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Wired for Sound
ENGINEERING AND TECHNOLOGIES
IN SONIC CULTURES

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WESLEYAN UNIVERSITY PRESS
Middletown, Connecticut

2005
CHAPTER ONE

Introduction
Wired Sound and Sonic Cultures

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A new and understudied means of music making has emerged within and among the world's musical cultures. It is driven not so much by the vibrations of membranes, chords, hard surfaces, or molecules of air but rather primarily by the manipulation of electrical impulses. In the contemporary paradigm the sound waves' measurements, rather than the sound waves themselves, travel across metal filaments as differentials in electrical charge, and sound information — also encoded as electrical charge — is manipulated by means of computer interfaces. Our jam sessions today increasingly play out in information bits encoded as differences in electrical charge, and distinctions between musician and engineer have become blurred. Musical agents creating and manipulating sounds in this wired form harness unprecedented expressive powers as they simulate entire orchestras from information stored in tone banks; as they record, alter, and mix together any number of tracks of live performance; and as they sample any timbre or sound quality they encounter instantly for use in their own music making. Wired sound is at the basis of digital sound editing, effects processing, multitrack recording, and MIDI sequencing, practices that have powerfully impacted musical cultures and soundscapes around the world.

In addition, sound converted into electrical charges enters the wires and cables of the Internet (e.g., MP3 file exchange) and is given forms of electromagnetic radiation in radio waves and (as light) along fiberoptic cables. Because of the sheer velocity of wired sound, global musical synergies have accelerated and become more complex. Musics now travel faster and farther.
than was possible before, and the feedback loops of sound communication and musical influence back and forth from music’s production centers to local settings of reception have accelerated dramatically. Recording studios have become, among other things, sponge-like centers where the world’s sounds are quickly and continually absorbed, reworked, and reincorporated into new musics. Music can now no longer be adequately modeled as something that happens in a local context and employs only the expressive means specific to a locality. Instead, music making increasingly employs technologies produced elsewhere and is informed by a heightened awareness of sounds that are traveling rapidly around the world. Wired sound therefore refers not only to music created by harnessing the new powers of wired technologies but also to the contemporaneous fact that many of the world’s musical practices are increasingly wired together. Music (including even music that resists globalization) happens along a global circuit of rapid communication and varying influence: an accelerating and disjunctive global cultural flow, in Arjun Appadurai’s sense (1990).

Although technologies of wired sound are not altogether new, they have become prevalent around the world only in recent years (and more so in some places than in others), due to the rapid expansion of middle classes in many societies, the accelerating mobilization of people, capital, and objects in the global cultural economy (ibid.), and reductions in the cost of sound technologies. In fact, following state deregulations (Manuel 1993), emergence of less expensive multitrack digital formats (Théberge 1997; Greene, this volume), and the falling prices of direct-to-disk recording software, sound production and reproduction technologies that were once prohibitively expensive are now within the financial grasp of many of moderate means. Analytic research on sound technology and the engineering of sonic culture has so far been conducted primarily in western cultural contexts, with a focus on western subject positions, yet the phenomenon has had a greater impact, in many ways, on the non-western world. Remarkably, the musical voice that has been most frequently recorded in all of the world’s music history is not that of an American pop or European opera singer but rather of the Hindi filmsong playback singer Lata Mangeshkar. It is quite likely that today there are more people working in studios to engineer sounds in Asia, Africa, and Latin America than in the West, and there are certainly more people listening to engineered musics in the non-western world. Although primarily of western origin and innovation, technologies of music production and distribution have come into their own in the non-western world, where high-tech sounds saturate many musical cultures today.

This book is about technological music making in global perspectives, about the extensions of control and assertions of creativity that ensue as technologies invented and produced in western societies are incorporated into and used by world cultures, and about the nuances and the revolutionizing of cultural forms and practices that have been brought about through wired sound. In some ways the new technologies seem to extend western influence and bring about a homogenization of the world’s musics and musical practices. For example, these technologies make it possible for a small collection of musical genres to resonate powerfully over large portions of the world, where they are frequently imitated (the wide reach and influence of Indian filmsong and western rock genres come to mind).

But technologies of wired sound also have the potential (whether fully realized or not) of opening up new directions for musical expression and evolution, inspiring new logics of music creation and empowering local cultural and expressive values. Ethnographic evidence presented in this volume shows that people around the world today are merging technological engineering with traditional “musicking” (Small 1998) in unpredictable ways, and they are producing a wide array of musics that is only beginning to be studied. And while some studio products are fastidiously quantized at the expense of creativity (“The first technician [in the sense of technique] of music was the first to stop being a good musician” [Adorno 1958: 197]), many engineerings (“high-tech” musickings) around the world are quite creative, varied, and expressively powerful. For example, in Indonesian sound studios, a new style called “brutal ethnic” fuses traditional Javanese melodic and rhythmic elements, Indian filmsong rhythms, and death metal: sound qualities from diverse cultural worlds are thus for the first time musically drawn together, transgressively crossing boundaries of distance and cultural division. In American ambient and techno music, sound qualities are deliberately engineered to play tricks on listener perceptions, to seem at one moment to be completely artificial and at the next thoroughly natural—as if produced by actual performers—thus playfully but powerfully invoking and calling into question the relationship between body and machine. Around the globe, different engineers and studios develop reputations for particular “sounds,” and many engineers keep their most innovative techniques secret.

A new modality of human music making has emerged, and its full range of meanings and cultural functions has yet to be assessed. As wired sound travels back and forth through what has become a global circuit, are we witnessing a worldwide assimilation of music making practices and a dissolution of meaningful distinctions among musics, aesthetics, and practices? Or is this in some ways the flashpoint of an explosion of new, technologically facilitated world musics? Might assimilation and differentiation both be underway at once? To address such questions there is a great need for ethno-
graphic studies that discover and document the world’s new musics, musical practices, and sonic cultures.

Ethnomusicologists and ethnographers who study world musical cultures have until recently tended to ignore electricity-based technologies in their studies of music making, community building, and performativity. We have tended, for example, analytically to favor technologies (such as instruments) made of organic components over those that originate with a western electronic hardware manufacturer, even when such technologies are used with immense creativity. And studies of recording technology and its relationship to music and culture (e.g., Zak 2001; Théberge 1997; Frith 1996: 226ff; Jones 1992; Cutler 1984) have examined primarily western subject positions and cultural contexts. Given the recent advent of wired sound to much of the world, researchers are just now reaching a point where it is possible to document, analyze, and theorize about the world’s new technology-intensive musics. Tim Taylor (2004, 1997) is among the first scholars to extend analysis beyond western societies to study and theorize, in sustained ways, the implications of technology and globalization. This trajectory is extended further in Lysloff and Gay’s Music and Technoculture (2003), a volume that examines music technologies from non-western as well as western perspectives and includes three ethnographic chapters on technologies in non-western cultures. Wired for Sound extends ethnographic study to all six inhabited continents and draws together global perspectives on sound engineering and its relationship to sonic culture.

The methods employed by the authors are primarily ethnographic but also include historical and psychological examinations. We investigate the mutually influencing and often interpenetrating practices of production, reproduction, reception, and perception of studio-produced and technology-facilitated sound qualities and musical patterns. We examine “sound engineering,” not merely in the narrow sense of manipulating levels in a recording studio but also in the more important broader sense of agency: “sound engineering” defined as the practice—by individuals, groups, institutions, corporations, or governments—of using sound technologies to engineer meanings, functions, and social strategies in musical cultures and in the world at large for strategic cultural, aesthetic, political, and economic ends (Greene 1990: 460–461). The volume draws emic viewpoints more centrally into scholarly discourse on music and technology in order to give voice to those with whom we work as ethnographers and to present local understandings of social and cultural institutions and practices. Together with the writings of scholars who voice perspectives from many parts of the world (for example, from Japan, Hosokawa 1990, 1984; from China, Chow 1993), ethnographic data on sound engineering (in the broader sense) offer new, global perspectives on music and technology.

**Hard Wires**

Although sound engineering clearly has great potential for “rational” and deliberate control over every detail of sound (Théberge 1997; Born 1996), engineering practice quite frequently does not progress rationally at all. Sometimes it progresses arduously, as engineers encounter stonewall after stonewall before perhaps experiencing a time of successful creativity. Engineers must tangle with their machines, often in a dumbfounded state: this is the “Can you hear me now?” phase of so many recording sessions. It is not just that technology may be complex or nonfunctional; instead, mismatches inevitably emerge between the engineering logics of actual cultural agents and the logics imposed on them, those hardwired into the machine from afar. As sound engineers plug themselves into the music technology and seek to be creative, they must grapple with fixed operating systems and unalterable programs that run on computers, synthesizers, tone modules, and effects processors designed in the United States, Japan, Europe, and also, in some cases, China.

Every technology brings with it a particular logic, a structure that, among other things, is a means of bringing order to the world (Winner 1999: 32). This logic reflects its particular social history; as Lysloff and Gay point out (2003: 15–16), the logic of a particular technology depends upon the logics of the related technologies and preceding technologies that prefigure it (e.g., the electronic keyboard is prefigured by the piano, which in turn is prefigured by the harpsichord) and also on the shifting social and economic contexts (Mackenzie and Wajcman 1999) in which the technology is sold, used, and consumed (Théberge 1997). The sound engineering technologies analyzed in this volume have evolved and taken their current shape in the context of western musical and social history, and they are coded with a logic that reflects this history. Musicians creating music that flows from a different history or involves significantly different ways of patterning sound frequently encounter mismatches of musical-engineering logics as they use the technologies.

For example, in most studio technology pitch is mapped out onto western equal-tempered scales, and it is often difficult to reconfigure the technology so that it offers easy access to pitches in non-western tunings, such as those of the Javanese pelog and slendro scales. And because the technology is based on the model of distinct pitch levels triggered by discrete keys

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(as on an electronic keyboard, which is based on the western piano), it is generally more difficult and complicated to perform or encode Indian gamaks—slides, trills, and other performative features—using western-designed technology. By design, some sound qualities and techniques are easier to produce and others more difficult. As a result, in many places the advent of western sound-engineering technologies has reinforced trends toward western equal-tempered scales with discrete pitches. Thus as western sound technologies are drawn into music making around the world, their hardwiring begin to structure local musical practices in certain ways, imposing their own musical logics onto the societies that adopt them. Hardwirings constitute a (sometimes subsonic) vehicle of control in the world's musical praxis, and technological musicking—perhaps more so than traditional musicking—becomes a struggle that engages with the translocal.

But in many cases, musical engineers develop innovative techniques to overcome the technology's inherent configurations and move beyond their originally intended uses (see Penley and Ross 1991: x). For example, in order to produce certain pitches used in Arabic music, Arab American musicians supplement the electronic keyboard with a device that makes it possible to play pitches that are not included on it (Rasmussen 1996). Culturally situated agents sometimes aggressively refashion their hard technologies by, for example, overdriving preamps in heavy metal. Some technological innovations could be called kluges: inelegant but effective ways of bypassing technology's inflexible features for creative ends.

Occasionally, new models of hardware are designed that reflect or enhance the new musical-cultural-technological practices that have been innovated. For example, factory-produced sound distortion modules can now readily be purchased to approximate the sonic effects of overdriving a preamp. As sound technologies are increasingly consumed in the non-western world, it remains to be seen to what extent future hardware models will better reflect the expressive needs of musicians operating outside the creative limitations of current western-designed technologies.

**Global Circuits**

Music technology has tended to bring about a blurring (in the sense of a loss of distinction) of the spheres of music production and consumption. Almost as soon as new musical technologies become available and affordable, they are put to service in local musical cultures. And as quickly as new sounds are engineered in local cultures, they are copied and loaded into the next generation of synthesizers or tone banks to be produced and distributed by music technology factories. In the process, musicians have become not only producers of music but also significant consumers of technology (Théberge 1997). As musical products become so thoroughly and rapidly recycled, the distinction between production and consumption begins to blur. The musical sounds of the world (Théberge 2003; Taylor 1997) have been drawn more deeply than before into the synergies of consumer society.

Many examples can be found of blurrings of production, distribution, and reception. Rudy Vallee's "intimate" crooning style, a 1920s American music production practice, is so dependent on a distribution network, namely radio, to create intimacy by bringing his live voice into private homes that the "distribution" technology effectively merges with the "production" practice (Taylor, this volume). The experience of listening to different and often contrasting musics heard in Kathmandu soundscapes (radio and audiocassette sounds) has led to a new aesthetic in which engineers, influenced by their listening ("reception") practices, employ multitrack recording technologies deliberately to record music with abrupt juxtapositions of musical style and texture ("production"; Greene, this volume). The innovative hip-hop practices of turntablism and sampling collapse "reception" (purchasing, playing back, and listening to) and "production" (Rose 1994). In fact, with technologies of digital sampling, the previously stable categories of authorship and performance are now threatened (Brady 1993: 62). In this volume we examine the shifting politics of identity construction, in which technologies that were innovated primarily in western societies become incorporated and "entangled" (in the sense of Thomas 1991) into numerous indigenous traditions, practices, and systems of value and meaning. Accordingly, this book engages musical production, distribution, and reception, as well as some of the ways in which the three practices interpenetrate each other today.

In *Strange Sounds: Music, Technology, and Culture* (2001), Tim Taylor historicizes and politicizes music transcription (notation) and points toward its importance for production, storage and distribution, and consumption. He pinpoints, in the late nineteenth century, the moment at which sound itself, rather than its representation, could be sold and moved. (Of course, with digitized sound, we now sell and move measurements of sound rather than sound itself; we have in a sense returned to transcription.) Taylor terms the electronic exchanges of today the first nonphysical mode of music distribution. I would argue that, with the emergence of nonphysical music distribution, the feedback channel between musical production and its reception has accelerated to such an extent that feedback is now approaching instantaneous, wired speeds.

The technological and social processes examined by Théberge and Taylor extend outward to encompass much of the globe, constituting a global

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circuit of production, reception, and distribution; of influence, subversion, and resistance; of pushes and pulls between local and translocal. The new technologies make it possible for local and translocal sounds to travel and interact at unprecedented speeds, to cross barriers of geographical distance and cultural difference, to facilitate powerful transformations of communities’ musics (Jones 2000). As musicians and listeners around the world increasingly live lives plugged into this global circuit, they face new challenges and engage in new processes of identity construction. On the one hand, the accelerating synergies between local and global are facilitating an acceleration of western musical influence into world cultures and lifeways. But at the same time, as satellite television, radio, and the Internet increasingly reach musicians and listeners in previously isolated settings, many musicians, such as the Native Americans studied by Diamond, respond by making their own recordings, thus registering themselves and their music in the global circuit. Evidence also suggests that some “schismogenetic” processes (Feld 1994a) are taking place. Sound engineers and musicians often articulate new techniques they have invented to achieve local aims, and the emergence of distinct studio “sounds” (in the sense of Théberge 1997: 191) may reflect artistic difference (the drive toward difference and distinction) in technological music production.

One can also hear women differentiating themselves from men in their approaches to and styles of music making. In Diamond’s interviews with and studies of Native American recording artists (in this volume) she finds that women, in comparison to men, voice greater concerns for collaboration and trust among performers and engineers and generally involve themselves less closely in the technological specifics of production. Native American women, like women in other settings around the world, often encounter barriers when they enter the sphere of sound recording; there is a persistent notion—possibly beginning in western societies and radiating outward with the spread of its technology—that technology is “masculine,” in opposition to nature, which is “feminine” (see Bradby 1993: 156; Théberge 1997: 123). But Diamond finds that a collaborative vision of the musical product—a CD as “a documentation of our process [of working together],” as Sadie Buck puts it—can build considerable respect and prestige for female artists. Further, she points out that the trust that Native American women cultivate in the process particularly enables them, more so than men, to innovate their musical traditions: an expressive aim to which technology then becomes subservient. There are benefits, then, in thinking broadly about technology as part of a collaborative creative process (cf. Sandstrom 2000). New feminist perspectives seek ways of overcoming the binaries of nature/technology and feminine/masculine by exploring new “cyborg” mergings of humanity, nature, and technology in both fiction and cultural life (Haraway 1991; Marsh and West 2003).

And at the same time, new global music-based subcultures such as global heavy metal are emerging. These are new “counter-nodes of identity” formations (Appadurai 1990: 18–39) that are, in many ways, both transnational and marginalized. Global musical hybrids comprise another vehicle of identity formation within wired sound. Hybrid forms use sound-studio technology to combine musical elements from different traditions. Such forms often make use of studio sound’s ability to invoke place: sounds that index certain geographic locales or particular world instruments or cultural groups are recorded, sampled, and combined in multitrack sound studios. Combinations of cultural places in hybrid multitracks facilitate cultural exploration (Greene, this volume), local microcultural constructions vis-à-vis a larger superculture (Slobin 1993), and transgressive social boundary crossing (Lipsitz 1994; Wallach, this volume). Deborah Wong’s examination of Asian American expressivity in rap (1994) suggests that even in practices of intense cultural borrowing (enactment by Asian American performers of hip-hop gesturing and rapping into a microphone), identity assertion is possible. The microphone can become a powerful vehicle of the “eye/I”: a process of self-defining, identity asserting, and cultural positioning.

**Charged Wires: Anxieties and Desires**

The use of technology in musical practice is rarely neutral or transparent in the experience of musicians and listeners. Instead, technology’s presence bears important meanings, and often leads to significant transformations in musical and aesthetic ideals. For Simon Frith, with the advent of electrical recording and amplification, perfection in western recordings “ceased to refer to a specific performance (a faithful sound) and came to refer . . . to a constructed performance (an ideal sound). The ‘original,’ in short, ceased to be an event and became an idea” (1996: 234; emphasis in the original; cf. Chanan 1995). One could also say that the aesthetic ideal now inheres in the sonic materiality of the recording itself (Wallach 2003). As engineered music has also become a ubiquitous presence in many non-western soundscapes, its technological nature has likewise inflected musical meanings and aesthetic expectations and in some cases sparked debates.

Concerns, criticisms, and celebrations of technology in music are particularly inflected by the anxieties and desires that emerge in immediate contexts in response to sound technology, and to technology in general. Some music genres showcase recognizably “high-tech” sounds, and technology’s traces come to function as prestigious markers of modernity. In

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other musics, such traces are heard as warning signs of cultural co-optation, and engineers labor to mask or conceal the “studieness” of their products. Wired sound is thus culturally and politically charged: listeners and musicians around the world invest sound technologies and studio recordings with anxieties on the one hand, and desires on the other.

There are many anxieties and concerns inspired by — and indeed warranted by — wired sound. Recording technology has enabled the separation of musical sounds from musicians, which has resulted in the musicians' subsequent loss of control over their circulation, their meanings, and all too often their ownership. Understandably, Native American musicians are wary of the recording process: “We have to be sure of the recording process before we allow the sound,” says Sadie Buck; “the atmosphere in which we're creating our work has to be a good environment or I won't sing,” says Mishi Donovan (Diamond, this volume). Indeed, one might add to the list any of a number of anxieties that are articulated with regard to wired sound: it is too carefully controlled, it is too inhuman (but it also, ironically, reproduces the natural with perhaps too much precision), it is too pre-authored (software packages are too invasive), it lacks “aura” (in the sense of Benjamin 1968), or it is too hegemonic (a western product that has entered the non-western world in a strategy to bring money to the West). There is also a wariness toward technologies that threaten to replace human labor. Many high-tech musics reflect a longing to erase (Eric Clapton unplugged) or exceed (metal guitar overdrive) music technologies. Also accompanying the spread of sound-studio technologoes comes anxieties of engineering fabrity: that studio-altered or fabricated sound products can “dupe” listeners into thinking that they are hearing an “authentic” recording of a performance event. This raises concerns because for many listeners an originary presence of actual voices, bodies, instruments, or performances is very important; it functions, in some sense, as an anchor, a guarantor of the recording’s meaning and value. (Some related concerns also come up in ethnomusicological field recordings: see Lyslof and Gay 2003: 2–6; Porcello’s afterword to this volume.)

At the same time, technologically altered sound can also be an object of desire and pleasure (Frith 1996). In many instances, unintentional by-products of certain music technologies, such as the compression, distortion, or audio echoes of magnetic tape (Porcello 1998/2003) or even the buzzes and pops of records, have become central to musical aesthetics: listeners, disc jockeys, and dancers take pleasure in the “warm” sounds of analog records and resist shifting to compact discs, in which such “limitations” are overcome (Wallach 2003: 44; Thornton 1996). Further, technology and its sonic traces can embody for listeners the hopes and dreams of modernity, of western technology and freedom from hardship and want. This desire for a technological utopia, a perhaps unrealizable vision of the “technological sublime” (Penley and Ross 1991: xii–xiii), is evident in certain dance clubs, among specific (often underground) groups, in particular age brackets, in certain geographic locales, and in particular venues where one longs for the self-consciously digitized music product.

A longing for technology is particularly evident in the ways in which people talk about it in Asia and elsewhere in the non-western world (Greene and Henderson 2000: 110–111). Sleeves of Tamil pop albums in Chennai marketplaces feature pictures and descriptions of the sound studios in which the music was produced, promoting a commercial recording by invoking its modernity (that is, its alignment with current technology, western marketing strategies, and so forth). The trappings of sound engineering — of the “high tech” — in Pakistan, Nepal, India, Malaysia, Indonesia, and elsewhere are aurally evident in the conspicuous use of digital effects (for example, reverb, delay, flange), quantized (computer-perfected) rhythms, perfectly balanced frequency response, and the frequent use of obviously synthesized or electronically manipulated sounds. Here, the desire for a “techno-sound” has often been less impeded than in the West by a sense of the immanence of real or imagined loss surrounding digitized musics. The positive associations of the new, the cutting edge, the cosmopolitan, the sophisticated, and so on are highly prized prestige markers. In the genres of Indonesian dangdut (Wallach, this volume) and Nepali pop (Greene, this volume), engineered sound qualities, and the explicit inclusion of the sounds of studio-based engineering, reassure listeners that their societies or states have entered a new, modern, global arena of culture and identity assertion. Sometimes positions vis-à-vis technology divide listeners along gender lines: in Nepal, I find that female Nepali pop listeners are generally less critical of the intrusion of audibly high-tech sounds into folksongs, perhaps because they generally have more to gain from the promises of technology and modernity and less to gain from traditional Nepali culture and gender expectations and restrictions.

The anxieties and desires that surround sound technology take different forms in different sonic cultures. Accordingly, many of the chapters in this volume engage with ways in which anxiety and desire shape notions such as “reality” (Meintjes), “sincerity” (Porcello), or “fidelity” (Shank 1994) of music in the cultural contexts in which it is produced and heard. What kinds of technological interventions and sound effects are permitted? What kinds are disallowed?

The evidence collected in this volume suggests that there are perhaps as many answers to these questions as there are studio production sounds.
This is because there are many locally constructed notions of “authenticity” that contradict each other in the immediate contexts of musicking (see Taylor 1997: 21–28). Moehn finds that in Rio de Janeiro musicians effectively navigate the desires and anxieties of sound recording by cultivating two different but interrelated samba music aesthetics—one for live performance and the other for studio recording. Groups of Native American musicians call for a strict clarity of drum sounds, for to obscure them through sound processing would “destroy the specificity of the timbral information about place and nation” (Diamond). In a Johannesburg recording session, a “real” Swaziland drum sound is accomplished through complex recording techniques involving seventeen microphones (Meintjes; see also Meintjes 2003). Thomas Porcello articulates the careful measures taken by sound engineers in recording the Austin sound and its sense of live, honest, genuine expression. The Austin strategy finds parallels in other American and Canadian musical production aesthetics: too much reverb, too much flange, too regular a rhythm, and so on strike a North American listener as inauthentic, in part because the sound is interpreted by listeners as overproduced. The ethnographies collected here suggest that matters of “authenticity” and “sincerity” are deeply caught up in local (as well as global) cultural discourses and ideologies of truth, value, anxiety, desire, and pleasure. While technologies that inspire these concerns, anxieties, and desires may be somewhat universal, the ensuing discourses, ideologies, and sound engineering practices are not. Indeed, as Porcello suggests (in the afterword), such discourses are becoming central to genre definition.

Some sound engineers seek to “enhance” the commercial viability of “authentic” musical sounds. One of the benefits of Neuenfeldt’s rich accounts of producer Nigel Pegrum’s studio practices (in this volume) is an illustration of how deeply intertwined concerns of authentic Australian Indigenous expressivity, commercial viability, and aesthetic appeal can become (see Ermann 1996). Pegrum stresses, “I really was very careful about putting forward any opinions. But it soon become clear to me that David liked to be produced ... I found myself almost talking David through some of the tracks.” As Neuenfeldt holds an ethnographic lens to the specific, actual moments in which an ancient musical tradition is drawn into and transformed within a sound studio, he brings into sharp focus the specific processes through which the world’s sounds are becoming technologically mediated. Tellingly, not only are aesthetic knowledge and skill subservient to commercial concerns but commercial concerns are thoroughly aestheticized in an emerging “industrial logic” of production. In Pegrum’s engineering (especially in the creation of “didjeridu-friendly sections”—introductory additions performed on synthesizers and other instruments that frame the didj sound in its new technologically and commercially mediated form)—the sounds of the didj and of indigenous expressivity are wedded with outsiders’ (perhaps New Age–inspired) conceptions and expectations of the didj, which has already become a well-known transnationally consumed sound bite. The important and contentious distinction between musical and cultural cooption on the one hand and cooperative culture brokering on the other becomes blurred in the era of wired sound: as Neuenfeldt observes, “Everyone involved [in production] had something of value to add to the projects and it could also be viewed as a form of intercultural reconciliation through art and music.”

**Music-Wire-Body**

As we examine our role as machine operators, we ask questions (that we have always asked) about the ontological status of the human body in a continuous material practice that extends from the eye, hand, and ear to the metal and plastic of machines. Cyborg metaphors have been invoked to model contemporary interfacing between human and machine, in both fiction and lived social reality (for example, Marsh and West 2003: 195–197; Haraway 1991). Cyborg models characterize the senses in which machines and bodies can ideally be made to work efficiently in tandem as well as the ways in which machines and bodies adapt to each other to facilitate cooperative work.

Like other technologies, global sound technologies influence or guide bodies in some senses and simulate bodies in other senses (see Manuel 1995), all in ways that warrant new examinations. Fales (this volume) discusses ways in which a sense of the corporeal presence of a human performer’s voice can be simulated, altered, or “morphed” into other sounds through technological means. In contemporary musical cultures, engineers can produce what I call “Pygmalion moments” in which synthesized timbres suddenly begin to sound like and be perceived as those produced by a living human body; and, as well, such “human” sounds can be dismantled, before the listener’s very ears, into sounds obviously produced through technological artifice.

One of the most globally widespread uses of digitized sound, particularly digitized drum tracks, occurs in dance clubs. Here, where drum sounds have often originated in the studio rather than by means of any actual drumming, the technologically produced rhythms set the pace for the movement of dancers’ bodies (Fikentscher 2000; Thornton 1996; Rose 1994; Greene, this volume). At techno and drum & bass (or “jungle”) raves it is the superhumanly fast and precise drumstrokes of rhythm ma-
chines that set a sometimes almost impossibly fast pace for the human dancer to follow.

In some cases, music technology facilitates new modes of experiencing one's own body and its relationship to the social world. Shuhei Hosokawa (1984), a Japanese scholar writing on the invention and uses of the Walkman, describes how the new technology creates a "personal theatre." The affective tensions and anticipations of Walkman music are so compelling that they in effect restructure one's real environment: listeners walk the real world to the beat of the Walkman. Writing from the perspective of the People's Republic of China, Rey Chow finds that the "miniaturizing" world of the Walkman offers an individual the ability to be "deaf to the loud-speakers of history" (1993: 49), which is both valuable and problematic.

Sound engineers in Nepal use digital delay echoes and noodling melodic shapes to simulate the effect of sounds heard high in the Himalayan mountains (Greene 2013). In Rio de Janeiro, sound amplifiers deployed along the avenues are differentially timed so that live sounds and their electrical amplification arrive at the same time, thus creating the sense that listeners and performers share a unified soundspace and participate in a shared musical event (Moehn, this volume). In the United States, Porcello (1996: 309–315) shows how engineers who recorded Van Halen's "Runnin' with the Devil" encoded new levels of meaning through the strategic use of stereo imaging and effects processing that invites listeners to hear sound shapes that unfold through three-dimensional space. Radio singers of the 1920s sang closely into a microphone in order to produce sound qualities that would normally be audible only in close spaces (Taylor, this volume). In these ways and many more, sound technologies are also used globally to enact corporeal simulations in the form of technologically constructed or technologically inflected spaces, bodies, and voices (see Lacasse 2000). These are also sound technology's animating moments, when perceptually persuasive sound products mimic or evoke physical environments. Through stereo imaging, effects processing, and the sampling of sounds that bring to mind certain kinds of places, engineers create virtual-cum-real cultural spaces audible in musical design.

The contributors to the present anthology all discuss wired sound in one sense or another, and all engage with a new global soundscape that is wired for sound. The authors represent the disciplines of ethnomusicology, cultural and linguistic anthropology, popular music studies, cultural studies, and communications, and they hail from the most distant expanses of the Western world: Sweden, Australia, and North America. Many of them also have considerable hands-on experience in sound-studio engineering. Our common focus has been to paint a world portrait (we collectively cover all six inhabited continents) from a position combining ethnographic detail and theoretical rigor. In this volume, many of the chapters foreground questions rooted in sound studies and the ways in which studio-produced sounds are used. Chapters 2 through 7 (by Meintjes, Moehn, Neuenfeldt, Porcello, Diamond, and Wallach) emphasize production practices, while chapters 8 through 12 (by Fales, Berger and Fales, Greene, Grandin, and Taylor) emphasize issues of reception; yet many of the chapters demonstrate in their very contents that a clear distinction cannot be drawn between the two.

In "Reaching 'Oversea': South African Sound Engineers, Technology, and Tradition," Louise Meintjes examines sound-studio practice, culture, and discourse in Johannesburg. "Oversea" (meaning the major European and American studios) represents for South African engineers a "trope of excellence," with associations of innovation, wealth, and stardom: "For sound engineers who are involved in shaping South African music styles, values about local traditions are co-constructed with ideas about sound production in high-end studios in the metropoles of the North." Meintjes, who also examines labor relations in view of the apartheid legacy, recounts an ongoing preference on behalf of one white engineer for a direct input of bass guitar, while black musicians preferred a slightly distorted miked sound "appropriate to a 'traditional' aesthetic." The solution: "Peter simultaneously miked the amp and patched the bass directly into the console, and he assured the musicians that he could get them the sound they wanted, 'only better,' with the clean DI signal." Disagreements over sound aesthetics (to distort or not to distort) are moments where the racial politics of studio production happen by way of studio decisions.

In "The Disc Is Not the Avenue": Schismogenetic Mimesis in Samba Recording," Frederick Moehn explores a dichotomization of musical spheres that happens as Brazilian samba groups who perform elaborate and boisterous musical processions down the avenues (sambódromos) of Rio de Janeiro also produce marketable albums of their music in studios. With careful attention to what is captured and what is "cleaned up" in the studio tracks (base), he shows how the two spheres in some ways assimilate to each other and in other ways become sharply polarized. In studios, samba musicians and engineers seek ways to capture and encode some of the participatory energy of the avenue; however, they also pursue new ideals of a "professional sound." Remarkably, Moehn also finds that sound engineers alter the sound reinforcement technology deployed for samba processions specifically with the aim of making the long soundscape of the avenue function as a single sphere of shared musical experience. This is accomplished by a

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computer program that calculates the precise delay needed for each speaker such that the sound traveling through the air arrives at the same time as its electrical amplification.

In “Nigel Pegrud, ‘Didjeridu-Friendly Sections,’ and What Constitutes an ‘Indigenous’ CD: An Australian Case Study of Producing ‘World Music’ Recordings,” Karl Neuenfeldt examines producer/engineer Nigel Pegrud’s engineering of “indigenous authenticity.” Neuenfeldt finds that the earthy, “real” sound of the didjeridu is juxtaposed by engineers with “unreal” (connoting artificial or inauthentic) synthesized sounds. The challenge for engineers is to blend the two kinds of sound in a way that does not result in a jarring juxtaposition. Neuenfeldt also finds that despite worldwide standardization there are “secret” aspects to recording processes, in that individual producers or engineers have particular ways of recording or mixing that arise from their particular aesthetic visions, or “sounds.”

In “Music Mediated As Live in Austin: Sound, Technology, and Recording Practice,” Thomas Porcello examines participatory discrepancies (defined as timbre, sound, and tone qualities), reverberant sound, and ideals of genuine and populist expression represented by live-sounding or live-seeming recording techniques. He identifies Austin’s sound values in connection with the city’s performance scene, and in the contrast between the music scenes of Austin and Nashville, perceived locally as a battle of ideologies. Porcello finds that the city of Austin “has actively traded upon this sound in promoting civic identity and using the live music scene to bolster the local economy,” and that sincerity, place, musical style, and live performance constitute the Austin sound to such an extent that any recording process must realize these qualities. In particular, Porcello discusses how drum sounds are engineered to evoke “roominess” as an index of live performance, and how technological choices in the recording process are to a large extent driven by the fact that “liveness” is a political aesthetic for many Austin musicians.

In “Media As Social Action: Native American Musicians in the Recording Studio,” Beverley Diamond studies Native American musicians, especially Native American women, as they enter the sound studio to craft their musical expressions. Women artists in particular consider the choice of engineers and musicians with whom they work to be highly important, and they speak of the “trust” that is a necessary prerequisite for recording. Diamond shows the problems that emerge when these artists find that the recording practice is organized around the common recording-studio assumption that music consists of separable parts that can be recorded in separate takes. In contrast, much Native American music requires “live” social interaction among musicians in order to unfold properly, and it relies upon cueing devices that are not easily incorporated into studio practice. Consequently, the

musicians insist upon organizing themselves in circles as they perform. Native Americans express deep concerns about any studio effects or processes that would obscure the precise timbral and rhythmic features that make it possible to differentiate the music of one region or nation from another. Diamond’s study elucidates ways in which the logic and assumptions behind sound technology and recording practices can become barriers to local expressive needs, and how musicians overcome such difficulties.

Jeremy Wallach’s “Engineering Techno-Hybrid Grooves in Two Indonesian Sound Studios” examines how various ethnic and foreign sounds are layered in recording studios in Indonesia. While “influence” is a sine qua non of understanding nearly all aesthetic products, multitrack technology heralds an unprecedented fluency with hybridization: the creation of sounds under a rubric of the simultaneity (that is, the copresentation) of influence. Wallach also presents the Indonesian aesthetic anti-ideals of “left back” (Nepalis would say, and do say, “backward”) in sound-studio aesthetics. Wallach argues that musical syncretism is representative of cultural syncretisms as experienced today by working-class youths in Jakarta.

Music perception researcher Cornelia Fales examines the acoustics of timbre and the perception of timbre in self-consciously high-tech sounds that “characterize the digital era.” In “Short-Circuiting Perceptual Systems: Timbre in Ambient and Techno Music,” Fales discovers that in terms of auditory processing, listeners encounter the timbres of electronic music in ways different from those of acoustic music. Timbre, Fales explains, has a great deal to do with hearing a sound and then interpreting it, presumably by comparing it to known sounds or to whatever sound the listener expects to hear at a certain point in the listening process (see Feld’s 1994 study of “interpretive moves” in listening). Fales delineates a taxonomy of the sounds of ambient music based upon hearing, processing, interpreting, confronting expectations, and so on.

Cornelia Fales and Harris M. Berger collaborate in examining metal fans’ perceptions of degrees of “heaviness” in metal songs. In “Heaviness in the Perception of Heavy Metal Guitar Timbres: The Match of Perceptual and Acoustic Features over Time,” Berger and Fales work with findings published by Berger (1999) and Robert Walser (1993) that demonstrate that among metalheads, it is primarily the guitar timbres that define a “heavy” sound. Berger and Fales examine music that metalheads characterize as less heavy and more heavy (i.e. earlier and later heavy metal music) and compare their acoustic measurements; in so doing, they both historicize heavy timbre and also describe its timbral qualities with greater nuancing. Working from the aesthetic values of heavy metal (power, intensity, heaviness, and so on) Berger and Fales discover that perception of heaviness corresponds to
a flattened dynamic envelope, and that flatter and flatter envelopes sound heavier and heavier to metalhead listeners.

In “Mixed Messages: Unsettled Cosmopolitanisms in Nepali Pop,” I examine the reception of Nepali mix music: studio-engineered sonic montages of abruptly juxtaposed musical styles heard in rapid succession. In the “mix” configuration, foreign and indigenous sounds often present themselves as inscrutable sound bites—suggestive, intriguing, but ultimately underdetermined cultural indices that are detached from their original histories and contexts. Kathmandu’s “mix” musics, which have taken on a new shape since the early 1990s, suggest that one *ars combinatoria* is not the same as another. Unlike Chinese mix musics with their gritty rock timbre that indexes authenticity, or certain Indonesian mixes in which jazz’s sophistication represents a cultural fit and thus a comfortable studio mix with gamelan’s elite connotations of the court, Nepali mix music encodes with fanatic precision a montage of timbres, rhythms, and sound bites that cite and graph the West without integrating it. Urban listeners describe themselves as situated in contradictory worlds as they hear the mixture of East and West that characterizes the professional identities of Kathmandu’s upper middle class.

Electromagnetic music encoding—wireless “wires” of radio broadcasting—form the basis of the soundscapes of Ingemar Grandin’s “The Soundscape of the Radio: Engineering Modern Songs and Superculture in Nepal” and Tim Taylor’s “Music and the Rise of Radio in Twenties America: Technological Imperialism, Socialization, and the Transformation of Intimacy.” Grandin examines the sociocultural aspects, politics, and economics of radio sound production in Nepal in the 1970s. Articulating some well-founded skepticism toward theories that assume that music commodities will automatically lead to music industries, Grandin explains how economies of patronage and sponsorship guided the sound-studio production for Radio Nepal. Musical products such as audiocassettes were primary prestige markers for the featured musician rather than commodities that entered a market of consumers. The engineered sounds broadcast by Radio Nepal shaped both a national culture and a “superculture” (in the sense of Slobin 1992) that incorporated Nepal’s multiple ethnicities, influences from outside Nepal, oppositional voices, and so on.

Timothy Taylor examines the culture of early radio, and the discourses of and surrounding radio, in the United States. The domestication of radio technology (its reach into private homes), Taylor argues, grew out of marketing strategies that urged consumers to purchase a necessary object of “civilized” peoples. In fact, “having technology” was rapidly becoming a means of labeling people on the radio and in other media, of separating Americans and American-ness from native peoples elsewhere and their technologically “deficient” lifeways.

Early radio took on uses that brought this technology into the deepest reaches of privacy and that are unheard of today: radio weddings, radio funerals, radio “prescriptions” as part of medical practice, and so on. Taylor argues compellingly that “even as radio was brought into these realms of social life . . . it was at the same time reconfiguring the nature of the private, of intimate space—it was being integrated into individual lives, into individual private fantasies.” American radio then came to blur, or at least alter, the distinction between public and private in American life.

In his afterword, Thomas Porcello surveys several broad themes emerging in these chapters and suggests analytical trajectories for future research. He calls for a broad, multidisciplinary approach to the study of the world’s contemporary high-tech sonic cultures and suggests that *Wired for Sound* represents a foray into examining what he calls local “techhoustemologies” of sound. By this new term, which is also an analytic tool, he means to “foreground the implication of forms of technological mediation on individuals’ knowledge of, sensations in, and consequent actions upon their acoustic environments as grounded in the specific times and places of the production and reception of sound.”

In sum, I believe it is time for ethnomusicologists, anthropologists, communications and media theorists, sociologists, historians, and others to make a greater contribution to the study of sound engineering and the world’s technological musics. Our scholarly inquiries should further engage with the ways that wired technologies influence and are entangled in today’s many diverse sonic cultures, and with the creative, cultural, and musical ways locally situated agents use and reframe their technologies. As we increasingly make and listen to music through the interconnected machines of the globe, we open up new chapters in our notions of organology.

Notes

1. The Hornbostel-Sachs (1961) scheme of organology involving membranophones, chordophones, idiophones, and aerophones (paralleled by drums, zithers, gongs, and flutes, respectively) is sometimes extended to include electrophones—synthesizers or other instruments sounded electrically. But the system loses analytic utility in distinguishing among the many practices and technologies of electric music making. The scheme’s criteria for organological distinction include the nature of the material that vibrates, and the immediate means by which the material is made to vibrate. These criteria are not useful in distinguishing among the many electric musical practices or technologies: in every case, woofers and tweeters at the final playback location are made to vibrate in response to electrical signals.
2. Alison Arnold (2000: 338) observes that Lata Mangeshkar is cited in the Guinness Book of World Records as the vocalist who has recorded the largest number of songs.

3. I have found that Chinese-made music technologies are increasingly used throughout South and Southeast Asia; most are interchangeable with established western technologies.

4. This echoes an earlier technology-related struggle, when the western keyboard-driven harmonium was introduced to India in the mid-nineteenth century. In much of the twentieth century the instrument was banned from Indian radio because it was incapable of producing gamaka.

References


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CHAPTER TWO

Reaching "Overseas"

South African Sound Engineers, Technology, and Tradition

Louise Meintjes

"Overseas," sound engineers do not have to cover for the producer, scramble around like a tape operator, program any musician's keyboard, check any string tunings, rehearse any vocalists, or invent any lyrics. Seated in front of the console, they can concentrate on technically rendering the best sound possible for the job at hand.

In the U.K., "I was handed the lead—that's it, that's it, that's it!" British sound engineer Richard Austin exclaimed to me in Johannesburg, South Africa, in 1992. "I mark it up on the desk, and the tape op takes the leads and pops them in. And then you just concentrate on the sound. While the programmer's trying to work out 'Oh God, this has got to be changed', the producer is saying 'I don't quite like that, all I'm worried about is getting the right sound. Because you've only got that one area to worry about, obviously your product is going to sound better.'"

"Overseas," a sound engineer is in a position to experience the process of technological production uncompromised and at its best: the toughest producers, absolute engineering at the console, super-creative technicians, the smartest design boffins behind the newest technological innovations, mythic star personalities backstage and in the throes of composition, and mediated public attention as glitzy as it gets. Once "overseas," an engineer can engage with these desirable features of the profession in their superlative, quality-producing forms.

"Overseas" is constructed as a value-laden discursive category through