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REVIEW ARTICLE

Georgina Born, ed., *Music, Sound and Space: Transformations of Public and Private Experience* (Cambridge: Cambridge University Press, 2013), ISBN 978-0-521-76424-7 (hb).

Jonathan Sterne, ed., *The Sound Studies Reader* (New York: Routledge, 2012), ISBN 978-0-415-77130-6 (hb), 978-0-415-77131-3 (pb).

Trevor Pinch and Karin Bijsterveld, eds., *The Oxford Handbook of Sound Studies* (Oxford: Oxford University Press, 2012), ISBN 978-0-195-38894-7 (hb), 978-0-199-99581-3 (pb).

In the introductions to each of these three substantial recent multi-author collections on the study of sound, the editors note that sound studies is past its fledgling beginnings and well into a phase marked by increased pressure for self-definition. However, one introduction adds pertinently that sound studies seems in fact to be in a state of perpetual emergence, much like sound as a materiality, not only changing and transducing but again and again claiming to come into being.[1] This rings true. But in spite of such claims, the field today is not only emerging but resounding, and widely at that. The almost simultaneous publication of these three significant collections of essays represents a timely opportunity to examine the resonant frequencies of contemporary sound studies.

The three volumes in question are Georgina Born's *Music, Sound and Space: Transformations of Public and Private Experience* (Cambridge, 2013), Jonathan Sterne's *The Sound Studies Reader* (Routledge, 2012), and Trevor Pinch and Karin Bijsterveld's *The Oxford Handbook of Sound Studies* (Oxford, 2012). Sound studies maintains a big, absorbent tent, and it is apt that all three books are animated by different primary concerns – sonic space, cultures of communication, and the sounds of science, respectively – and consequently offer different assays on the state of sound studies. Each covers important territory, and there are even more potential framings that could have been selected by the editors. The field houses a robust and genuine interdisciplinarity. The challenge in the face of such diversity (and magnitude – the three volumes contain between them eighty-two essays distributed across more than 1400 pages) is to locate the books' nexuses. Among these, as I will discuss below, is a lingering preoccupation with the category of the human; this concern subtends much of the work in all three collections, as well as in the broad arc of the field. For decades, constructivist scholarship has been devoted to illuminating the limits of viewing the human subject as an ontological presumption. But even with the human hybridized and rendered contingent, sound studies still debates whether the human – as a single nodal point within the field's manifold preoccupations – may hold some generalizable value. These debates have been refined over time, and are one thread in the field worth following today.

But before proceeding to investigate the status of the human in sound studies, some brief disciplinary perspective is in order. The study of sound has been, for two decades at least,

1 Jonathan Sterne, 'Sonic Imaginations', in *The Sound Studies Reader*, ed. Jonathan Sterne (New York: Routledge, 2012), 3.

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an ascendant area of research that has generated scholarly interest and funding.[2] Providing empirical material for urgent inquiries into human-technical intercourse, sensory culture, and the phenomenology of being, sound has opened valuable veins by boring through the surfaces of many scholarly domains, as other instruments could not. Sound attests to the dynamism of lived experience; to music as it comminutes in audition; and to rings, whistles, and sirens as they become part of listening cultures. Sound is compelling because of its relationship to our senses, but so too does it raise pointed questions about sense itself. The recent spate of edited collections is not surprising; there has been a professional gold rush.

In the early years of this decade, peer-reviewed journals, special interest groups in professional societies, research centres, monographs, and (of greatest concern here) thick edited volumes bear witness to the continued maturation of sound studies, the settling of its frontier towns.[3] There are active outposts for soundscape historians, theorists of noise, scholars of sound and violence, and archaeologists of audio technology, among others. In disciplines as wide-ranging as musicology and astrophysics, scholars who identify themselves part of the sound studies community propose methods grounded in listening, methods that are intended to enhance or reform existing analytic approaches. Though some scholars are more marginal in their fields than others, enough of them have had enough success that sound studies is now regarded as a serious interdiscipline.

Disciplinary maturation, of course, means fixing what's been loose. As science and technology studies (itself an important influence for sound studies) takes to be axiomatic, the inscription of durable definitions is the privilege of intellectual authority.[4] Out of an unruly diffusion of ideas and theories bouncing around like echoes in a hall, only some proceed to the lecture room for disciplinary action. This process is routine in the sciences.

2 The timing and angle of ascendance may be debated. Jonathan Sterne quotes Michele Hilmes as remarking that the study of sound has been 'hailed as an "emerging field" for the last hundred years', and Trevor Pinch and Karin Bijsterveld note that with regard to sound studies 'the word *emerging* may now be slightly too modest'. Nevertheless, the relative quantity of publications and institutional housings for interdisciplinary sound-based work have increased dramatically. Sterne, 'Sonic Imaginations', 3. Trevor Pinch and Karin Bijsterveld, 'New Keys to the World of Sound', in *The Oxford Handbook of Sound Studies*, ed. Trevor Pinch and Karin Bijsterveld (Oxford: Oxford University Press, 2012), 7.

3 Among these are the peer-reviewed *SoundEffects: An Interdisciplinary Journal of Sound and Sound Experience*, the scholarly platforms the *Journal of Sonic Studies*, *Interference*, *Earroom*, and *Sounding Out!*, professional associations including the European Sound Studies Association and special interest groups within the Society for Ethnomusicology (SEM), American Anthropological Association (AAA), American Studies Association (ASA), and the Society for Cinema & Media Studies (SCMS), as well as scholarly research institutes including the Sound Studies Lab at Humboldt-Universität zu Berlin, the Acoustic Ecology Institute, the World Forum for Acoustic Ecology, the World Listening Project, and the Nordic Research Network for Sound Studies. Among the key volumes in sound studies published since 2000 are Michael Bull and Les Back, eds, *The Auditory Culture Reader* (Oxford: Berg, 2004); Veit Erlmann, ed., *Hearing Cultures: Essays on Sound, Listening and Modernity* (Oxford: Berg, 2004); Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham, NC: Duke University Press, 2003); and Emily Thompson, *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900–1933* (Cambridge, MA: MIT Press, 2004).

4 Steve Woolgar and Bruno Latour, *Laboratory Life: The Construction of Scientific Facts* (Princeton, NJ: Princeton University Press, 1986).

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This moment is ironic for sound studies, however, because the field opposes codification and universality, almost as a first principle, as a condition of its perpetual emergence. Its *raison d'être* has been described as a means of apprehending the world that challenges Cartesian coordinates, and that bespeaks relations, networks, plurality, and dynamic environments rather than orders of things.[5] Anointing forebears and establishing hierarchies would strike most of its practitioners as absurd if not offensive. So much is laid at sound's altar because it seems to *materially* defy an ontology of quantitative and positional truth, about which many scholars already felt uneasy. Acoustics may account for the mechanical behaviour of sound, but not for dialogue nor the power of announcement, and certainly not for the unique existential fact of a voice (to cite one crucial example). It is to the vast, uncodable humanistic remainder left after the study of waves, the not-so-silent majority, that sound studies offers itself.

In considering the problem of codes, it is indeed worth pausing at the voice. The presence of *a* voice in *a* body, never fully reducible to an ideal within a symbolic order, has been a philosophical concern in the West for some time, as noted in decades-old work by Jacques Derrida and Roland Barthes, and more recently and explicitly by Adriana Cavarero, Mladen Dolar and Judith Butler, among many others.[6] The sound of the voice, caught between personal possession and the cultural commons, public and private property, effusion and event, is heard to produce selves at the limit point of liberal humanism. Those who grappled philosophically with a crisis of vision, principally in the twentieth century, grappled by proxy with the liberal humanist self.[7] The pure seeing subject, he of the godly panopticon, was found to be lacking, and demoted. Along with phenomenology, sound, and often the voice in particular, have rushed in to fill the viewer's blind spot, where he could not see himself, and so became an alienated other. The sonic turn was a move toward knowing the self as diffuse, disaggregated from any single point in the social fluid, knowable only in terms of difference. This turn met with relief as well as anxiety. The perspectivally situated human being, plagued by nausea, could perhaps discover a different sensory grounding. But what kind of subjectivity, ostensibly not ordered by visuocentrism, would emerge in its wake? This is arguably the key question to which any work in the field must respond.

Surprisingly, however, one of the works most often named as a core reading of sound studies is essentially agnostic about the crisis of subjectivity.[8] In composer R. Murray Schafer's

5 See, for example, Don Ihde, *Listening and Voice: Phenomenologies of Sound*, 2nd edn, (New York: State University of New York Press, 2007).

6 Jacques Derrida, *The Voice That Keeps Silence: And Other Essays on Husserl's Theory of Signs* (Evanston, IL: Northwestern University Press, 1973); Roland Barthes, *Image-Music-Text* (New York: Hill and Wang, 1978); Adriana Cavarero, *For More Than One Voice: Toward a Philosophy of Vocal Expression* (Palo Alto, CA: Stanford University Press, 2005); Mladen Dolar, *A Voice and Nothing More* (Cambridge, MA: MIT Press, 2006); Judith Butler, *Excitable Speech: A Politics of the Performative* (New York: Routledge, 1997).

7 Martin Jay, *Downcast Eyes: The Denigration of Vision in Twentieth-Century French Thought* (Berkeley: University of California Press, 1994). Among those who wrote on this subject were Jean-Paul Sartre, Maurice Merleau-Ponty, Luce Irigaray, Jacques Lacan, Frantz Fanon, Paul Virilio, and Gilles Deleuze and Félix Guattari.

8 R. Murray Schafer, *The Soundscape: Our Sonic Environment and the Tuning of the World* (Rochester, VT: Destiny Books, 1994).

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1977 book *The Tuning of the World*, (included later as part of *The Soundscape: Our Sonic Environment and the Tuning of the World*), the author sides with an Apollonian interpretation of music, in which art is 'God-sent to remind us of the harmony of the universe', a state of proto-human truth that we are called to act in tune with.[9] Schafer proposed the word 'schizophonia' to characterize sounds displaced from their natural context by reproduction or human negligence. Schizophonia was a negative effect that the budding field of acoustic ecology would seek to heal. The term is strongly suggestive of the environmental consciousness of the Left at the time, which rejected capitalist modernity in favour of a return to nostalgically imagined communities and landscapes. A schizophonic diagnosis whispers of urban blight, the cataclysmic, bellicose consequences of technology, and the weedy spread of late capitalist privatization. It hears in sonic cultures not a new kind of human subject, but one unnaturally divorced from his true and 'natural' being. Although acoustic ecology is a science that attempts to take account of non-human sounds (including those made by animals and geological entities), it is also a last-gasp attempt to rehabilitate the coherence of the classical human subject, now in terms of guilt and responsibility: if something is not done soon, it will be too late. Humanity is morally culpable for introducing dissonant notes into a formerly harmonious sonic order, and a return will be possible only through an extraordinary and concerted effort.

Nearly every contemporary work in sound studies, whether or not it broaches the issue of subjectivity, rejects this position. The claim that certain sounds are right or wrong (For whom? And when and where?) has been widely criticized as naïve at best, and paternalistic and elitist at worst. Certainly, such a claim traffics in the kind of universal subjectivity that sound studies does not abide. Why, then, has *The Tuning of the World* remained so prevalent in genealogies of sound studies?

There is, of course, Schafer's clear and single-minded call to listen. Given the paucity of sonically attentive work in, for example, architectural design and historiography, which sound studies sets out to remedy, his call for aural attention already provides a point of sympathy. But many figures, including Pauline Oliveros, John Cage, Luigi Russolo, and Yoko Ono (the astute reader could probably name fifty more), made similar appeals. Is it possible that nostalgia for the human, in some guise, even the hope of its recuperation, remains latent in sound studies?

The assertion that an aural ontology might supersede a visual one was common in mid-to-late twentieth century work on sound, and still arises today, albeit less vociferously.[10] Embedded in this assertion is the idea that humans can retain a meaningful identity, perhaps even an interpretive primacy in the universe, by honing a long-ignored physical capacity. This claim has been amply critiqued, however, as reproducing a perspectival subjectivity with hearing in place of seeing as the privileged sensory mode.[11] Hearing is no less

9 Schafer, *The Soundscape*, 97.

10 See, for an example of mid-to-late twentieth century work, Walter Ong, *Orality and Literacy: The Technologizing of the World* (London: Routledge, 1982).

11 Georgina Born, 'Introduction', in *Music, Sound and Space: Transformations of Public and Private Experience*, ed. Georgina Born (Cambridge: Cambridge University Press, 2013), 6.

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mediated or situated than seeing, despite its purported omnidirectionality and a remarkably stale and inadequate chestnut about an absence of earlids. Nevertheless, the pursuit of a universal human subjectivity through sound arose with the very dawn of the discipline, and the question of the human continually reemerges as a site of possibility. For example, an emphasis on the role of the senses in scientific experimentation seems to reclaim some agency (if unintended) for human actors in disciplines that valorize non-human objectivity.[12]

At times, those working on sound articulate their position on the human in the theoretical language of posthumanism. In posthumanism, the human is decentered as an axis of self-knowing in favour of more rhizomatic structures.[13] It is an empirical response to a modernist subjectivity, and has overtones of feminism, anticolonialism and critical race theory. The link between sound and the posthuman has frequently been pointed out, and is even the subject of a monograph by David Cecchetto called *Humanesis: Sound and Technological Posthumanism*. Cecchetto's typically Deleuzian gloss describes sound as differential and multiplicitous, 'radically singular', effectively without position – much like the posthuman being itself.[14] Alexander Weheliye's ' "Feenin": Posthuman Voices in Contemporary Black Popular Music' and Kodwo Eshun's *More Brilliant than the Sun: Adventures in Sonic Fiction*, two pieces of writing with purchase in sound studies, also make this grounding explicit, and with a sense of urgency to boot.[15] 'The human', Eshun writes, 'is a pointless and treacherous category.'[16]

However, posthumanism is not the only theoretical basis for critically interrogating the figure of the human through sound. The three collections edited respectively by Born, Sterne, and Pinch and Bijsterveld present a wealth of strategies rooted in a variety of allegiances to and attitudes about the human subject. The human axis of comparison is one of many that could be productively selected. I suggest, however, that it is a particularly vital intellectual issue at a moment of disciplinary maturation, and that moreover it reveals a great deal about how sound studies has both come to acknowledge intellectual lineages and to continue holding canonization at arm's length. This simultaneous acknowledgement/resistance is mirrored by the field's relationship to the question of the human.

Born's volume is adapted from papers given at a conference on sound and space in Cambridge in 2008. Of the three books under review, it includes the fewest number of total contributions (fourteen), and its essays are the most structurally consistent, each around twenty pages with their own tidy concluding sections. Born also offers the longest and

12 See, for example, Alexandra Hui, Julia Kursell, and Myles W. Jackson, eds, *Music, Sound, and the Laboratory from 1750–1980* (Chicago: University of Chicago Press, 2013). The subject has also been approached through field recordings; hear Ernst Karel, *Heard Laboratories*, and/OAR records (and/35), 2010, (CD).

13 N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999); Donna Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1990).

14 David Cecchetto, *Humanesis: Sound and Technological Posthumanism* (Minneapolis: University of Minnesota Press, 2013).

15 Alexander Weheliye, '"Feenin": Posthuman Voices in Contemporary Black Popular Music', *Social Text* 20/2 (2002), 21–47; Kodwo Eshun, *More Brilliant than the Sun: Adventures in Sonic Fiction* (London: Quartet Books, 1999).

16 Kodwo Eshun, 'Operating System for the Design of Sonic Reality', in *The Sound Studies Reader*, ed. Jonathan Sterne, 450.

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theoretically tightest introduction. Sound is constitutive of unique kinds of public and private spaces, she suggests, and the work in the volume displays a new 'social phenomenology of music and sound' that is an apt methodology for analyzing these spaces.[17]

There is indeed an easy affinity between sound studies and critical geography, two disciplines that Born describes as 'remarkably consonant'.[18] Geography has been engaged in a critique of space for several decades. Henri Lefebvre's *The Production of Space*, which frames much of the field, is a Marxist admonition to confront discrete spaces (a city, a building, a room) as unstable ferments that require deliberate labour to maintain, rather than the static containers they are often assumed to be.[19] To the extent that a space is durable, this owes to the work of reproduction, not to an inherent fixity. Critical geography thus proposes a social, relational alternative to a model in which the contours of space are given by physical coordinates.

In much the same way, an analysis of sound confronts musical-formalist conceptions of space, in which the musical object exists in an idealized, ahistorical sphere. A great deal of Western music since the early twentieth century, including sound art as a whole, thusly challenges formalism. As Born writes, 'Because of sound's perspectival and relational nature – in the sense that it is always experienced from particular subjective and embodied, physical and social locations – and thus sound's multiplicity, its capacity to overflow measurement and containment, in sound art it is knowingly employed to produce modes of sonic-spatial experience that transcend Euclidean forms.'[20] Whereas a purely formalist view of music takes the listener to be external to the work, sound studies joins a constellation of paradigms for which the listener and the performance space are not only important but constitutive of musical space. To know music is not to know it absolutely, contra space, but to experience it conditionally in the world.

Both sound studies and critical geography – as well as work in the junction between them – proceed from the question of how to think the human in the aftermath of a philosophy of being that assumes a classical individual subject whose privacy is sacrosanct. A spatial interpretation of sound demonstrates the impossibility of an ideal universal point of reception, and sound consequently becomes the transmission par excellence for an age trending away from ideality and toward multiplicity. Sound has been recruited for this reason as much as any. But multiplicity does not merely index the idiosyncrasy of human actors (which would in effect reproduce the liberal humanist model); rather, Born offers sound as part of the field of the social, an 'actant' in a multiply hierarchical network that includes not only people but technologies, laws, and other non-conscious material forms. The human persists not isolated from but in relation to these actants, and as a result its centrality in the liberal tradition ebbs. Note that this is not an explicitly posthumanist theoretical apparatus – there are overlaps with posthumanism – but critical geography provides a somewhat different

17 Born, 'Introduction', 7.

18 Born, 'Introduction', 20.

19 Henri Lefebvre, *The Production of Space* (Hoboken, NJ: Wiley-Blackwell, 1992).

20 Born, 'Introduction', 17.

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route toward rethinking humanity. The construction of space is no less than a construction of interactions among agents in the world, of public and private spheres that assume uneven shapes and proffer different orders of selfhood.

Music, Sound and Space is divided into four sections, the first focused broadly on the design of sonic space, the second on institutional spaces of sound, the third on music and the politics of space, and the last on sound's relationship to the realm of the body. Notably (and this distinguishes Born's collection from the other volumes under consideration here), nearly every essay deals with music, albeit with minimal concern for formalism and, in a few cases, emphasising musical technology rather than composition. Only one, Tom Rice's 'Broadcasting the Body: The "Private" Made "Public" in Hospital Soundscapes' is exclusively engaged with non-musical sound.[21] Case studies in research on sound may focus on phenomena like the telephone or the aural culture of scientists, the consequences of which are often tangential to music. But while Born's introductory essay is a gambit that opens the door for work like this, the collection very much keeps music in the centre of the frame.

The essays about technology describe a growing emphasis on musical contexts of reception. Gascia Ouzounian's 'Sound Installation Art: From Spatial Poetics to Politics, Aesthetics to Ethics' describes a genealogy of sound installation art that runs parallel to core concerns about the nature of the self in twentieth-century thought.[22] Especially as mechanical reproduction became cheaper and more supple, the performative potentialities of devices joined human instrumentalists on the marquee. Perhaps for reasons that Walter Benjamin may help to explain, this shift drew attention to mediation, including those of the space of reception and the ears of the receiver.[23] Particularly in sound art, every actant in a listening network is recast as a mediating force whose affordances, be they physical or cultural, affect performance. Initially, this was reflected in work that foregrounded the room as 'not an afterthought, but a critical element of the composition', such as La Monte Young's ongoing *Dream House* installation in New York City.[24] But at a more developed stage, the visible walls of a room became less compelling than invisible – though hardly metaphorical – social spaces. For example, Ouzounian explains that Rebecca Balmore's 1990 *Ayumee-aawach Oomama-mowan: Speaking to Their Mother* broadcasted the voices of First Nations people in Quebec directly towards a section of land from which they had been evicted, suggesting a dialogue between the land and its previous claimants. The politicized nature of the space is both illuminated and challenged by Balmore's sound piece.

Three other essays on technology, Eric F. Clarke's 'Music, Space, and Subjectivity', Jonathan Sterne's 'What the Mind's Ear Doesn't Hear', and Sumanth Gopinath and Jason Stanyek's 'Tuning the Human Race: Athletic Capitalism and the Nike + Sport Kit' focus

21 Tom Rice, 'Broadcasting the Body: The "Private" Made "Public" in Hospital Soundscapes', in *Music, Sound and Space*, ed. Georgina Born, 169–185.

22 Gascia Ouzounian, 'Sound Installation Art: From Spatial Poetics to Politics, Aesthetics to Ethics', in *Music, Sound and Space*, ed. Georgina Born, 73–89.

23 Walter Benjamin, 'The Work of Art in the Age of Mechanical Reproduction', in *Illuminations: Essays and Reflections* (Berlin: Schocken Books, 1969), 217–252.

24 Ouzounian, 'Sound Installation Art', 79.

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on examples of the technological production of 'virtual' spaces of listening. These designs, as Sterne writes, 'strive at once for some form of universality, or at least translatability, even as they allow for the irreducibility of private, subjective experience'.[25] For mass technologies of listening to function, an ideal human subject must be imagined, whose capacities and potential interactions are built into technologies. Sterne uncovers the historical processes that led to the design of such technologies, while Clarke is concerned with how 'recorded sound has the capacity to specify a great range of "proximities", with all the consequences of the experience of subjectivity that ensue'.[26] Gopinath and Stanyek, meanwhile, ask after the more recent association between music and 'biocapitalism', an interfacing of the body with devices that audit and respond to it through songs and sonic signals.[27] Each of these contributions reveals one specific historical way in which the human body is decidedly not a private container unto itself, but rather a node in a network through which sounds, discourses, technologies, and capital readily flow. Gopinath and Stanyek, for example, suggest that 'the correlative effect [of state and capital intermingling] concerns the subject, even the human: once historically divided as consumer, worker, citizen, leisure seeker, the human becomes a merged entity, one for which these earlier classical categories are blurred together by capital'.[28] Technologies of listening then reconstitute the human according to new divisions more conducive to the modern subject as conceived by capitalism, and realized through technology, quite prominently including technologies of listening.

Suzanne Cusick's 'Acoustemology of Detention in the "Global War on Terror"' takes a somewhat contrary position.[29] The article extends the author's interview-based work on music as a tool of violence in detention camps, which are themselves disquieting examples of politically constructed space. Her emphasis, however, is not on the extralegal space of the offshore prison, but on the evisceration of bodily privacy and subsequent domination of subjectivity enacted by musical torture. This evisceration is powerful precisely because it strikes at the heart of a liberal humanist notion of individual privacy. Within the liberal-humanist frame, our communications in the world are taken to be mediated by the sounds we produce (or refrain from producing) linguistically; we have, both legally and normatively, the right to speak or not, at times of our choosing, and to manage what we hear as well as how we form communicative relations. On the other hand, in prisons where musical torture occurs, Cusick hears something akin to Jean-Luc Nancy's concept of a vibration-centered ontology, in which agents are not individuals but rather entities constituted by vibrations to which they are subject.[30] Violent as the conception of the liberal human subject may at times be, the vibration-centered alternative seems no less fraught with the possibility of harm and imbalances of power. Cusick does not advocate an unreconstructed

25 Jonathan Sterne, 'What the Mind's Ear Doesn't Hear', in *Music, Sound and Space*, ed. Georgina Born, 113.

26 Eric F. Clarke, 'Music, Space, and Subjectivity', in *Music, Sound and Space,* ed. Georgina Born, 100.

27 Sumanth Gopinath and Jason Stanyek, 'Tuning the Human Race: Athletic Capitalism and the Nike + Sport Kit', in *Music, Sound and Space*, ed. Georgina Born, 128–148.

28 Gopinath and Stanyek, 'Tuning the Human Race', 146–147.

29 Suzanne Cusick, 'Acoustemology of Detention in the "Global War on Terror"', in *Music, Sound and Space*, ed. Georgina Born, 275–291.

30 Jean-Luc Nancy, *Listening*, trans. Charlotte Mandell (New York: Fordham University Press, 2007).

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return to liberal humanism, but calls the vibratory networks in which prisoners are held a 'very dark symbolic order' which 'we would be wise to avoid'.[31] Perhaps there is a definition of humanity, a selfhood grounded in individual rights, that these prisoners' sonic experiences suggest remains ethically urgent.

In comparison to *Music, Sound and Space*, Jonathan Sterne's *The Sound Studies Reader* is theoretically sweeping. The essays (many condensed by Sterne into new, shorter versions) are curated from the past forty or so years, rather than having been commissioned as originals all at once for the volume. Though the field of communication studies and its local concerns are paramount, Sterne includes a striking variety of methods and theoretical bents, from the ethnographic to the historical, the posthumanist to the psychoanalytic, the traditionally sociological to the experimental. A great many of the essays will be familiar to media studies and sound studies scholars (or 'sound students', as Sterne aptly calls them), and a good number to ethnomusicologists as well. Among the best-known are excerpts from Jacques Attali's *Noise: The Political Economy of Music*, Emily Thompson's *The Soundscape of Modernity*, Schafer's *The Soundscape*, Friedrich Kittler's *Gramophone, Film, Typewriter*, Derrida's *Speech and Phenomena*, Louise Meintjes' *Sound of Africa!*, and Barthes' 'The Grain of the Voice'. Many others are rarely included in syllabi for any area of music studies, and make refreshing additions, especially when placed in conversation with tried-and-true selections. These include Frantz Fanon's brief, evocative essay 'This is the Voice of Algeria', Michèle Martin's incisive 'Gender and Early Telephone Culture', and Shuhei Hosokawa's 'The Walkman Effect', written in 1984 but still perhaps the most elegant theorization of mobile listening technologies in the lineage of the Walkman.[32]

These pieces, which predate the coalescing of sound studies (let alone its maturation), are pressed into service as key influences by Sterne, who I suspect arranged the book in such a way that chapters would enter into mutual dialogue, either bluntly or subtly. Hosokawa's essay, for example, immediately follows Schafer's, and critiques it directly:

> [Schafer's] principal argument about the present urban soundscape seems to fall short of its reality, that is, of its necessary artificiality, which appears to him as something to be restored to a more natural, therefore a more 'human' state. His 'humanistic framework', supported by the ravishing neologisms, aims only at the improvement *ad hoc* of the soundscape in question on the perceptual level (for example, 'ear cleaning') or on the situational one (for example, 'soniferous garden'); there is no consideration of the underlying social interactions or of the process whereby the soundscape itself is institutionalised.[33]

Reading Schafer and Hosokawa consecutively, the reader is left with a keen sense of the discursive possibilities that arise when the human is at stake in work on sound. An interviewer in a French magazine, Hosokawa reports, asks 'whether men with the Walkman are

31 Cusick, 'Acoustemology of Detention', 291.

32 To his enormous credit, Sterne reads widely for sonic commentary; an entire further volume could easily be dedicated to truffles from literature, mythology, and history, some of which he alludes to in his introduction to the volume, as well as in his short essays introducing each section.

33 Shuhei Hosokawa, 'The Walkman Effect', in *The Sound Studies Reader*, ed. Jonathan Sterne, 111.

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human or not … whether they are psychotic or schizophrenic; whether they are worried about the fate of humanity. One of the interviewees replies: your question is out-of-date'.[34] The conversation between Schafer and Hosokawa, organicist and mechanist respectively, describes a resilient groove through something since labeled sound studies. The groove carries past the philosophical place where the human was a black box into a period when it would, by many methods, be auscultated.

If the question of whether new mediating forms disqualify people as human is outdated, as most would agree it is, what kind of questions are timely? The inclusion of myriad legitimate answers to this question is one of the major strengths of Sterne's collection. A posthumanist might frame the person-Walkman apparatus as a cyborg, and a Deleuzian might consider the same human-device pairing as an assemblage. Meanwhile, historians of hearing and sonic technology, represented here by Emily Thompson, Richard Cullen Rath, John Picker, Karin Bijsterveld, Tara Rodgers, Lisa Gitelman and several others, write against a universal human subject by analysing the construction of sensoria. Picker's 'The Soundproof Study', for example, traces a rising middle-class expectation of interior silence fraught with racism and xenophobia in late-nineteenth century London.[35] While particular cultural utterances were heard as filthy and disruptive, equally loud industrial noise was spared vitriol because it indexed capitalist progress. Rodgers, meanwhile, reveals the gendered delineations within electronic music, whose canon has, to different degrees, marginalized musicians like Annea Lockwood, Le Tigre, and Clara Rockmore because they are not interested in tools and rhetoric inscribed as virtuosic.[36] The human sensorium is not, at any point in history, exempt from more general biases.

Furthermore, as Sterne notes in his introduction, there is a group of sound students united by their interest in something like 'vibrational ontology', a term used by Steve Goodman to describe sound's way of being in the world.[37] Such an ontology is not propelled by a rejection of humanism – it is propelled by sound – but the human undoubtedly occupies a reduced place within it. Like a tourist imagining he is in control of his itinerary, while in fact being channeled, observed, judged, and debited by the locals who know the terrain, the human conscious to himself in a vibrational ontology is naïve to the exterior forces that determine his being. He can only be autonomous by a profound application of ignorance. This ontology makes the phenomenology of perception secondary, since human or animal ears can only ever be responsive to a narrow range of frequencies. Instead, it asks how entities respond to one another when human perception is no longer an orienting principle. An approach like this is of value when digital communications function on an algorithmic plane hostile to human presence. War, security, and personally identifiable information processing are zones where subjectivity is organized in ways that bypass affect. However, this work – earnestly empirical and necessary as it may be – remains subject to an ethical critique like Cusick's.

34 Hosokawa, 'The Walkman Effect', 104.

35 John Picker, 'The Soundproof Study', in Sterne, ed., *The Sound Studies Reader*, 141–151.

36 Tara Rodgers, 'Toward a Feminist Historiography of Electronic Music', in *The Sound Studies Reader*, ed. Jonathan Sterne, 475–489.

37 Steve Goodman, 'The Ontology of Vibrational Force', in *The Sound Studies Reader*, ed. Jonathan Sterne, 71.

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The deftest vibrational ontological essay in *The Sound Studies Reader* is Stefan Helmreich's 'An Anthropologist Underwater: Immersive Soundscapes, Submarine Cyborgs and Transductive Ethnography'.[38] By joining a submarine dive to the ocean floor as an expert listener, Helmreich demonstrates that transduction, not immersion, may be the most felicitous metaphor for what anthropologists do. Data is not only recorded but transformed as it moves among media, be they atmospheric or cultural. 'I am curious', Helmreich offers, 'about the cognitive, affective, and social effects of transducing – that is, converting, transmuting – sound from the medium of water into that of air, and about what an anthropology of such transduced sensing can make explicit about the conditions that permit immersion (and, I maintain, that create senses of presence as such), whether people speak of immersing themselves in water, sound, or the medium of culture.'[39] Submerged, the human ear cannot hear spatially nor lucidly because of its innate mechanical capacities and limitations. Several distinct mediating steps are required to extract a reproducible object that can represent immersed hearing. The concept of transduction is merely one way of drawing attention to such fundamental mediations. (These have also been noted by Frances Dyson, a figure conspicuously absent from all of the three volumes.)[40] In this regard, Helmreich's essay, though it locates the ear in a network of nonhuman forces, nevertheless moves toward a human-centered aural ethics.

There is a great deal more to say about *The Sound Studies Reader*, which includes contributions on sound in relation to religious publics (Charles Hirschkind), nationalism (Ana María Ochoa Gautier), consciousness and expression in the post-colony (Michael Veal), the visual arts (Richard Leppert), and the avant-garde (Douglas Kahn), each of which pertains to the question of the human. The volume gives a sense not only of the enormous groundswell under sound studies, but of the field's multidisciplinary potential.

The third volume, Trevor Pinch and Karin Bijsterveld's *The Oxford Handbook of Sound Studies*, is striking in how differently it delimits sound studies as a field by comparison to the collections discussed above. The editors name 'science, technology, and medicine as the keys to unlock the worlds of sound'.[41] As a result, the essays are largely about the sounds of laboratories (Joeri Bruyninckx, Julia Kursell), product design facilities (Eefie Cleophas and Karin Bijsterveld), factories (Hans-Joachim Braun), medical institutions (Hillel Schwartz, Tom Rice) and studios (William Whittington), as well as about how sound is utilized by experts in these spaces. Pinch has written on the social histories of instrument manufacture (an excerpt from *Analog Days*, a book co-written with Frank Trocco, is excerpted in Sterne's collection), and Bijsterveld on noise and acoustic design.[42] Collectively, their book

38 Stefan Helmreich, 'An Anthropologist Underwater: Immersive Soundscapes, Submarine Cyborgs and Transductive Ethnography', in *The Sound Studies Reader*, ed. Jonathan Sterne, 168–185.

39 Helmreich, 'An Anthropologist Underwater', 169.

40 Frances Dyson, *Sounding New Media: Immersion and Embodiment in the Arts and Culture* (Berkeley: University of California Press, 2009).

41 Pinch and Bijsterveld, 'New Keys to the World of Sound', 6.

42 Trevor Pinch and Frank Trocco, *Analog Days: The Invention and Impact of the Moog Synthesizer* (Cambridge, MA: Harvard University Press, 2004); Karin Bijsterveld, *Mechanical Sound: Technology, Culture, and Public Problems of Noise in the Twentieth Century* (Cambridge, MA: MIT Press, 2008).

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bespeaks a concern with sound as a device in new technocratic modes of governance, to which Eurozone countries have increasingly been subject. This concern is decidedly sociological, and hints at something of a European current within sound studies.

The introductory essay by Pinch and Bijsterveld offers an illustrative story: a device called the SoundEar visibly warns students in Swedish classrooms when their voices reach a certain noise level, and has proved effective at convincing them to maintain a lower volume that will not damage anyone's hearing.[43] Over drinks, the editors and their friends debated whether the device was to the students' benefit (and whether it could be beneficial in other settings), or whether it was an excessive biopolitical intervention by the state. There is no clear answer; rather, the tension between the positions, and the wealth of conversations about sound and technology that they engender, become a broad foundation for the volume.

The category of the human is at issue in several essays that listen for the marginal voices of 'culture' under technocratic conditions, as well as for the enduringly political inscriptions of technology. Mara Mills' 'Do Signals Have Politics? Inscribing Abilities in Cochlear Implants' begins with an anecdote about a roboticist for whom cochlear implants portend an eventual transcendence of the human body through integration with technology.[44] For Mills, however, transcendence is tempered (if not made impossible) by the affordances of the implanted device, which cannot help but express certain possibilities while restricting others. For example, cochlear implants tend to favour the timbre and frequency of spoken language, making them poor transmitters of music. For the same reason, they may fail to render the pitches of tonal languages. As a result, they have been called both aesthetically and ethnically discriminatory. The signals that run through these artefacts do have, as it were, a politics. Going a step further, some within deaf culture balk at the notion of implants as a physical 'improvement' at all, claiming instead that deaf children are coaxed into obtaining them before they can reasonably consent to such a profound and lifelong physical modification. Humanism, in this case, may imply a normative body to which deaf people should aspire, quite at odds with a social model of disability. However, there are also deaf futurists and posthumanists who regard such technology as a site of experimentation, and who may embrace it.

'Do Signals Have Politics?' is written against a narrative, common in technocracy as well as science and industry, of what Pinch and Bijsterveld call 'the moral of mechanical objectivity'.[45] Unearthing the contingent, bodily processes by which science is performed and artefacts are designed is clearly an important gesture here. Not coincidentally, Stefan Helmreich is also included in this volume, once more writing on underwater sound, and the editors mobilize his principle of 'transduction' (among others) to locate the sensory and mechanical mediations that occur in knowledge production.

43 Pinch and Bijsterveld, 'New Keys to the World of Sound', 3–4.

44 Mara Mills, 'Do Signals Have Politics? Inscribing Abilities in Cochlear Implants', in *The Oxford Handbook of Sound Studies*, ed. Trevor Pinch and Karin Bijsterveld, 320–321.

45 Pinch and Bijsterveld, 'New Keys to the World of Sound', 13.

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However, two essays on 'sonification' provide reminders about the limits of highlighting a particular form of social constructionism – and, perhaps, the limits of rethinking the human through sound. Alexandra Supper's 'The Search for the "Killer Application": Drawing the Boundaries Around the Sonification of Scientific Data' and Jonathan Sterne and Mitchell Akiyama's 'The Recording That Never Wanted to Be Heard and Other Stories of Sonification' are sober on two very important matters. First, as Supper argues, sonification – as a means of representing scientific data – sonically abuts deeply ingrained disciplinary biases about which expressions qualify as science and which as art.[46] Science overwhelmingly rejects sound as a legitimate representational mode, and while certain uses are understood to hold promise, sonification is still searching for the 'killer application' that will convince mainstream scientists of its legitimacy. Second, Sterne and Akiyama stress that one of sonification's lessons is that 'if we acknowledge the plasticity of sound, we must also acknowledge the limits of a commonsensical definition of the field's object …'.[47] They conclude that 'the unity of "sound" as a perceptual category is an illusion of language'.[48]

This is not to suggest that sound is not real or legible, but rather that as an object of contemplation it too undergoes epistemological transduction, rendering it conceptually unstable on a historical scale. If sound once seemed to offer the possibility of a new human subject position *because* of a romantic reading of its nature – enveloping, immersive, sympathetic – and even if that expectation has been tempered by subtler theorizations in a maturing moment, scholars still must contend with sound's own ongoing need to be defined, its own shifting subjectivity. We cannot write of an acoustemology, a vibrational ontology, an acoustic ecology, or a phenomenology of listening that prefigures the cultural labour of definition. The broad appeal of sound studies now, however, and its persistent concern with the human, may suggest that we wish we could.

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46 Alexandra Supper, 'The Search for the "Killer Application": Drawing the Boundaries Around the Sonification of Scientific Data', in *The Oxford Handbook of Sound Studies*, ed. Trevor Pinch and Karin Bijsterveld, 249–270.

47 Jonathan Sterne and Mitchell Akiyama, 'The Recording that Never Wanted to be Heard and Other Stories of Sonification', in *The Oxford Handbook of Sound Studies*, ed. Trevor Pinch and Karin Bijsterveld, 545.

48 Sterne and Akiyama, 'The Recording that Never Wanted to be Heard', 557.

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