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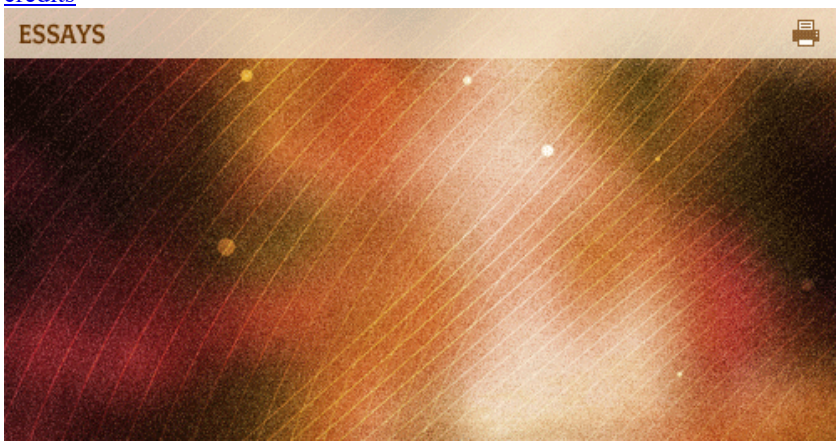

Improvising Tomorrow's Bodies: The Politics of Transduction

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ABSTRACT

The computer has become an indispensable part of the cultural and social histories of the arts, in which improvisation has long served as a site for interdisciplinary exploration, exchanges of personal and cultural narratives, and the blurring of boundaries between art forms. The ever-expanding roles played by interactive digital systems in globalized cultural, social, and economic environments are now being complemented by a similarly wide-ranging re-conceptualization of how improvisation produces knowledge and meaning. Because both improvisation and computing serve as important sites for interdisciplinary exploration in the arts, humanities, and sciences, a twinned theorizing of improvisation and interactivity will help to illuminate the inevitable differences that fragment and rupture even the most fluid and flexible notions of sociality, agency, history, and power. Part memoir, part history and criticism, this essay explores, among other topics, the contention that political debates about the nature and function of music and bodies inevitably become embedded in the structure of software.

CLOSE ABSTRACT

As part of the transition that this paper has made from its humble PowerPoint origins, presented at the Hemispheric Institute's 2007 Corpolíticas conference in Buenos Aires, to a more or less formally structured *Werk* (in the 19th century musical sense of that term), I want to include my distanced reflections from that most excellent gathering. I don't mean to engage in conspicuous self-construction or pretended prescience, but I couldn't help noticing that my discussion at the conference appeared somewhat outside the mainstream in a number of respects. First, I was one of the very few people who discussed music, which seemed a bit odd in view of music's highly contested international role in the politics of the body. Secondly, I seemed to be one of the only people who discussed histories of technology—also strange, given the centrality of technology to new and highly politicized conceptions of the body.

The third element of difference, and the one that I want to highlight in this paper, was my discussion of improvisation. For me, centering improvisation in my scholarly practice (as distinct from my sonic practice) came to a head during an interdisciplinary residency that I co-led in 2002 at the University of California's Humanities Research Institute, for which the object of study was "Improvisation In The Contemporary Performing Arts." Our introductory narrative for the group declared, among other things, that:

- improvisative production of meaning and knowledge provides models for new forms of social mobilization that foreground agency, personality and difference;
- improvisative work symbolizes history, memory, and self-determination; and,

- improvisation fosters socialization, enculturation, and community development.

Any practice for which such expansive claims could be sustained would seem to be one that should be studied widely, in depth, and with great zeal. But in Buenos Aires I ventured a bit further out on that particular limb, making common cause with an insightful musing of the philosopher Gilbert Ryle, who declared shortly before his passing that if someone,

> [I]s not at once improvising and improvising warily, he is not engaging his somewhat trained wits in some momentarily live issue, but perhaps acting from sheer unthinking habit. So thinking, I now declare quite generally, is, at the least, the engaging of partly trained wits in a partly fresh situation. It is the pitting of an acquired competence or skill against an unprogrammed opportunity, obstacle or hazard. It is a bit like putting new wine into some old bottles. (Ryle 77)

Quite a few years ago I had a conversation about music with one of the founders of the field of artificial intelligence, an area that has had fruitful exchanges with the philosophy of mind. As we discussed his great love, keyboard improvisation, he maintained very strongly that he was not a composer, but an improvisor. I remarked that AI researchers working on music seemed to spend a great deal of time studying European composition and performance, hoping to reproduce the work of the great European masters by computer.

That seemed a bit odd to me; after all, the point of AI as I saw it was to get a computer to operate in the real world. The original notion of the Turing test, as I understood it, was that to convince you that the computer was really intelligent, it had to respond in lived real time to unexpected, real-world input. Constructing such a program would necessarily confront a set of issues that the *Werktreue*-based conception of music composition doesn't usually address.[1] So I suggested that the study of improvisation, or what he was doing everyday, might be more germane to the field as a whole. I must admit that I was very surprised by his very quick, curt reply: “You can't study that.”

Ryle's discussion of improvisation predated this conversation, and familiarity with it might have momentarily eased my perplexity, but in a sense my naïveté was probably fortuitous. The conversation was certainly very encouraging, because in thinking about the problem over the ensuing years, I have come to identify a variety of issues that make the study of improvisation difficult. Part of the problem is that, to paraphrase George Lipsitz's observation regarding the epiphenomenon of whiteness, improvisation is everywhere, but it is very hard to see.[2] That's because improvisation is not really a philosophical *Haltung* for a few people living the artist's life, but a fundamental mode of being in the world that all of us share. My practice as an improvising musician has taught me that although all art must involve improvisation, improvisation itself moves beyond the purview of both art and craft.[3]

With Ryle, I felt some support for my overall view of improvisation, which can be described (if not defined) as exploration, discovery and response to conditions, part of a ubiquitous human practice of real-time analysis, generation, manipulation, exchange, and transformation of meaning, mediated by (among other factors) the body, history, temporality, space, memory, intention, material culture, and diverse methodologies. My claim is that improvisation is fundamental to the existence and survival of every human formation, from the individual to the community, through the postnational body to the species itself.

If we can conclude that improvisation is the ubiquitous practice of everyday life, a primary method of meaning exchange in any interaction, we could go further in suggesting that an improvisative orientation could well be transformative to the hybrid discipline of performance studies—although it would probably be an error to presume that we can begin our retheorization of improvisation by constructing the practice as a subspecies of performance, except to the extent that performance itself is a condition of being in the world. On this view, if anything, improvisation’s ubiquity becomes the modality through which performance is articulated.

If improvisation is fundamental to what it means to be human, obviously it represents a crucially important site for humanist study, and those theorists who investigate the condition of improvisation are apt to find it as close to universal as contemporary critical method could responsibly entertain. For now, however, it is clear that my optimistic and forthright declarations of improvisation’s centrality probably do not carry the same weight in our public intellectual and political culture taken more generally. In these domains, improvisation is most commonly invoked in a pejorative or negative sense, as in “Condoleeza Rice’s improvised foreign policy,” or “the Bush Administration’s military improvisations in Iraq,” which have lately been obliged to find answers to the threats posed by the deadly IEDs, the “Improvised Explosive Devices,” one of which recently wounded a famous US mainstream media commentator.

Having seen my shadow and been chastened by those images, I want to return to my groundhog's nest of music, in order to nurture the hope that the study of musical improvisation might nonetheless offer the possibilities of using music itself as a critical tool to retheorize political, cultural, historical, and social issues, as well as carrying out comparative analyses of the dynamics of social and political systems. Because of music’s importance among the arts that freely embrace the improvisative, the art that has provided a wide and trenchant variety of models and actual experiences of how meaning is exchanged in the real world, the study of music will be central to the development of an exemplary literature of improvisation studies that illuminates the condition of improvisation.

That literature will necessarily be interdisciplinary—not simply multi-disciplinary, as at present, where we find important work being done in many fields. In fact, some of the most important theorists may not even realize that they are discussing improvisation—an artifact of Western intellectual culture’s blinding (and deafening) distrust of it. That literature will also be deeply collaborative in nature and method, as insights gleaned from the study of musical improvisation find homes in many other fields, and the connection between music and contemporary public intellectual culture, a connection that came under threat sometime in the 20th Century, will be

powerfully reasserted—all in the process of necessarily decentering the West and its intellectual preoccupations as few such discipline-complexes are positioned to do.

Certainly, despite the ubiquity of improvisation, the study of the practice is in its infancy. A primary practice of the European composer-performer since antiquity, improvisation was unceremoniously dumped from Western music's arsenal of practice by the late 19th Century. The radicalism of this break with improvisation seems gradual, but in fact constitutes a most radical rupture with over a half-century of canonical practice. The extreme understatement with which the historiography of Western music treats this rupture justifies an ironic characterization as a Quiet Revolution.[4]

For much of the 20th Century, the boundary between high and low culture in the United States was symbolized in music by the great competition between the jazz and classical traditions, a discursive stand-in for a more fundamentally racialized cultural struggle. The double-star binary opposition between improvisation and composition continues to deform many discussions, constituting something of a cultural halfway house, symbolizing Western culture's confrontation with postcolonial challenges to its own presumption of pre-eminence.

The recrudescence of real-time music making in the American and European classical music of the 1950s, according to cultural historian Daniel Belgrad, was part of an emerging "culture of spontaneity" that crucially informed the most radical American artistic experimentation in the mid-20th Century, from the Beats, the Black Mountain poets, the Abstract Expressionists, and the musical New York School of John Cage, David Tudor, Morton Feldman, Earle Brown, and Christian Wolff.[5] Belgrad also includes the transgressive new music of Charlie Parker, Thelonious Monk, Mary Lou Williams, and other bebop pioneers in his discussion of spontaneous practice, a fact that is of particular import because their work appeared at least a decade before the earliest experiments in real-time musical expression by the other artists mentioned.[6]

Moreover, 1940s beboppers, as well as the later free jazz musicians, were drawing upon a legacy of improvised musical practices that had been developing unusual approaches to time, form, and aesthetics since the 1920s. New ideas emerging from jazz were racing around the world in record time and turning up in the most unusual places. In fact, a complex of ruptures attended the birth of jazz: the notion of a high musical art emerging from vernacular roots, subalterity, and improvisation; wide-ranging challenges to musical aesthetics and the provenance of musical historicity; and the reassertion and rapid growth of improvisation in a fashion undreamed of by the former keepers of the now-abandoned tradition.

Since the 1950s, a form of conceptual masking, where substitute discourses of "happening," "action," "intuition," and recently, "interactivity," has often obscured the presence of improvisation in the arts. The need to exnominate improvisation here is due largely to the problematic status of improvisation in high-culture, pan-European art practice, as well as in Western culture more generally. This exnomination is particularly endemic to the older and more traditional media of music, dance, and theater, where in pedagogies, criticism, and support structures, works that incorporate improvisation are consistently disparaged—often, as Theodor Adorno had it, for simply feigning spontaneity rather than truly delivering it—since to admit the obvious was to challenge the primacy of new European music as the engine of change.[7] In this case, the inability to learn from (or rather, to be seen learning from) designated subalterns, a retention from the colonial moment, becomes a fatal flaw for historians and theorists. In this way, I want to argue, music history (and the philosophy of music) risks becoming complicit in systems of domination.

The sociologist Alfred Schutz saw the limits of Western music's construction of sociality in his important 1964 essay, "Making Music Together." Schutz's radical assertion that "There is no difference in principle between the performance of a string quartet and the improvisations at a jam session of accomplished jazz players" (Schutz 177) attacks the racializing presumptions of the high-low divide, showing by this carefully chosen example that the political foundations of this cultural binary turned on the practice of improvisation.

Schutz amplified his view that "the particular character of all social interactions connected with the musical process [is] founded upon communication, but not primarily upon a semantic system" with his declaration that "the system of musical notation is…accidental to the social relationship prevailing among the performers" (Ibid. 159). For Schutz, this relation "is founded upon the partaking in common of different dimensions of time simultaneously lived through by the participants" (Ibid. 177), a relationship that, as Schutz saw it, the phenomenological *epoché* was in a far better position to address than notation-based theorizing.

My critical rehistoricizing of improvisation began with the limited goal of decolonizing the discourse of American experimentalism in so-called "art music," along lines suggested by the composer and cultural historian Michael Dessen.[8] A crucial critical discourse to that end involved the destabilization of the composition-improvisation binary that regularly warps the study of improvisation in historical musicology and ethnomusicology—though not so much in the philosophy of music, which has for the most part simply ignored the practice.

To be sure, the Western-oriented model of musical notation as the primary locus of possible sonic meaning, though far less hegemonic than before, has been shared by researchers working in many different fields beyond music. For now, however, I want to temporarily bracket this aspect of my rehistoricizing impulses, in favor of looking at how debates, discourses, and research in artificial intelligence, robotics, anthropology, and science and technology studies have engaged improvisation—or, how these fields might do so, and how creative musical machines can help. My discussion looks toward a new, transcultural interdisciplinarity that can use improvisation itself to unearth and challenge this embedded cultural context and its presuppositions about the nature of meaning.

Combining improvisation with technology can propose new models for the study of meaning and sociality, while technologically imbued artmaking shows that critically oriented aesthetic experience can bridge gaps between fields of inquiry. Improvising computer programs both problematize and clarify constructed distinctions between human and machine, in ways that illustrate the radical position of Lucy Suchman that "I take the boundaries between persons and machines to be discursively and materially enacted rather than naturally effected and to be available…for refiguring" (Suchman 12). In that way, performances with creative machines are not simulations of "actual" musical experience, but a form of "making music together." Thus, working with improvising machines becomes a way of creating a politically inflected, critically imbued aesthetic space, in which, following Schutz, "a study of the social relationships connected with the musical process may lead to some insights valid for many other forms of social intercourse" (Schutz 159).

Finally, in Schutz's view, "making music together [presupposes] a face-to-face relationship, that is, a community of space" (Schutz 177). In fact, this view is problematized by the creative musical machine, an entity that did not exist in its present form in Schutz's time, that in much contemporary practice, embeds not a face-to-face animating metaphor, but a dramaturgy founded, first, upon empathy in the relation between bodies, and second, upon the creation of a community of differences between one ear and another.

Suchman was surprised to learn that AI-based conversational agents "make evident the greater contingency of competent machinic hearing" (Suchman 247). In fact, a theory of listening, hearing, and interpretation is at the root of any design strategy for interactive music machines, because we can understand the experience of listening to music as very close to the experience of the improvisor. Listening itself, an improvisative act engaged in by everyone, announces a practice of active engagement with the world, where we sift, interpret, store, and forget, in parallel with action and fundamentally articulated with it.

In both humans and creative machines, the ear-equipped body becomes the locus of an emotional transduction. In the interactive encounter between human and machine (and even, perhaps, between two creative machines themselves), the accumulation and articulation of many small details by an interactive, adaptive input structure can generate a detailed representation of what it receives. This representation, in turn, can produce a musical output that may be perceived as analogous to various emotional states that were experienced as the music is improvised.

This bidirectional transfer of intentionality through sound—or "emotional transduction"—constructs improvisation as utterance- and listening-acts embodying meaning, and announcing emotional and mental intention. As I have written elsewhere, in this context, "sound" becomes identifiable, not with timbre alone, but with expressions of personality, assertions of agency, assumptions of responsibility, and encounters with history, memory, and identity.[9]

The electronic musical instrument known as the Theremin, invented in the 1920s by the Russian polymath Lev Termen (or Leon Theremin), exemplifies this way of thinking about sound. This deceptively simple device used focused radio frequency fields to transduce bodily gesture into pitch and volume, two basic building blocks of many kinds of sounds. Along the way, however, the sounds produced by the bodies that engaged the Theremin became carriers for a more complex set of meanings that, for example, allowed listeners to distinguish insecurity or disengagement on the part of the performer.

Thus, the Theremin was perhaps the first electronic transducer of emotion and intention, and it is perhaps no surprise that with Theremin's own interest in gesture and sound, in the 1930s he married the African-American choreographer Lavinia Williams, with whom he had been working on the symphonic scores of the great Harlem stride pianist James P. Johnson.[10] Johnson himself was the composer of "The Charleston," a tune that inspired a dance craze that swept the US, while enduring as a piece of music. Williams died in 1989, never knowing that her Russian-born husband was still alive, but had been kidnapped by the Soviet Union to work on the war effort.

To update the point about the transduction of intention into and from sound, allow me to indulge in a bit of reminiscing with a parable of the virtual body:

Sometime in the mid-1980s, I attended a performance of a barrel organ player in a Parisian jazz club. The fellow was opening for the evening's featured performers—that is, us, the Steve Lacy Sextet. Instead of the usual renditions of popular folk songs and military music that one heard from such machines on the streets of Western Europe, this fellow's organ rolls included arrangements of what are called "jazz standards," compositions by people like Thelonious Monk and Chick Corea.

By way of reminder, to make music on most barrel organs requires the operator-busker to turn a crank that causes a program encoded on a paper or wooden roll to be performed as sound. At first glance, this seems not to require any particular skill or virtuosity; in fact, in the Netherlands, where I lived for two years in the mid-1980s, many barrel organs were completely electrically operated. The street busker's crank is actually virtual, a fact that I want to return to later.

The club audience's response to this literally cranked-out jazz performance was extremely enthusiastic, with the "performer" taking a bow, to considerable applause, after each number. After a couple of tunes, I went to the dressing room with some of my fellow musicians. Some of us appeared somewhat bemused by the audience's response to this rather minimal "performance," considering that the same activity, performed in its usual habitat, might well have evoked nothing like this.

We were understandably nonplussed, having grown up with the idea (shared by many academics) that part of the joy of live

performance consists in the visual stimulation provided by the virtuosity and instrumental activity of the performers, a view leading in turn to the axiomatic conventional wisdom that eye contact is "required" for improvisative performance.

Hear, for example, AI researcher Rodney Brooks, in colloquy with US National Public Radio commentator Kurt Andersen, who combined rather downbeat critical commentary of my work (without any chance for me to respond) with a recapitulation of an Arnoldian stance on improvisation, interactivity, and artmaking:

> COMMENTATOR: Rodney, I guess the computer programs and output devices that he, George Lewis, uses, don't strictly qualify as a robot in your definition.
>
> BROOKS: No, but they do at least respond to something they're sensing in the world. They're sensing what the human is playing...
>
> COMMENTATOR: Right.
>
> BROOKS: ...from that, come to where they play.
>
> COMMENTATOR: I wonder if a machine that actually played a trumpet or a trombone or a piano, as opposed to outputting those digital sounds, would get us any closer to a kind of interesting simulation of human musical creation?
>
> BROOKS: Well, you might want the robots to be sitting there with the other musicians and making eye contact with them, and understanding the nod and making a little nod back—whose turn it is to take the solo.
>
> COMMENTATOR: When do we, uh…get there—that is, machines creating art that we care about?[11]

In this case, the perception of the "human-ness" of the machine, as well as its quality as art, is clearly made dependent upon the aesthetic judgments of listeners; despite the apparent assumptions of universality on the part of the commentators, in the real, socially constituted world that robotic entities of this musical kind must engage, such judgments would inevitably vary widely. Thus, Brooks's assertion that in the absence of "eye contact," no "human-like" musical interaction can be taking place, demonstrates a lack of connection with the meanings embedded in sound, a logocentric privileging perhaps mirrored in scientific research priorities taken more broadly. Moreover, the notion that visual elements constitute the foundation for the sonic art of music seems curiously detached from our everyday experience, to say the least.[12]

Flashing back to the musicians' dressing room, no one even considered the possibility that the sheer novelty of "jazz barrel organ" accounted at least for part of the audience's enthusiasm. This is probably because musicians of that generation believed in mobility of practice, and didn't take labels like "jazz," "rock," "classical," etc., very seriously. I remember arguing that the whole thing could have been done by a computer and synthesizer anyway. Someone else responded that the barrel organ had an "acoustic, real sound," presumably "natural," not like the sounds of synthesizers. No, that couldn't be it, said another, since in the 1970s Chick Corea used to play great solos on MiniMoog synthesizers that could only make one sound at a time, and were limited timbrally to what one could make with sine waves, sawtooths, and the like.

Really, I argued, it was just a playback thing, so it could still be a tape or a computer or something, just like the old-time tape music concerts in the 1950s. What's so great about that? There was just a piano roll in there anyway…or?

A couple of us stopped to watch the organ guy again. Eventually we realized that the quite prosaic process underlying the music's realization—like the playing of a record as performance, a process that in the mid-1980s was only beginning to approach the heights of the DJ culture that emerged a decade later—did not seem to figure in the audience's judgment that this activity constituted a live performance of music. No, we reasoned, it was the guy turning the crank that kept the audience interested. Not that he used particularly interesting movements as he cranked; rather, it was the cranking itself, the visible physical human activity, that satisfied the audience that a real performance was taking place. That realization took me back to those Amsterdam streets, where the buskers operate nonfunctional, *virtual* cranks while electrically operated barrel organs play the music.

Our attempts that night to locate authenticity in the music itself was already given the lie by my experience with the creative machines I was making at that same moment, machines that could basically improvise well-structured music without human intervention, but also with nowhere near the level of audience engagement. I joked to myself that maybe I needed to attach a crank to my computer for my next performance—but then I realized that the "crank" was me, and human partners I had set up to perform with the machines. Our cranky bodies were providing the crucial link between the music and the audience—and in the case of creative machines, providing a locus of transduction—a sprit medium, if you will—by which some audience members might learn to experience the changing inner states and the "personality" of the creative machines—leading, perhaps, to an unexpected experience of empathy with the machine.

This was perhaps what the Argentinean composer Mario Davidovsky realized with his exciting "Synchronisms" series of electronic compositions, which, beginning in the 1960s, placed human performers in simulated improvisative dialogue with taped electronic sounds—or, going further, asserting through musical composition that dialogue was an utterly human foundation for improvisation. We don't want to move too quickly, however, in locating this as the "Aha!" moment for our bodies. For one thing, people familiar with

experimental performance have been treated to many non-human "cranks." Visual elements—slides, dance, film, video, computer graphics, and real-time action drawing and painting (an ongoing favorite at jazz performances in New York since the 1960s)—can also be quite cranky.

So do these cranks serve as stand-ins for corporeality? Are they, so to speak, virtual bodies? Substituted bodies? Has performance studies developed a theory of the "aural gaze" that matches in intensity and intricacy its grasp of the visual and the physical? I'm not really sure; certainly post-structural theory has had little to say about the experience of sound, forcing those of us for whom sonic encounters are the blood of life to entice sounds into the Procrustean bed of "textual" discourse.

Like cultural theories of improvisation, once sound theory exceeds its science-borrowed discourses, the poverty of expression becomes evident, at least in the English language. Moreover, discourses of sound, particularly those that are borrowed from music, quickly become mired in moralizing about the purity and autonomy of the listening experience. Ways are sought to ascetically disconnect listening from the world, as in "reduced listening," or ideals of "sounds in themselves" that lack any relationship to culture, history, memory, providing fertile philosophical topsoil for an objectifying commodification of sound, where sound is distanced from interactivity and connectivity, from intentionality and empathy.

By "acoustic ecology," we are told to focus on the pristinely bourgeois redwood vision of the Sierra Club, rather than the rude intrusion of gunfire during church services in *favelas* and their counterparts around the world, where even very young children are obliged to learn the survival value of parsing sonic utterance. We are encouraged to work around contemporary urban sonic worlds, where an environmental racism just as insidious and iniquitous as its chemical counterpart rages on.

To be sure, sounds, like texts, quickly escape the control of putative authors—that is, if any such beings are really left. Authorship, however, seems important mainly to rights holders, and unlike the visual arts, in which an Italo Scanga or a David Hammons could incorporate a piece of urban detritus into a dynamic piece of art, the equivalent practice in sound, the sonic collage, can become actionable in a legal thicket in which most sounds are owned by media corporations who pose as "the little gut," the everyday creative rights holder.

Unlike the visual gaze, however, the human sonic experience is one of surround, 360 degrees. We can't see what's behind us, but we can certainly hear what's behind us, as well as what's on the left or the right, what's above, what's below—and all at once. Using stream segregation theory, psychoacousticians can describe the mechanism by which humans can pick out a particular sound of interest amid the crowded babble of the everyday.[13] Finally, any sound in a given environment can be perceived, not just by two or a few people in face-to-face (or sound-to-ear) interaction, but also, quite possibly, by thousands in an acoustic space whose immediate dimensions are unstable and indeterminate.

Provisional Stopping-Point: Katrina and the Future

In both Europe and the United States in the 1950s and 1960s, improvisation was widely viewed as symbolic of a dynamic new approach to social order that would employ spontaneity both to unlock the potential of individuals, and to combat oppression by hegemonic political and cultural systems.[14] The rise of "free jazz" in the United States, and later in Europe, was widely connected with challenges to racism and the social and economic order generally.[15]

Of course, improvisation had its detractors in Europe as well. French musicologist Celestin Deliege, writing in the wake of May 1968, drew upon Adornonian critiques of jazz and mass culture in describing as "illusory" the notion of a participatory improvisative aesthetic in collective improvisation. Such an aesthetic, made possible by the contemporary absence of musical rules, would inevitably lead to an art produced by "everybody," a reactionary rather than generous manner of thinking.[16]

But what I am coming to call the "condition" of improvisation is indeed open to everybody—as a human birthright that was expressed precisely in the fight for survival that millions of people around the world witnessed on their television screens, including Johannesburg, where I watched in horror and incredulity as the US administration seemed either completely at a loss as to what to do, or more ominously, appeared to be willfully and perhaps criminally negligent, concerning the real-time plight of those fighting to survive Hurricane Katrina's levee-smashing onslaught. Meanwhile, moralizing US news commentators thundered self-righteously about "looters" from the comfort of TV studios, drawing moribund racializing distinctions between black "looters" and similarly positioned whites who were simply "trying to find food and water."

Following James Scott's formulation, the improvisations of Katrina victims may be read as one of a potentially infinite number of "forms of public declared resistance" to domination, enacting "public counter-ideologies propagating equality, revolution, or negating the ruling ideology" (Scott 198)—all the while, in the words of the old saw, "making so much from so little, you can make anything from nothing." In the end, people were simply trying to survive, and the poverty of response of the US government to Katrina lay, simply, in the staunch refusal to improvise—inability of "homeland security" and "emergency management" forces to analyze situations and respond to conditions in flexible and mobile ways—elements that are, not surprisingly, key to improvisation.

I missed most of the predictable US media smugness by being in Johannesburg, where people on the street were even more incredulous than I, who could not explain to them how the richest country on earth could allow it to happen. But later, I was struck by the possibility that these are people who match the profile of the "cyborg worker" Chela Sandoval outlines in her important article, "Cyborg Feminism

and the Technologies of the Oppressed," a critique and intensification of Donna Haraway's theory of the cyborg.

Sandoval begins with a question of signal importance to the present discussion: "What constitutes 'resistance' and oppositional politics under the imperatives of political, economic, and cultural globalization?" (Sandoval 374). In the light of Sandoval's question, I renew my concern that technology could have been more widely addressed at the Corpolíticas conference in Buenos Aires, primarily because our bodies are not ourselves—not any more. The network is the site of the production of knowledge, and the body animates that network. That makes living with creative machines an epistemological practice/project.

Even if improvisation is an embodied practice, its mode of encounter need not hew to the conventional sense of bodily gesture, since cyberspatial, electronic means of accessing brain patterns—the body as data source—can also be a transmission medium for the improvisative exchange of meaning, placing pressure on narratives that purport to use improvisation to challenge mind-body dualism at the same time that these same dualisms are reinscribed through an essentialism of bodily gesture.

But there is more: even bodies apparently on the wrong side of the digital divide are still connected; all of us now create in tandem with machines, constantly. The political implications here are enormous, certainly dwarfing the synaesthetic gadgeteering to which so many well-meaning and technologically facile artists have succumbed. The brunt of cyborg life in the 21st Century is borne not nearly as much by artists as by those whose experience Sandoval so strongly evokes, a non-celebratory vision of the cyborg that can be summed up in the grimly evocative word *maquiladora*:

> [T]he muscles and sinews of workers who grow tired in the required repetitions, in the warehouses, assembly lines, administrative cells, and computer networks that run the great electronic firms of the twentieth century. These workers know the pain of the union of machine and bodily tissue, the robotic conditions, and in the late twentieth century, the cyborg conditions under which the notion of human agency must take on new meanings…Cyborg life as a worker who flips burgers, who speaks the cyborg language of McDonald's, is a life that the workers of the future must prepare themselves for in small, everyday ways. (Sandoval 374, 375)

Nonetheless, for Sandoval, over the last 300 years, the ancestors of the residents of New Orleans "had already developed the Cyborg skills required for survival under techno-human conditions," drawing upon five interlocking technologies. First, "la facultad" (as Sandoval cites Gloria Anzaldua's term): reading signs, what I would call the necessary improvisation of listening, or what the neuroscientists call a "theory of mind."[17] Then, *deconstruction* and *meta-ideologizing*, the twin technologies aimed at the rearticulation of signs of dominance; and the fourth, *democratics*, the reassertion of egalitarian social relations.

The fifth technology, what Sandoval calls "differential movement," corresponds in form and function to what I have called simply "mobility." Itself a "polyform," this fifth technology, appearing as womanism, *mestizaje*, strategic essentialism, as Sandoval notes,

> [A] differential form of oppositional consciousness, as utilized and theorized by a racially diverse US coalition of women of colour, is the form love takes in the postmodern world. It generates grounds for coalition, making possible unity across difference. (Sandoval 376, 377)

Perhaps our conference was subliminally influenced by the baleful artifacts of a conflict in which, as Sandoval deplores, cyborg politics appears "in renewed contestation with differential (US Third World feminist and subaltern) politics" (Ibid. 377). Her hope is that differential consciousness can create the grounds for "a new form of transdisciplinary work that centres the metholodogy of the oppressed—of the subaltern—as a new form of post-Western empire knowledge formation that can transform current formations and disciplinizations of knowledge in the academy" (Ibid.).

But within and outside the academy, all of Sandoval's critical technologies become articulated through improvisative interaction—in "small, everyday ways"—and it is on this point of assertion that I'd like to encourage future theorists to focus their attention. Again, I quote from our UCHRI residency narrative, which asks:

> How might an examination of the distribution of power in improvised expression provide models for social responsibility and action? Improvisation is viewed by many as facilitating direct intervention in political, social, economic and scientific discourses, promoting an awareness of intercultural and transnational discourses, and providing an atmosphere for the acknowledgment and articulation of difference that employ expressive means to challenge totalizing narratives that seek to reify notions of the role of creative expression in society. Building on these kinds of insights enables an examination of the potential for improvisation to aid in imagining new possibilities for interrogating power structures.[18]

As Sandoval maintains, this kind of activism cannot wait comfortably for the gradual development of a technologically enabled and supposedly oppositional cyborg politics, nor can it afford to undertheorize the importance of technologies of many kinds for the emergence of new political and social formations.

Conclusions

If from a musical improvisor's standpoint, composing, performing, and listening are hardly unrelated (as Cage has suggested), but come together in the practice of improvisation, the plain fact remains that the study of improvisation has bigger fish to fry than trying to relegitimize itself as part of the rarefied, minoritarian practice of art music. Improvisation makes use of all three, and ultimately transcends musical history and practice itself.

At the same time, the study of music provides us with a unique standpoint from which to investigate that transcendence, to illuminate the condition of improvisation that suffuses our lives. It is music that has provided us with an ideal platform for experiencing the condition of improvisation, for investigating its effects, and divining its future—and ours as human beings. If the foreshortening of distance between art and life is central to the contemporary arts, improvisation has always been the staging ground for that foreshortening, whether we are discussing Allan Kaprow or *The Iliad,* as it has come down to us as a compendium of originarily improvised texts.

I would like to suggest that the condition of music in the 20th, and now the 21st Century, announces the importance of our overall condition of improvisation. "Music is no longer made to be represented or stockpiled," Jacques Attali wrote in 1977, "but for participation in collective play, in an ongoing quest for new, immediate communication, without ritual and always unstable. It becomes nonreproducible, irreversible" (Attali 141). In that regard, those of us who study improvisation seriously find ourselves at the center of things, even as the myth of our marginality-—our academic subalterity, if you will-—is ever more anxiously repeated. In that light, I welcome the future of the study of improvisation in all its diversity, and hopefully, its transgressivity.

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