



music¹⁷ and on-message songs such as Martha and the Vandellas' "Nowhere to Run" and "You're No Good" by Linda Ronstadt in order to either irritate him or prevent him from sleeping. Militarized pop got even more avant-garde during the Waco siege of 1993. The FBI engaged in "acoustic psycho-correction," playing high-volume music blended with sound effects into the compound of the Branch Davidians led by David Koresh with a playlist that was accompanied by bagpipes, screeching seagulls, dying rabbits, sirens, dentist drills, and Buddhist chants. One story maintains that silent subliminal tapes were also used along with music, including the tale of one Guantanamo detainee who was left in an empty room with a boom box playing a variety of classic rock tracks, which John Ronson suggests were embedded with subliminal messages to nudge him toward revealing all he knew about al Qaeda.¹⁸ Other torture allegations against the U.S. Army, for example from Falluja in Iraq, tell of the bizarre subjection of captives under interrogation with musical torture.¹⁹

Alongside these allegations from the U.S. war on terror, the episodic history of sonic warfare has recently taken on even more prescience due to the widely covered uses of acoustic weaponry by both the U.S. and Israeli armies. In February 2004, for example, the American Technology Corporation secured a \$1 million deal to provide long-range acoustic devices (LRADs) to the U.S. Marine Corps in Iraq. These LRADs are said to provide "an effective less-than-lethal tool to communicate, affect behavior, and support lethal rules of engagement."²⁰ They involve targeted high-frequency beams of sound about 2,100 to 3,100 hertz of up to 150 decibels within a range of 100 yards.²¹ Their primary function has been as a crowd dispersal tool, and they were also used in the aftermath of Hurricane Katrina to repel looters.

Returning again to Colonel Manley, pumped up with his zealous enthusiasm, he seemed excited by the prospect of deploying his theoacoustic weaponry, with Whitehead making parallels to widely reported tests of sonic crowd control near Jericho early in the summer of 2005, on the eve of the evacuation of settlers from the contested West Bank territory. The Israeli army issued a press release about its contingency plans for dealing with turbulence among Israeli and Palestinian populations generated by this demographic transition. The Israeli Defense Force dubbed their new "nonlethal" sound weapon "The Scream": "Protestors covered their ears and grabbed their heads, overcome by dizziness and nausea, after the vehicle-mounted device began sending out bursts of audible, but not loud, sound at intervals of about 10 seconds. An Associated Press photographer at the scene said that even after he covered his ears, he continued to hear the

sound ringing in his head.”²² The device, a military official noted, targeted a specific frequency toward the inner ear. Throwing more uncertainty into this foggy history of research into acoustic weaponry, some even suggested that this was perhaps the first time such a device had been deployed out of the lab and in the field, despite the fact that one nameless official admitted that the proper tests on long-term auditory damage due to prolonged exposure to the frequencies had not yet been conducted. It was clearly such recent instances that inspired Whitehead’s Project Jericho piece.

Aside from military and police deployments, research into ultrasound in the field of commerce realizes the notions of science fiction. In Steven Spielberg’s adaptation of Philip K. Dick’s *Minority Report*, personalized branding messages are beamed at passing consumers, identified by retinal scans. What kind of technologies would push these signals at individual bodies in the crowded spaces of hypercapital? One application of the highly directional qualities of ultrasound currently being researched involves a signal carried by a very focused beam. These “audio spotlights,” or “holosonics” devices, facilitated the micro-locational targeting of audio advertising, part of the arsenal of insidious sonic branding strategies in which brands become woven into the fabric of immersive, interactive, predatory environments. These carrier mechanisms, increasingly deployed in sound art installations and undergoing research and development for theater surround-sound systems, have been dubbed sonic bullets or lasers: when you pass through the beam, you hear the sound as if a mere auditory hallucination. One step right or left, and you vacate the zone of audition. Crank up the pressure, and that targeted beam becomes a hypersonic weapon. Also operating with high-frequency sound, this time as an irritant as opposed to a directional beam, is a device referred to as the Mosquito. Operating just at the edge of the threshold of audibility, between 15 to 20 kilohertz, Mosquitoes, originally aimed at repelling rodents, were recently repurposed on teenagers in the U.K.

Despite these recent news reports of confirmed deployments, a penumbra of uncertainty will always exist around military-police security research. Deception, after all, as Sun Tzu tells us, is the most potent weapon of war. What then, should be made of this confusing mesh of data, rumor, defense industry press releases, pop mythology, and news reports surrounding the concept of sonic warfare? Clearly there are big differences between biblical stories, occult research into infrasound, and the redeployment of rodent-repellent ultrasound devices on teenagers on the streets of the U.K.

Weapons are tools not just of destruction but also of perception—that is to say, stimulants that make themselves felt through chemical, neurological processes in the sense organs and the central nervous system, affecting human reactions and even the perceptual identification and differentiation of objects.

—Paul Virilio, *War and Cinema: The Logistics of Perception* (1989)

All war is based on deception.

—Sun Tzu, *The Art of War*

Between the two world wars, the visual logistics of the photograph and cinema (as described by Paul Virilio in *War and Cinema*) were joined by the expanding repertoire of the “logistics of sound,” its networked ecology, with the advent of interwar mass radio transmissions and the carceral archipelago of performance spaces, the distributed system of audiospecular enclosures deployed for entertainment and propaganda purposes and known more widely as cinema. The history of war, as traced by Virilio, revolves primarily around the mutation of perception over territorial and economic concerns; its evolution accelerates an osmosis between biological and technical nervous systems. Just as Virilio found the logistics of military perception within the history of cinema, especially with the emergence of cybernetics in the postwar period, we can locate, updating an ancient history of acoustic warfare, an undercurrent of research into sonic tactics guiding a symbiosis of noise, bodies, and machines. Across the continuum of war, from sonar to nonlethal acoustic weaponry, this logistics of perception

in its vibratory, resonant, affective, and virtual sonic dimensions is now assuming new permutations in cultures mutated by the impact of global terrorism and asymmetric warfare.

This logistics of (im)perception does not merely seek to intervene in the “normal” functioning of psychophysiological circuitry, but, in McLuhanist terms, also involves perceptual prosthetics: an extension or an amputation. Conceived differently, for philosopher Baruch Spinoza, the focus shifts from what a body is, even in its technologically extended sense, to its powers—what it can do. The body of sonic warfare is therefore always a speculative question, which does not return home to a pre-given human, corporeal demarcation. The episodic history of sonic warfare’s perceptual assemblages can therefore equally be found in electronic and electromagnetic cartography, the distributed nervous system of technical sensors that feed it, and the flood of information these systems produce.

In the cybernetic phase of martial evolution, which emerged out of the detritus of World War II, turning this data flood into workable knowledge became as important as the efficiency and accuracy of weapons systems. The logistics of perception has been confronted by the ravenous information hunger of military systems, generating a chain reaction of problems in the gathering, transfer, and processing of data. The more sophisticated the military’s distributed nervous system, the more overpowering the sheer weight of information to be dealt with.¹ And as an unavoidable corollary, the more overexposed the battlefield becomes, the more appearance gives in to an array of camouflage, decoys, jamming, smokescreens, and electronic countermeasures. To be perceived is to be “taken out.” So investment in forces co-evolves with the investment in their concealment. Stealth, secrecy, and the logistics of perception signal, for Virilio, that the war of images has in fact superseded the war of weaponry. Whether we agree with Virilio’s historical argument or not, his insight is to draw attention to how the evolution of weapons and armor is paralleled by the co-evolution of visibility and invisibility and, by implication, of audibility and inaudibility.

In the late 1920s, a series of strange structures started appearing in Kent on the south coast of England. The plan of the British air force was to set up a chain of “concrete ears” along the coast that would peer out over the channel of water that separated the island from the Continent. It was a plan never completed. Looking like prehistoric satellite dishes and resembling the concrete styles catalogued in Virilio’s very Ballardian book of photography, *Bunker Archeology*,² these structures were sound mirrors used as acoustic detection early-warning devices designed to pick up sounds from approaching enemy

resonation is not on the walls. It is in the emptiness between them. It fills the emptiness with its complex patterning. The patterning is not at a distance from itself. It is immediately its own event. Although it is complex, it is not composed of parts. It is composed of the event that it is, which is unitary. It is a complex dynamic unity. The interference pattern arises where the sound wave intersects with itself. The bouncing back and forth multiplies the sound's movement without cutting it. The movement remains continuous. It remains in continuity with itself across its multiplication. This complex self-continuity is a putting into relation of the movement to itself: self-relation. . . . Resonation can be seen as converting distance, or extension, into intensity. . . . With the body, the "walls" as sensory surfaces.⁶

Sonic warfare therefore is concerned with the generation, modulation, and dampening of vibrational carrier waves of sonic affect. This is as much about the amodal, nonsensuous, the abstract, cross-mediality of rhythm as the sense of sound itself. If amodality is taken to ontologically precede the designation of a sensation to a specific exteroceptive sensory channel (the five senses), then the clinical conception of synesthesia would have to be inverted from pathological condition to foundational of the affective sensorium.⁷ Such a discussion opens the sonic onto the vibrational substratum out of which it individuates as a specific sensory modality. Interestingly, many ascribe to the sonic a strange intermediary sensory role. Deleuze and Guattari assert that perhaps sound plays a piloting role in synesthesia.⁸ Stephen Connor has argued that this derives from sound's interstitial qualities, that it has the tendency to drift in between the other senses.⁹ French film theorist of audiovisual perception Michel Chion argues that the sonic, within film, possesses a strange power to render a block of sensations that includes both the tactile and the visual. He notes, for example, that "some kinds of rapid phenomena in images appear to be addressed to, and registered by, the ear that is in the eye, in order to be converted into auditory impressions in memory."¹⁰ For him, "the ear's temporal resolving power is incomparably finer than that of the eye," and this allows cinema to go beyond a mere correspondence between the senses toward what he called an "intersensory reciprocity," transposing a "sonic velocity into the order of the visible."¹¹ More important, he points to rhythm as the locus of sensory transposition. Moreover, he prefers the trans-sensorial to that of the intersensorial.¹² It is an "element of film vocabulary that is neither one nor the other, neither specifically auditory nor visual . . . when a rhythmic phenomenon reaches us via a given sensory path—this path, eye or ear, is perhaps nothing more than the channel through which rhythm reaches us."¹³

In any sonic experience therefore, it is primarily the vibrational (microrhythmic) nexus of sensory modalities that constitutes an encounter. The affective sensorium of an entity becomes a rhythmic transducer composed of not just the five exteroceptive channels that open onto the external environment, but also the viscosity of interoception, which is sensitive to intensity minus quality and in a sense preempts exteroception in that it makes decisions before the consciousness of extensive sensory objects fully emerges. Where there is a visceral perception initiated by a sound and in a split-second the body is activated by the sonic trigger, then the gut reaction is preempting consciousness. Interwoven with the proprioception of the feeling of the moving relations of the body, a tactility facing inward, the affective sensorium as polyrhythmic nexus is a synesthetic synthesizer. For Massumi, synesthesia constitutes the perspective of the virtual. It can therefore be concluded that if synesthetic perception is intersensorial, it is so only to the degree that it faces the actual, whereas amodality proper, facing the virtual, is trans-sensorial and, as Chion maintains, rhythmic. This tension between transsensoriality and the sonic produces the concept of unsound, the not yet audible, the dimension of sonic virtuality.

in advance for products that may not yet exist. The affective deployment of sound, we have also noted, may be more direct than the ominous tinting of atmosphere or mnemonic intervention. As we have also seen, the soft power of affective tone can be overridden by the immediate physicality of sonic violence where frequency is multiplied by amplitude into the sonic dominance of acoustic weaponry.

Sonic Warfare has therefore underlined the ways in which affective tonality in its broadest sense operates within a play of forces and that every nexus of sonic experience is immersed in a wider field of power. But not just any mode of power. By placing the discussion within the context of a mode of power-tagged preemption, a deliberate attempt has been made to align the text so that its comments do not bear just on past and present distributions of sonic sensations, but are keenly focused on futurity—the way in which the future is active virtually in and is anticipated by the present—hence, the speculative focus on the time anomaly of *déjà entendu* within virosonic branding, where the misleading sense of familiarity with something never experienced renders, more likely, a future disposition or affinity.

No doubt, the outline of preemptive power could leave one feeling despair that the invention of new modes of feeling is always already co-opted in advance, that control has morphed into becoming, and vice versa. With capital's drive to incite creativity ever intensifying, the difference between cultural invention and the cynical fabrication of invention begins to blur. Taking the example of piracy, some commentators have noted how it has become just another business model. And when the most banal popular music is simultaneously mobilized as a weapon of torture, it is clear that sonic culture has reached a strange conjuncture within its deepening immersion into the environments of the military-entertainment complex. However, the impasse of despair at such apparent undecidability would imply that the new is defunct and relegated to recycling. *Sonic Warfare* refuses this persistent, despairing echo of postmodernism.

Countering this despair, one of the threads that runs through the book, in tension with control's frequency modulation of affective tonality, finds in futurism's art of war in the art of noise, and Afrofuturism's revisions and updates, one of the most potent, if problematic, conceptualizations of the aesthetic mobilization of vibrational force. Implicit in futurism is an affective politics that goes well beyond its typecasting within music of "sounding futuristic." What was salvaged from futurism, after discarding its dubious political affiliations and compromised linear temporality, was an aesthetic politics as a tactics of

invention that suspends possibility for the sake of potential. *We do not yet know what a sonic body can do.* This potential was pinpointed using the concept of *unsound*, another name for the *not yet audible*. It describes the peripheries of human audition, of infrasound and ultrasound, both of which modulate the affective sensorium in ways we still do not fully comprehend. In its negative connotation, *unsound* aptly describes the colonization of inaudible frequencies by control. But most important, *unsound* also names that which is not yet audible within the normal bandwidth of hearing—new rhythms, resonances, textures, and syntheses. Most generally, then, *unsound* denotes sonic virtuality, the nexus of imperceptible vibration, masked due to limitations on not just the deficient physiology of the auditory system, but also the policing of the sensible enacted by groups defined by their affective affinities determined by taste, expertise, or other audiosocial predeterminations such as class, race, gender, and age. Traditionally sonic virtuality has been understood in relation to concepts such as silence and noise, with both offering, in different and sometimes conflicting, sometimes complementary ways, vehicles for thinking the aesthetic, cultural, or micropolitical potential of the audiosocial.

Together, the aesthetic politics of silence and noise has been a useful way of framing or demarcating the field of sonic power. For example, in the history of musical aesthetics, silence, from John Cage onward, has been conjoined to the virtual in that it constitutes the shadow of audition, the nonconscious background, perceivable only through absence and with only a negative possibility of entering conscious attention. Silence here is sound in potential, unactualized. Similarly, the concept of noise, from futurism onward, came to mean the potential of any sound whatsoever to disrupt and move forward musical jurisdictions as policed by generic criteria, critical border patrols, or harmonic or melodic parameters of organized sound.

Both of these aesthetic tendencies, within the remit of a politics of amplitude, are often placed in allegiance to an anticapitalist politics. In these cases, in noise pollution policy, for example, strategic resonances are recognized in local tactical interventions into the force fields of sonic ecologies. Yet the silence-noise axis has several drawbacks.

The politics of silence often assumes a conservative guise and promotes itself as quasi-spiritual and nostalgic for a return to a natural. As such, it is often orientalized and romanticizes tranquility unviolated by the machinations of technology, which have militarized the sonic and polluted the rural soundscape with noise, polluted art with sonification, polluted the city with industry, polluted

thought with distraction, polluted attention with marketing, deafens teenagers, and so on.¹ Its disposition is almost always reactionary. In a much less strong but more compelling aesthetic version, it sides with those lamenting the loss of dynamic range within the “loudness war” that currently rages concerning the overuse of compression in mastering techniques within sound engineering. Dynamic compression here, or at least its overuse, in maximizing loudness and minimizing dynamic range, is objected to as a weapon for enhancing the audio virological power of sonic capital while deadening affect in the hypercompetitive economy of attention.

The politics of noise, on the other hand, may become an excuse for relativism (one person’s noise is another’s music) or, in more militant mode, takes noise as a cultural weapon, as a shock to thought, as a shock to bourgeois complacency, as a shock to tradition, as a shock to the status quo.² The various positions that can be grouped under this heading revolve around an array of definitions of noise, from unwanted sound, to deconstructive remainder, systemic excess, void, or disturbance through to acoustic definitions based on distribution of frequency and tagged by colors—white, pink, black, and so on. Aesthetically, however, in the soundtrack to the politics of noise, its weapons often remain trapped within the claustrophobic confines of the dual (and usually white) history of rock music and avant-classical sound art. Justified by Adornian propaganda, the politics of noise may be enlisted to celebrate everything from the dreary to the monstrous, with sonic dominance narrowly construed as the overpowering taken to the point of meaningless parody—instead of a shock to thought, a provocation to boredom.

In its most convincing formulations, the negativity of the politics of noise is twisted into an engine of construction, and noise becomes a reservoir of rhythmic potential, a parasitic probe beckoning the future. Usually noise here, in a nontechnical sense, is black noise—the black noise of what Kodwo Eshun calls the futurhythmachine. It is to black noise that twentieth-century popular music owed most of its innovations. Black noise, painstakingly crafted in the context of enforced migration, depressed urbanism, and ethnic suppression, becomes a locus of affective collectivity. Feeling around in the dark, in the toxic smog of megalopian pressure, when no hope seems to exist, when no stability persists, rhythmic decisions still get made, collectives mobilized, and potential futures produced. The rhythmic breakthroughs of the electronic musics of the Black Atlantic have been countless.

What is certain is that the dialectics of silence and noise cannot contain the concept of sonic warfare developed here. Both the conceptual fetishization of noise and silence as a politics of amplitude is always arbitrary. Hence emphasis has been deliberately shifted to vibration—and therefore (micro) rhythm—as that discontinuum without which a “loud” or “quiet” sonic ecology would be inconceivable. Instead of obsessing on one or the other, it is clear that agencies of both control and enjoyment, or repressive and mobilizing forces, reserve the right to zigzag as and when it is pertinent to do so.

The problem of solely prioritizing the amplitude axis (between loudness and quietness) when considering the politics of sonic intensity is that usually it comes at the expense of a much more complex set of affective resonances distributed across the frequency spectrum. Some of these complexities have come out in our discussion of unsound, from infrasonic and ultrasonic deployments of sonic weapons through to the bass materialism of sound system cultures. In other words, to a micropolitics of amplitude must be added a micropolitics of frequency.

For sure, a more complete picture of the deployment of power within sonic ecologies would have to delve deeper into issues of political economy and language. But it is precisely the usual obsession with these two themes, within cultural theoretical attempts to politicize sound and music, and the blind spot that these dogmas have produced to date, that have made it impossible to take a properly ecological vantage point. They constitute only the tip of the iceberg. Yet for this very reason, some readers may understand sonic warfare, in its focused concern with this blind spot (and its only brief comments on economics via piracy and language via voice synthesis), as apolitical or, the preferable term, subpolitical.

Other readers may detect, particularly in the discussion of the sound system cultures of the *Planet of Slums* the suggestion of a latent, romantic notion of a musical multitude of the global proletariat. There is, however, a key difference between an argument about the affective mobilization and microcapitalist bootstrapping of the sound system cultures of the developing world and the internal peripheries of the core, on one hand, and the influential notion developed by Hardt and Negri in *Empire*,³ of an antiglobalization movement as *creative multitude*, on the other.

The claims made in *Sonic Warfare* are much less grandiose. It is one thing to find a model of affective collectivity in the aesthetic invention, sensory engineering,