame them as such. Instead, they must be seen as possessing their own structuring, perhaps micro-hegemonic, principles.

Throughout such discussions, loudness continues to function as a pivotal tool through which salvos of code and noise are volleyed by various constituencies. Amplifying loudness provides the most straightforward means of 'weaponizing' sound in both literal and metaphorical ways. Through the effects of noise occupation, loudness allows sound to impose a socio-sonic discipline upon the space in which it operates. It is no coincidence, for example, that military bands often comprise the loudest instruments in a given culture (Scottish pipers, European drum corps, Turkish janissary, etc.). Musical genres associated with protest have also tended toward high volume, from the piercing trumpets of jazz to the booming bass of hip hop to the distorted guitars of rock. Even the American folk revival of the 1960s, despite its professed aversion to electric amplification, cultivated volume through mass sing-alongs and communal gatherings.

The political power of noise occupation is more than simply a metaphorical display of solidarity. Instead – like listener collapse – it operates within the affective space in between individual and social experience. On the one hand, noise's un/desirability is negotiated by myriad cultural values and expectations. On the other, it operates via an uninvited penetration into the ears of individual subjects. In Foucauldian terms, one might say that noise occupation imposes social mandates through acts of discipline inflicted upon physical bodies. This becomes especially evident when considering the various 'weaponizations' of sound that have arisen over the past several decades (Operation Nifty Package, Long Range Acoustic Devices [LRADs], Guantanamo Detention Techniques, and so on). Loudness and volume empower noises to penetrate directly into the bodies of anyone close enough to hear – anyone within ear/shot.

Part II: the cry and the scream

Thus far, the discussion has focused on defining a series of reported effects that speak to loudness's affective impact. In this final section, I will attempt to apply the preceding ideas to two recent theories of musical aesthetics: Michel Poizat's concept of the operatic 'cry' and Fred Moten's examination of 'Aunt Hester's scream' in African American music. Though

dealing with very different genres, the two writers share a concern with the immense force of non-linguistic vocal utterances. Both texts stress the wordless nature of the sounds as the key to their power. Though this is certainly significant, I propose that additional sources of affect can be found in two other characteristics that go largely unexamined: their intense loudness, and their paradoxical parallels to silence. It is no accident that both theorists focus on the extremities of human declamation (loudness and absence), rather than choosing among the many other forms of non-linguistic sound (the gasp, the whimper, the sigh, etc.). This section will re-examine both theories to consider how accounting for loudness may offer additional insight.

In chapter three of his book *The Angel's Cry*, Poizat explores various relationships between speech, music, and silence in the realm of operatic singing. He begins with a historical account of the long-standing argument over which feature of opera is more important: music or text. The roots of this debate are traced to ancient accounts of unease surrounding the mysterious, unexplainable power of musical tones. For centuries, political and religious leaders sought to contain this power through the controlling restraint of intelligible sung texts. Despite their efforts, Poizat argues that opera has steadily moved away from intelligible speech and towards a less comprehensible style of singing, ultimately culminating in the emergence of the pure cry.[44]

Reflecting upon this trajectory, Poizat proposes a new way of thinking about the operatic voice that abandons the older binary of music versus text. Instead, he suggests a spectrum of possibilities derived from linguistic signification itself. On one side, the scale is bounded by the presence of linguistic signifiers as communicated in clear, intelligible speech. On the other, it is characterized by the absence of language, which can either occur through total silence or through the cry. This idea is illustrated in Figure 2.

The cry, in its position as both similar and directly opposed to silence, becomes a central element in Poizat's theory. He defines it as follows:

> [W]henever I speak of a *pure* or sheer cry, I mean specifically a paroxysmal vocal emission beyond the range of music and out of reach of the word. This cry is therefore not supported by the musical notation, nor can it be accommodated on the staff; and it is not supported by direct verbal notation in the text (at most, it is indicated by an 'Ah!' in the libretto, though usually it is given in a stage direction such as 'screams with horror' or 'cries out in terror'). It is in this dual sense that the cry is literally unsupportable, unbearable, and untenable. Lulu makes us feel the horror of the cry that no human symbolic system can accommodate, and this is why the cry is so often called 'inhuman'.[45]

For Poizat, the potency of the cry is derived from its uncontainability in any linguistic or symbolic system. Instead, it generates affect by simulating 'the cry of pain [that] preceded all speech'.[46] He frames this idea via Jacques Lacan's theory of the 'object voice', a pre-linguistic form of utterance that is properly possessed only during infancy. The object voice has no recourse to meaning, and the infant speaker is unable to distinguish between his/her voice and his/her self. This experience of the voice is lost, however, as soon as the infant acquires the

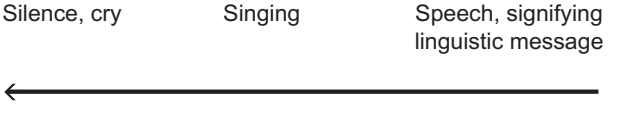

Figure 2. Poizat's vocal signification spectrum. Poizat, *The Angel's Cry*, 90.

use of language.[47] For Poizat, the cry is opera's attempt to simulate the sublimity of the object voice by presenting an utterance that triggers affect without relying upon the word. It is this striving toward an unobtainable pre-linguistic mimesis that gives the cry its chilling power.

Before returning to the question of loudness, one final aspect of Poizat's theory should be noted: its treatment of silence. The author conceives of silence in two separate ways. The first imagines it as a form of absence – a gap between sounds that allows them to be separated and differentiated from one another. This separating function allows sound to be molded into semiotic systems, and he therefore refers to it as 'the silence that speaks'. But Poizat dwells somewhat longer on a second formulation, which he refers to as 'the silence that screams'. Here, silence is not conceived as an absence, but as a pervasive presence that underlies all sonic experience. It only becomes recognizable 'when the verbal, the articulate, is cast back into nothingness … a silence that results from that destruction, a deadly silence, the unsevered and *absolute presence* of the pulsing of presence and absence'.[48] Like the cry, the silence that screams derives its force by summoning a form of presence that reaches before and beyond systems of signification. By casting off semiotic meaning, the silence that screams imposes itself as a crushing presence due to the absence of (signifying) absence.[49]

It is in this overlap between silence and the cry that we find our first indication of possible loudness effects. Note that these two events embody the furthest ends of the loudness spectrum: silence and pain – those limits at which the listener can no longer listen. Although Poizat describes the cry primarily in terms of heightened pitch and lack of linguistic content, all of his primary examples (Berg's Lulu, Wagner's Kundry, Mozart's Commandant, etc.) occur at the loudest moments of opera. At such levels, the performance becomes capable of evoking several crucial loudness effects. First, by presenting itself at extreme levels, the cry initiates the characteristic double-movement of listener collapse. Its loudness foregrounds sound's identity as a physical presence, while at the same time dissolving selfhood through the approach toward physical pain (or – in the related example of the silence that screams – psychological terror). This observation does not contradict Poizat's analysis, but rather enhances it. As listener collapse dissolves the distinction between (exterior) sound and (interior) self, the cry becomes better equipped to perform its terrifying simulation of a Lacanian pre-linguistic object voice.

One might protest that although the cry is presented as a dramatization of pain, orchestras and singers rarely reach levels loud enough to produce actual physical anguish in the opera audience. As such, listener collapse could never function in the way that it does for a genre like heavy metal (which, through amplification, is more than capable of reaching such levels). To this, I offer two responses. First, if the classical orchestra is unable to match metal's extreme loudness, it is certainly not for lack of trying. The continuous growth in the size of orchestras up through the nineteenth century can be read as a steady accumulation of loudness potential, even if they could never approach the levels attainable through electric amplification (due to the restrictions implicit in Fechner's logarithmic function). It is worth noting that the most influential figure in expanding the orchestra is also Poizat's central example in developing the cry: Richard Wagner. The desire for loudness effects may have been a common factor underlying both developments.

Second, even when the orchestra's volume does not approach the threshold of physical pain, listeners may be able to fill in the remainder through an act of imagined volume. The timbral associations invoked by a crying, straining, distorted voice can work to create a phenomenological perception of loudness that is sufficient for the cry to have its crushing

effect. Through imagined volume, the aesthetic–affective impact of the cry can be experienced by those straining to hear from the highest balconies, just as it is by those who are engulfed in the front row.

Several related issues arise in Fred Moten's analysis of 'Aunt Hester's scream', a reference to a passage from the first autobiography of Frederick Douglass. The scene relates an event from Douglass's youth in which he witnessed his aunt being whipped viciously by their slave master. The piercing sound of her screams haunted Douglass throughout his life, and, Moten argues, has continued to haunt African American artists, historians, and writers ever since. In this way, he conceives of the scream as a foundational moment for radical black aesthetics.

Where Poizat is concerned with spectrums, Moten highlights the significance of discursive gaps (breaks, cuts, invaginations, etc.). The impact of Aunt Hester's scream stems from its position inside several such breaks. One of these closely resembles Poizat's emphasis on sounds that generate affect by operating outside of linguistic signification. In Moten's words, the scream constitutes 'a radically exterior aurality that disrupts and resists certain formulations of identity and interpretation by challenging the reducibility of phonic matter to verbal meaning or conventional musical form'.[50] Unlike Poizat – who stresses the cry's unidirectional movement away from significatory meaning – by conceiving of the scream in a conceptual gap, Moten proposes that it engages in its own double-movement *toward and away from* signification. The scream is powerful in the way that it symbolically conveys defiance, as well as in its presence as a pure vocalization that transcends language. In this, it defies any model that would attempt to position it as either signifier or signified. Aunt Hester's scream announces itself as both and neither, cleaving a deep rift in the structure of signification itself.[51]

The cut opened by the scream mirrors that engendered by slavery more broadly, in which lines between subject and object are obliterated through the perverse conceptualization of human chattel. In a reversal of Marx's concept of 'exchange value', Moten argues that it is through speech acts that the slave is able to resist commodification, namely by announcing one's own subjecthood. In the case of the scream, however, this act of defiance is not pure, but functions as another treacherous double-movement. On the one hand, Aunt Hester's scream disrupts the logic of bondage through a subjective, improvisational, vocalized defiance of her commodification. But on the other, the scream, as a response to physical pain, reinforces the objectification that is intrinsic to the slave system. The scream always conveys more and less than it intends; as Douglass notes, the slave master 'would whip her to make her scream, and whip her to make her hush'.[52] Within the system of slavery, where subject/object distinctions disintegrate and signification becomes bankrupt, the human voice is left with only the scream, or silence.

Considering loudness can once again illuminate the process through which Aunt Hester's scream cuts us. As with Poizat's cry, the voice's intensity again works to provoke an experience of listener collapse that arrives with crushing force. But simultaneously, as a form of active defiance Aunt Hester's scream also taps into the potentialities of noise occupation through an Attalian reclamation of sonic space. Through its immense volume, the scream cuts into the bodies of those within earshot. The symbolic rape of Hester's beating is resisted and inverted as her scream functions as a sonic penetration against her attacker, a penetration the master cannot control.

But of course, this penetration is turned not only on the master, but also onto young Douglass himself. Bearing witness to his aunt's pain, the young man is materially and conceptually torn open through the scream's terrifying affect. In Douglass' words: 'I remember the first time I ever witnessed this horrible exhibition … It struck me with awful force. It was the blood-stained gate, the entrance to the hell of slavery, through which I was about to pass.'[53] Yet even as the moment marks a non-negotiable entrance into slavery, it simultaneously enables him to position himself outside of it – a view of hell from beyond the gates. The pain of Aunt Hester's scream, as a jarring i(nte)rruption of the architecture of slavery, opens a space for questioning and resistance that becomes the groundwork for future black radicalism. Moten goes on to describe several of her most resonant descendants:

> [Abbey] Lincoln hums and then screams over [Max] Roach's increasingly and insistently intense percussion, moving inexorably in a trajectory and toward a location that is in excess of or inaccessible to – words. You cannot help but hear the echo of Aunt Hester's scream … That echo haunts, say, Albert Ayler's 'Ghosts' or the fractured, fracturing climax of James Brown's 'Cold Sweat'. It's the re-en-gendering haint of an old negation: Ayler always screaming secretly to the very idea of mastery, 'It's not about you'; Brown paying the price of such negation, a terrible, ecstatic, possessive, dispossessive transfer, a transcendental fade, an interminable songlike drag disrupting song.[54]

We should not be surprised that Moten's examples – Lincoln, Roach, Ayler, Brown – again draw upon extreme levels of loudness that push beyond linguistic meaning. Their sounds proliferate in multiple directions: connecting communities through interpersonal sonic touch and shared pain, staking a visceral claim to physical, political, conceptual, and spiritual spaces.

The loudness effects in Moten's theory reconnect with Poizat again at the end of his book, where the author analyzes an installation by artist Adrian Piper called *Untitled Performance for Max's Kansas City*. In the piece, Piper presents herself physically within the space of her artwork. She remains perfectly still, eyes and lips tightly closed, and refuses to interact with anyone in the room. Her charged silence functions as an active resistance to expectations of her speech. Like Aunt Hester, Piper conveys her message through a presence that refuses recourse to signification. Through Piper, Moten's theory comes full circle, identifying a descendant whose power is drawn from silence, yet retains kinship to the scream.[55]

Where Hester's subjectivity is enacted through a vocalization that rejects her designation as a silent commodity, Piper's is performed through a crushing silence that refuses the role of speaking collaborator. Where Hester penetrates by filling up sonic space, Piper castrates by stripping away symbolic systems. Where Hester's resistance is the soul-saturating loudness of the cry, Piper's is the equally devastating stillness of the silence that screams.

Conclusion

Given the numerous threads explored, it is useful to return to a central question: what is to be gained by considering loudness? How might we benefit from re-examining its role as a generator of sonic affect? To summarize, I would present the following general points.

First, loudness operates in the liminal space between multiple experiential registers. Especially at extreme levels, it draws its force from an oscillation that flattens and/or transgresses several perceptual binaries: interior/exterior, self/other, presence/meaning, individual/social, physical/reflective. In each of the examples of listener collapse, imagined volume and noise occupation, we observe loudness cutting across categories, distorting

and obscuring them, disorienting us by disrupting our most basic perceptual apparatuses. This in-between-ness speaks to its affective impact – its ability to transfer intensities across bodies and discourses. Unexpectedly, such a model also provides compelling correspondences with loudness's germinal role in the history of psychophysics, a quantitative field that was also predicated on interrogating the translation of experience across physical and perceptual realms.

Second, by shining light on loudness, we open new avenues for considering the impact of musical/sonic encounters. While other parameters of musical sound (pitch relations, rhythmic structures, textual settings) are perpetually analyzed and interpreted, loudness is often glazed over as obvious or self-evident. Yet any conductor can tell you that the dynamics of a passage have tremendous ramifications for its realization; any performer can relate the long hours spent developing a powerful sound on their instrument; any mixing engineer can describe how manipulating levels can make or break a recording. These nuances speak to loudness's importance for aural experience, but too often they go overlooked or unmentioned. Such was the case in the examples of Poizat and Moten. The loudness of both the cry and the scream seem so obvious that neither author dwells on them, but upon closer examination it can be seen as a powerful contributor to their affective poignancy.

While the present piece has focused mostly on the furthest ends of the loudness spectrum, it is not only here that loudness is felt. I conclude with the hope that future work may continue such examinations on more moderate levels of intensity. Despite our perceiving them as unique moments, silence and pain are not alien entities; they are not entirely detached from other registers of sonic encounter. By mapping the edges of listening they remind us of aurality's broader affective potentials. In the sounds between silence and pain, our ears touch a world beyond.

Notes

1. Griffiths, "George William Clarkson Kaye," 889.
2. Lloyd, "What Are Phons?"
3. For several examples, see Brown et al., *City Noise*.
4. Thompson, *The Soundscape of Modernity*, 115–68; Bijsterveld, *Mechanical Sound*, 104–10.
5. Wegel, "The Physical Examination of Hearing and Binaural Aids," 156 (emphasis mine).
6. Wegel, "The Physical Characteristics of Audition" 58; "The Audiometer," 5–6; Riesz, "The Relationship Between Loudness," 212–13; Fletcher and Munson, "Loudness," 91.
7. Smeds and Leijon, "Loudness and Hearing Loss," 236.
8. Wegel, "The Physical Examination of Hearing and Binaural Aids," 157.
9. Among acousticians and psychologists, the term 'loudness' is strictly differentiated from 'volume', with the latter referring to 'the subjective size of a sound, not its perceptual strength' (Florentine, "Loudness," 6). To these researchers, the vernacular tendency to conflate the two concepts presents an understandably frustrating source of confusion, since they require very different approaches to measurement and experimental design. While I am sympathetic to this concern, I have found some terminological slippage to be unavoidable in the present piece for two reasons. First, much of the discussion considers reports of loudness experience offered by everyday listeners, outside of the laboratory setting. I have found it necessary to account for the scientific imprecision of these largely non-scientific writings, which tend to treat the two terms as synonymous. Second, many forms of sonic deployment involve efforts to make sound permeate space *and* penetrate/resonate within bodies. These characteristics, which are often closely linked, seem to fall somewhere between the clinician's differentiation between perceptions of space (volume) and those of strength (loudness). Their close imbrication acts as a

key component of loudness's politico-aesthetic power, making it difficult to neatly disentangle them. While such a project would make a fascinating topic for further study, it will only be obliquely referenced here.

10. Gregg and Seigworth, "An Inventory of Shimmers," 1.
11. Ibid., 2.
12. Roads, *Microsound*, 7–8.
13. Helmholtz, *On the Sensations of Tone*, 7–25.
14. Florentine, "Loudness," 4.
15. Marks and Florentine, "Measurement of Loudness," 21.
16. Nancy, *Listening*, 14.
17. Novak, *Japanoise*, 46.
18. See also Walser, *Running with the Devil*, 45; Hegarty, *Noise/Music*, 145; Wallach, Berger and Greene, "Affective Overdrive," 12; Lucas, "Maximum Volume."
19. Gracyk, *Rhythm and Noise*, 106.
20. Port, "My Bloody Valentine."
21. Lucas, "Maximum Volume."
22. Ibid.
23. Scarry, *The Body in Pain*, 33.
24. Ibid., 165.
25. Cusick, "You Are in a Place"; Daughtry, "Thanatosonics."
26. Goodman, *Sonic Warfare*.
27. Novak, *Japanoise*, 47.
28. Lucas, "Maximum Volume."
29. Novak, *Japanoise*, 47.
30. Walser, *Running with the Devil*, 44–45.
31. Ibid.
32. Psychophysicists have observed similar associations between loudness and other stimuli in laboratory settings. In one recent study, recordings of automotive sounds played alongside photographs of red sports cars were judged by participants as being louder than those played with cars of other colors, even when played back at the same level (Menzel et al., "Influence of Vehicle Color").
33. Gracyk, *Rhythm and Noise*, 100.
34. Szwed, *So What*, 186.
35. Karpf, *The Human Voice*, 41.
36. A third definition, sometimes used in musical acoustics, refers to noise as 'irregular vibrations in contrast to the periodic sound waves of musical tones' (Bijsterveld, *Mechanical Sound*, 104). This usage will have less bearing on the discussion here.
37. Hegarty, *Noise/Music*, ix.
38. Ibid.; Novak, *Japanoise*.
39. A more detailed survey of recent literature on noise in sound studies and related fields can be found in Bijsterveld, *Mechanical Sound*, 31–41. See also Thompson, *The Soundscape of Modernity*; Sterne, *MP3*; Novak, *Japanoise*.
40. Bijsterveld, *Mechanical Sound*, 40.
41. Attali, *Noise*, 6.
42. Gracyk, *Rhythm and Noise*, 106.
43. Echard, *Neil Young*, 87.
44. Poizat, *The Angel's Cry*, 40–48.
45. Ibid., 76 (emphasis in original).
46. Ibid., 77.
47. See also Dolar, *A Voice and Nothing More*, 26–42.
48. Poizat, *The Angel's Cry*, 87.
49. Ibid., 89.
50. Moten, *In the Break*, 6.
51. Ibid.

52. Douglass, *Narrative of the Life*, 259.
53. Ibid.
54. Moten, *In the Break*, 22.
55. Ibid., 233–54.

Acknowledgements

The author wishes to thank the following individuals for invaluable feedback at various stages of this article's development: Jason Stanyek, Peter McMurray, Emily Richmond Pollack, Ben Tausig, Alexander Rehding, Olivia Lucas, Daryush Mehta, Jim Sykes, and the editors and anonymous reviewers of this journal.

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