THE POLITICS OF THE (SOUNDWRITING) INTERFACE

The body of the instrument gives definite preference to some frequencies, and when its strings (or its vibrating column of air, or its pulsating stretched skin) give it a fundamental plus overtones to transmit to the air, it has a mind of its own and stubbornly boosts some frequencies and partially mutes others.

-Daphne Oram, *An Individual Note of Music, Sound, and Electronics*

In 1991, Hawisher and Selfe published "The Rhetoric of Technology and the Electronic Writing Class," in which they carefully remind us not only that technological change influences how we write *and* teach writing, but also that our culture (both in popular consumer culture *and* in academia) most often veers sharply toward a perception of emerging technologies as empowering, democratic, hopeful, and visionary. This is often easy to spot in Apple advertisements (though any will suffice, you might recall the "It Just Works" ad campaign), but perhaps it is more difficult to reflect on our own de facto endorsement of "new", "exciting," "cutting edge" tools in our classrooms. Hawisher and Selfe ask us to be mindful of the kind of rhetoric we use, and yes, *enforce* in our classrooms. Selfe and Selfe followed this work in 1994 in "The Politics of the Interface," the article for which this chapter is named. They argue that the interface of the contemporary computer—and its various components such as the ubiquitous Microsoft Word—are always political:

> Within the virtual space represented by these interfaces, and elsewhere within computer systems, the values of our culture—ideological, political, economic, educational—are mapped both implicitly and explicitly, constituting a complex set of material relations among culture, technology, and technology users. (485)

Such critiques should be levied against *all* of our tools and interfaces. They not only discipline our bodies and reinscribe dominance and colonialism, but they actively participate in

(co)composition. We never really write alone, we never really write *on* technologies. They write with us, and sometimes for us. Our *invisible coauthors*.

More than two decades later, it is difficult to find evidence indicating this rhetoric of technology is changing. Following Selfe and Selfe for instance, much has been written about the interface with which this chapter was written and revised: Microsoft Word. Word continues to be the (in many cases explicitly required) composition tool prescribed across curricula and institutions, though many have argued that its interface and attendant values, processes, and priorities, are not problematic only in terms of their colonizing effects, but at odds with critical thinking, effective pedagogy, and mentoring relationships (McGee & Ericsson 466; Buck 398). Scholars also continue to point out the simultaneous proliferation and erasure of technologies-as-coauthors in emerging contexts. Arola's work asks us to question the tired claim that the Web and its various template-driven interfaces and platforms are simply "vessels" for content. The design, she rightly argues, *is* the content (13). McCorkle urges us to resist technoutopian turns-of-phrase like "natural user interfaces," approaches to device design which turn out to be neither natural (but rather, *conditioned*), nor particularly concerned with the bodies of users that are unable to access their design (110). A pattern emerges: for every new technology that promises ease, a corresponding cost of obscured politics exists. Gratefully, we have technocritics among us who have committed their classrooms and research to cautioning against the uncritical awe— and accompanying prescription—of emerging composition technologies. Within this conversation, I wish to add an exploration of software-based soundwriting technologies, the tools with which we edit, re/mix, compose, and publish sonic texts.

As twenty-first century composers and teachers, it is easy to take something like the ability to write with sound for granted. We have relatively accessible means to record, download,

sample, edit, publish, and distribute sounds for a wide variety of purposes, audiences, and platforms. Though sonic technologies have existed for a few centuries that generated and measured sound scientifically, and therefore reproducibly, soundwriting as we know it was quite inaccessible to those outside professional sound studios until the middle of the 20th century and the rise of magnetic tape as a recording and playback device. Many readers will likely have some direct experience with magnetic tape and its affordances and limitations. Recording from the radio, compiling mix tapes, warping materials from environmental conditions and overuse, the audible sound of fastforward and rewind. And so on.

It is difficult to overstate the impact of magnetic tape on audio culture writ large, let alone what I will here call *soundwriting*. Here I am calling on the work of rhetoric and composition scholars who have done valuable work to understand and share how sound works rhetorically and how composers might work with sound. And though earlier work at the intersection of rhetorics, composition, and sound does exist, I should mention a few important spaces in which these conversations grew and took shape, particularly Rickert's (ed.) 1999 "Writing/Music/Culture" issue of *Enculturation* and Ball and Hawk's (eds.) 2006 "Sound in/as Compositional Space: A Next Step in Multiliteracies" issue of *Computers and Composition.* So many threads of scholarship emerged from these special issues, and scholars in the field continue to engage sound in exciting ways: multimodal and body-centered listening practices (Ceraso), remix literacies and practices (Stedman), musical rhetorics (Halbritter; Stone), multimodal practices and pedagogies (Ahern; Selfe; VanKooten), ambience and soundscapes (Rickert), technologies and posthumanism (Hawk), race, class, and genre (Rice; Stoever-Ackerman; Sirc). This list could expand widely, of course. And while *soundwriting* scholarship is politically

thoughtful, much of it implicitly takes for granted the tools and techniques made possible via digital recording, editing, playback, and publication.

Therefore, as a contribution to the *soundwriting* corpus, this chapter will investigate the politics of contemporary digital audio workstations (DAWs) vis-à-vis their ancestral ties to early sound recording, editing, and mastering tools and techniques. And while the bulk of this work will trace his-/hystories in an attempt to understand why our technologies look, sound, and perform the way they do, my interest here is not one of techno- or retro-fetishism. On the contrary, we have learned from Hawisher, Selfe, and Selfe the dangers of uncritical, technoutopian approaches to working with writing technologies, because they are never inert, never apolitical, never *just tools.*

At the outset of the chapter, I quoted Daphne Oram, an important figure both in this chapter and in electronic music history, though she is often muted in the latter. Her opening comments in large part echo the sentiments of Hawisher, Selfe, and Selfe (and the many who have followed this line of critique): instruments' *materiality*—how they are constructed by forces (usually human) that possess values and politics and preferences rooted in a variety of sociocultural milieus, many of which perform subjugation and oppression—affects the sounds it makes (and those it ignores), who may use it and how, and so on. No compositional instrument—of music, or words, or any mode/media combination, overtly rhetorical or not—is ever simply an instrument. It is an artifact of political power, privileging those already in power, disciplining the colonized bodies.

In a way of beginning to understand and critique our current conditions of soundwriting via DAW technologies, I should do some work to describe those conditions at the time of this writing. Like the word processor, the contemporary DAW is not a singular product even despite

various institutions' best efforts to enforce the use of one or two such products. In the media production world, the term "industry standard" often describes and rhetorically cements these programs' identities as such. A variety of DAWs do exist on the market, but for a number of reasons, Avid's Pro Tools remains the DAW most used in industry (music, sound design, radio) and is therefore most often *taught* by those wishing to prepare students for "the industry." Little concrete evidence exists as to why Pro Tools has risen and remained the DAW *par-excellence*. But like Word, Pro Tools a) was a relatively early option available to professionals and studios b) drew from its hardware predecessors in terms of processes, jargon, and priorities, and c) because of its early success in industry, became an institutional—and therefore *educational*— staple. But my critique is not focused solely on Pro Tools, nor any other conventional DAW. Instead, I am interested in investigating the techno-lineage of dominant digital audio workstations and their attendant politics, so that we might consider our coauthors wisely, both in our soundwriting work and in the kind of soundwriting work we ask of our students.

It is worth repeating that a work does not necessarily have a beginning or an end. One cannot mark its beginning or end.
<div align="right">-John Murungi, African Musical Aesthetics</div>

Most contemporary DAWs rely exclusively on a multitrack timeline as a visual and functional editing interface. Below, see screenshots from Pro Tools and Audition. A multitrack timeline view is rather self-explanatory: the composer has access to multiple tracks of audio that can exist on the timeline of one project. On the right, you will see that I have imported two individual clips of audio into two tracks in Audition. Tracks are versatile; we might arm one or more of the tracks to record from various inputs (e.g., recording a live band, assigning each track

to an instrument's output), we might arrange and edit prerecorded samples (e.g., remixing a song or mixing a podcast that features speech, music, and other prerecorded sounds), and so on.
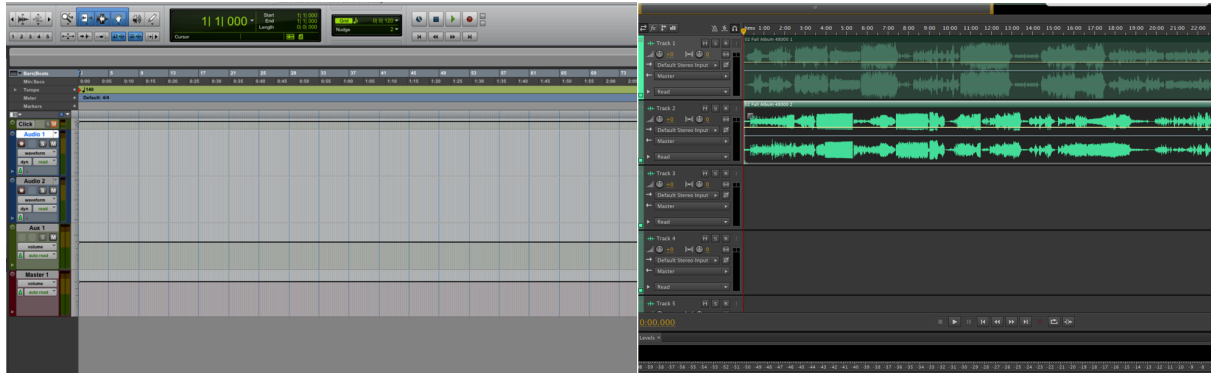

Figure 1: Multitrack Timelines of Pro Tools (left) and Audition (right)

At first glance, the multitrack timeline is a very logical and seemingly open-ended environment. A sound composition, after all, usually has a distinct start and end and often features multiple sound sources, some we may want to record synchronously, some we may want to record and edit asynchronously. For maximum control and precision, a multitrack timeline may in fact be optimal. Yet we must consider a few things as technocritics.

First, why are control and precision the markers of a good interface? Irregularity and error can be not only enjoyable experiences as composers, but they can be extraordinarily valuable as *materially-conscious* composers. Relatively recently, scholars in composition and rhetoric have explored the affordances of glitch (Boyle; Hammer; Johnson and Johnson; Reid). Calling on artist-activist-scholars in the new media arts who in many ways have led the charge of techno-critique in recent decades not only bridges disciplinary divides, but can also lead us to fundamentally question our assumptions regarding the relationship of human composers and digital writing technologies. Menkman argues that the search for noiselessness, perfection, and

functionality is futile; all technologies and processes of composition "will always possess their own inherent fingerprints of imperfection" (11). As such, the glitch artist ought not pretend that these political-made-digital artifacts do not exist, but instead "find catharsis in disintegration, ruptures and cracks; manipulate, bend and break any medium towards the point where it becomes something new" (11). Similarly, in his articulation on dirty new media (DNM), jonCates understands that "brokenness is a primary feature" of writing technologies, and DNM works exxxplicitly to reveal the politics && power that lies in protecting illusions of cleanliness and functionality (Cates).

Secondly, we must always question not only the inherent politics and roots of a given device, but we must also ask what was muted as the dominant paradigm became Standard. We have read works by scholars like Byron Hawk that do just that: provide *counterhistories* of composition. And just as Hawk's work asks readers to reconsider composition's preoccupation with epistemology for one of ontology, I am asking readers here to reconsider the dominant interface of contemporary soundwriting for an approach that existed but never really took gained purchase by the gatekeepers of audio technologies. Therefore, I will begin by explaining how we arrived at the multitrack timeline interface. Then I will tell a story of forgotten names and philosophy-practices, and conclude by advocating for alternative approaches and interfaces for soundwriting.

While multitrack recording techniques existed as early as the late 1800s to create stereophonic sound, multitracking did not pragmatically emerge until the mid-1950s, when Les Paul designed, proposed, and commissioned a custom 8-track recording device from Ampex. Paul proposed that instead of treating a piece of magnetic tape as a single recording medium, one might divide the tape into eight distinct but parallel sections, or tracks. This way, one could build

a composition in which each track was distinct, yet all tracks would be synchronized during playback and overdubbing. We might return to the right image in Figure 1, as contemporary DAW multitracking is a direct digital representation of Paul's first eight track recorder. We could add another recording to the composition in track three, and do so with no risk to the work we have already done in tracks one and two. And when we have successfully recorded, arranged, and applied effects to track three in relation to the others, our multitrack mix will play in synchronization. The multitrack recording and editing idea spread quickly and remains the most used means of soundwriting.

Tom Dowd, chief engineer at Atlantic Records, acquired an 8-track multitrack recorder in 1958, making Atlantic the first major music label to record on such machines and to release stereo records. Dowd is also credited as the first engineer to use linear faders on recording consoles, another feature very commonly replicated in DAW environments (Smith). Like Paul, Dowd's impact on the sound of U.S. American music is difficult to overstate, but his influence on the standardization and proliferation of multitrack mixing and recording techniques is at least equal in scope. Throughout the 1960s, soundwriting experienced something of a technological plateau; most studios throughout the U.S. and Europe continued to employ linear fader mixing boards, and multitrack tape recording interfaces.

Soundwriting became much more accessible to the amateur beginning in 1972, when TEAC released the first multitrack recorder intended for home use. Other manufacturers soon followed suit. In 1980, TEAC released its first cassette version of the 4-track recorder, and ushered a significant change in who could engage with the recording process and where (Hurtig 10). The PortaStudio, as it became known, was the public's first real access to soundwriting technologies, and it was based on very specific concepts and philosophies inherited from Les

Paul (multitrack recording processes and interfaces) and Tom Dowd (stereo panning, level

equalization, linear mixers). From the famous (Bruce Springsteen's *Nebraska* was recorded in

1982 on a PortaStudio 144) to the obscure, the home recording revolution had begun.

While multitrack-based soundwriting took a turn for the digital in 1992 when Alesis

released its ADAT, the trend of digital hardware multitracking did not last long, as software

multitracking had already begun developing and would quickly become the new standard for

professional and amateur soundwriting. Throughout the 1980s, multitrack recording software

such as Hybrid Arts' ADAP II had already begun to be used in music and film, and by 1991, Pro

Tools emerged as an incredibly powerful, professional-grade studio "in-a-box" (Burgess 145).

Other DAWs followed, like Steinberg's Cubase in 1992, and by the end of the 1990s, prices of

DAWs had decreased significantly, evening the playing field of soundwriting studio recording

and editing. Today, even while some cling to analog equipment and techniques, the DAW

undoubtedly reigns as the most economical and powerful way to produce sound-based work. A

range of software exists, from free and open-source editors like Audacity to studio standards like

Avid's Pro Tools. The common thread of nearly every DAW remains, however, the multitrack

timeline interface.

What, though, does this process and interface enforce philosophically about the nature of

sound and the process of soundwriting? In short, multitrack timelines pushed soundwriting into

the territory of what Marshall McLuhan described as *visual space* (as opposed to acoustic space).

McLuhan, of course, was not talking about in terms of what can be seen and heard, respectively.

Instead, visual and acoustic spaces are paradigms that describe and enforce how we understand,

experience, and are disciplined by media environments. He argues that acoustic space "has no

center and no margin, unlike strictly linear space, which is an extension and intensification of the

eye. Acoustic space is organic and integral, perceived through the simultaneous interplay of all the senses; whereas 'rational' or pictorial space is uniform, sequential and continuous and creates a closed world" (59). We might follow, at least for a moment, Gow's (2001) articulation of opposing characteristics that explain and unpack these paradigms. He characterizes visual space as sequential, asynchronous, static, linear, vertical, left brain, figure, tonal, and container; and acoustic space as simultaneous, synchronous, dynamic, nonlinear, horizontal, right brain, ground, atonal, and network.

The multitrack timeline DAW is inherently sequential, static, and linear. Most often praised for his simultaneous development of overdubbing techniques (i.e., recording asynchronously over prerecorded tracks), Paul's work in shaping this paradigm also shaped soundwriting as an inherently asynchronous activity. Instruments, tracks, samples, sources, effects, and virtually all other elements of a sonic composition are discrete and contained, and only work together to make a soundscape as they are arranged and exported as such. This might seem a strange juxtaposition with how many of us typically experience sound in the world. When we hear the audible world, it is all-at-once, dynamic, networked and relational, it has no discrete tracks, starts or ends. It is not well-mixed and mastered. It is noisy and imperfect. In this way, most contemporary soundwriting bears almost no semblance of what it means to hear, to listen. It disciplines us to contemplate and perform soundwriting as a linear, visual practice.

In his reflection on the musical impacts of European colonialism on African musics, John Murungi treats linearity both generously and carefully:

A linear composition can be found, and is found in every tradition, even in African tradition. It is one way for human beings to organize experience. What has happened in the Western European tradition is the institutionalization of this way as if it were the only

way to organize experience. What we can learn from the African masters of composition, though not exclusively from them, is that this way is not the only way to organize experience. Organizing experience takes on many forms. Moreover, organizing experience has a direct bearing on being human. In organizing experience human beings organize themselves. (227)

Following Murungi, we can critique dominant DAW paradigms without abandoning timelines or multitrack mixing altogether. After all, I am not implying that linearity or visual space is explicitly colonialist. I am, however, implying that because these features of DAWs are both pervasive and enforced as *The* approach to soundwriting, they have indeed colonized the practice in the Western tradition.

In Nigeria, you don't make short records. The musical masturbation of the Western World hasn't, sort of, impinged on their creativity. Those guys play, and eighteen minutes is not long enough.
            "Blackfire," from Madlib Medicine Show No. 3: Beat Konducta in Africa

As Les Paul co-developing the multitrack philosophy and technology in the U.S. in the mid-1950s, Europeans were working with magnetic tape in much more *acoustic* (in McLuhan's sense of the word) ways. Pierre Schaeffer's relatively well-known musique concréte had successfully transitioned from 78 RPM records to magnetic tape in 1951. Shaeffer's method of musique concréte, developed in the late 1940s, was revolutionary in both technology and philosophy. Logistically speaking, Schaeffer and others utilized prerecorded sounds (first on records, later with tape) in combination with a range of manipulative effects (e.g. speed) to obscure the sound's source and soundwrite "forms" rather than time- and movement-based compositions with clear instrumental origins and attendant traditions (e.g. scales). Though many

point to this work simply as an important beginning in sampling, musique concréte also "represents an inversion in relation to the traditional musical approach;" instead of the traditional composer moving from the abstract to the concrete in a controlled, disciplined manner (i.e., the performance of notation), the musique concréte composer "can do no better than manufacture his material, experiment with it, and finally put it together" (Palombini 16). In other words, in much the same way that we encounter sound in acoustic space—all at once, in relation to a variety of sound-sources, and free from notational control—so too does Shaeffer's composer. Though Schaeffer is undoubtedly the best-known practitioner of such philosophy-practices, much has been written of his work; we might instead look to some of his contemporaries, particularly the oft-muted women of early experimental soundwriting.

Daphne Oram was hired by the BBC in 1942 as a junior studio engineer. She also produced music, such as her groundbreaking composition "Still Point" in 1949, considered the first piece of music written to combine live electronic manipulation and a live acoustic orchestra. "Still Point" is an important reference point to many contemporary artists' work, yet is seldom referenced, and had not been performed until 2016. Perhaps this is unsurprising; the BBC rejected "Still Point" and several other compositions, but kept Oram employed until she left to pursue her own interests in 1959. At that time, she began development and construction of an instrument/composition philosophy called Oramics.

Oram wanted to construct a highly theoretical and multimodal instrument that strayed far from linear, visual space. She writes of her planning,

> We considered the painter and the photographer and decided that the painter has added
> scope for individuality. He has freehand control and he also has the benefit of immediate
> feedback. We then considered the singer and his use of feedback when performing a

song. It seems that each parameter of the sound is checked and that, maybe, each

parameter instruction is stored separately, so that individual interpretation can evolve-

evolve by the subtle changing of interplay between the parameters. (96)

What resulted is the Oramics machine—a large, metal framed instrument that featured ten continuously running loops of 35mm film (see Figure 3, below). The player would draw directly on the film, and those markings were read by photocells, altering a different aspect of the resulting sound. One film strip controlled the pitch, one controlled vibrato, and so on. While this may at first glance resemble a multitrack system, its functionality and philosophy are radically different for several reasons. The important difference here, though, is that the composition was always running, always subject to change. There is no beginning or end to an Oramics composition, because each "track" is a loop, and will run for as long as the machine receives power. Further, each new or edited mark completely changed the nature of the composition— there are few points of discreteness, none of the safety so vital to Paul's multitrack system. Oramics is an instrument of networked-ness, synchronicity, all-at-onceness, and loops. Perhaps most ironically, Oramics utilizes visual input (hand drawn markings on the film) to create *acoustic* space, whereas Paul's 8-track utilizes audio input to create *visual* space.

Figure 2: The Oramics Machine. Photo courtesy Wikimedia Commons

While Oramics was largely lost in the politics of capitalistic priorities that dominated technological development in audio recording and engineering, her work and philosophy continued to influence soundwriters like Delia Derbyshire. Derbyshire also worked for the BBC's Radiophonic Workshop and composed works in the tradition of musique concrète. Her most famous work (though she is seldom explicitly credited) is the original title theme from Dr. Who, which was composed using a combination of sampled sounds on tape, spliced and played together at different speeds to create a range of rhythms, pitches, and patterns.

It is difficult to overstate the influence of musique concrète on soundwriters that followed, from Gysin and Burroughs' cut-up compositions, to tape musicians like Terry Riley, even to early hip-hop and electronic music (Taylor 71). Modular Synthesists like Robert Aiki Aubrey Lowe and Kaitlyn Aurelia Smith, though not working with tape, have also taken to soundwriting as a largely nonlinear, acoustic undertaking. Smith, perhaps channeling Oram, discusses the integration of multiple senses in the soundwriting process: "Sometimes I'll start just seeing colors and then it becomes a feedback loop between what I'm making and what I'm seeing. Like, 'Oh, if I open the timbre on this then it's a shape created in this color.' And then

that starts to turn into a story in my brain" (Host). Smith is describing a multisensory, acoustic process in which the composer, sounds, and technologies are interacting and exchanging feedback, irrespective of time or notation.

In short, there exists a strong philosophical tradition of soundwriting that deviates from multitrack timelines comprised of discrete voices. But while these traditions have made small impressions on mainstream soundwriting culture, they most often remain the obscure tools and techniques of those who we may deem "experimental." Yet this need not be the case. After all, the term "experimental" most often refers to the *result* of philosophy-processes, not the processes themselves. And certainly not the interface. My interest here is to ask what happens when we use nontraditional tools for rather ordinary rhetorical situations. Unlearning the multitrack timeline interface need not result in works that are inaccessible to audiences, but they *will* challenge the soundwriter to think about sound *acoustically* rather than *visually*.

How might we begin? Soundwriting can be an expensive undertaking, particularly for those interested in niche counterhistorical tools and techniques. And so while I am tempted to endorse vintage tape machines, West Coast style modular synthesizer modules, and other wondrous(ly expensive and fetishized) soundwriting tools, I will not do that here. Instead, I wish to point out a few tools and interfaces that are more accessible to soundwriters while still fostering non-dominant philosophies and processes.

Perhaps the most pragmatic solution to teaching soundwriting so that students are aware of the multitrack timeline is a well-known DAW, Ableton Live. It features two distinct "views," and therefore philosophy-processes, simultaneously: "session" and "arrangement." In the aptly named arrangement view, we are presented with a traditional timeline interface. In session view, however, the composer is presented with a range of available instruments or samples which may

be played in a variety of combinations. The composer may begin to arrange them in rows (called "scenes") and play them together, though she may also deviate from linear arrangement by launching new sounds at any time. The session view offers a distinctly acoustic approach to soundwriting, allowing for any sound to enter or leave the current composition. While recording will inevitably lead to a product with a beginning and end, the composer herself is never engaged with a timeline in this view; she is arranging sounds in terms of visual space and in acoustic relation.
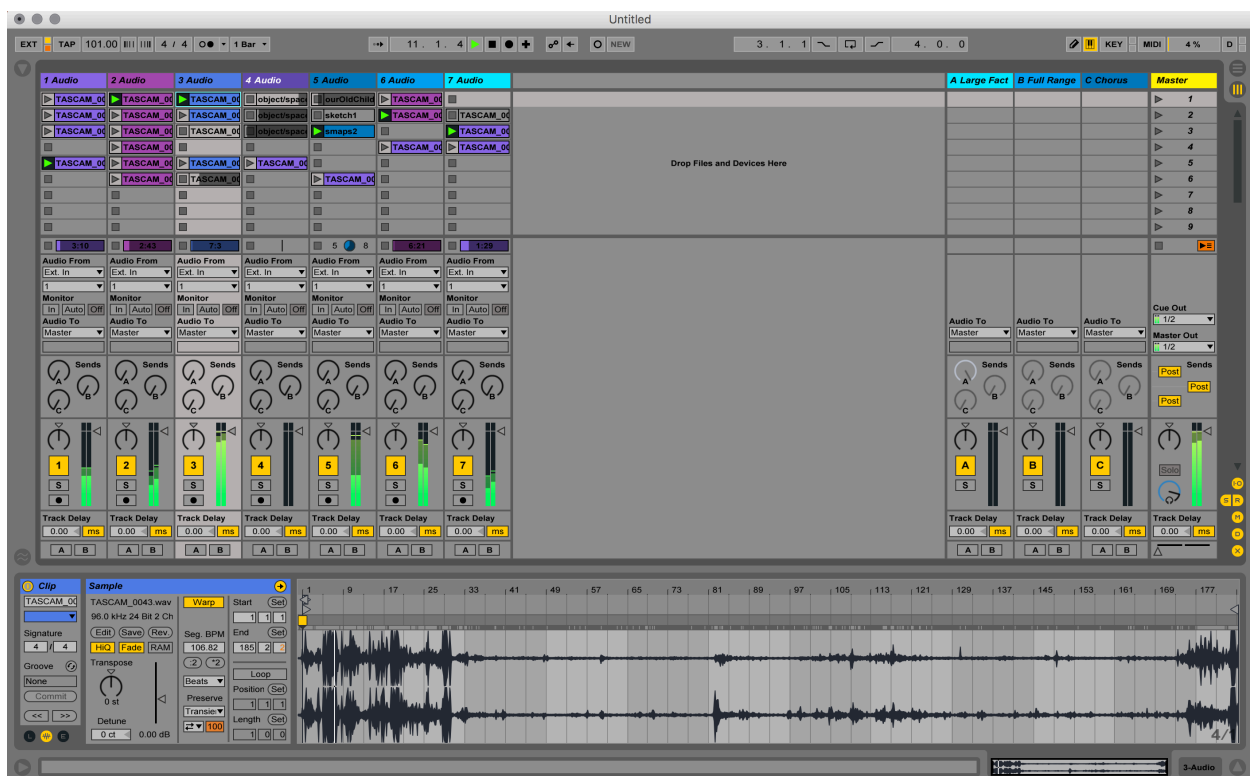

Figure 3: Ableton Live's Session View

For those interested in completely open environments and programming, Pure Data (and its more polished sibling, Max/MSP) can serve as a highly instructive tool of working with the real material of digital sound. Free and open-source, Pure Data utilizes graphical programming for a range of input/output procedures, from robotics to audio. Its open compositional environment fosters an understanding of sound not as time-based, but as data-based. After all,

digital soundwriting is always both processual and data-based. The DAW's interface simply works to black box, or obscure, those processes in the interest of user-friendliness, which is in itself a highly political act. Consider a basic sample player, for instance. In a typical DAW, one would simply drag and drop an audio file into a space (see figure 4, above, for instance), and click on that clip for playback. In Pure Data, the composer must both understand how sampling works at the data level and construct an interface that allows sample playback to take place. In this way, Pure Data forces the composer to choose and perform her *own* politics in designing her interface.

Another option, for the digital-soundscape minded, is a program called Audio HiJack, which allows a user to route all audio in a computer's operating system into a recordable mixer. The user's operating system and all of its programs that produce sound can then be seen as an acoustic environment (rather than a typical DAW, in which audio channels are discrete and regulated by acceptable inputs). Further, no timeline exists as the composer "plays" her desktop. The operating system, though, becomes the instrument, becomes the interface. Shawné Michaelain Holloway, a dirty new media artist, uses this technology to instrumentalize the technoculture she is critiquing, simultaneously playing YouTube videos, streaming music, and speech.

Figure 4: Screenshot of Shawné Michaelain Holloway's BROWSER COMPOSITION 01: what u cant give me n LOVE give me n GUCCI

It should go without saying that each of these programs also possess their own politics, their own subjectivities. My hope here, of course, is not to convert readers to one interface or another, but to provoke soundwriters to think beyond the dominant, Western traditions that engulf soundwriting processes and practices. We might also participate in or support the design of DAWs that better serve the gaps in current offerings. A significant gap, for instance, exists in the space of accommodating persons with varying bodily experiences with sound, namely those with hearing loss or deafness. The use of visual mixing techniques and vibratory feedback hardware may well lead to helpful gains toward this particular aim; I have done some work developing these kinds of platforms using PureData, Arduino, and external hardware. I hope to see more of these kinds of horizon-expanding and post-ear ways of thinking about soundwriting.

We have become (more) aware of the ways that we shape our technologies and how they shape us, from early word processors to the most (seemingly) revolutionary emerging media. The obscurity of this shaping seems to be growing, however, in the sweeping wake of "user-friendliness" and "ease of use" and other favorite utilized by the purveyors of the rhetoric of

technology as articulated a few decades ago. While I am not hopeful that academic publications will singlehandedly dampen this trend, we have the extraordinary privilege of making meaningful impacts on the way our students not only learn to produce content for digital spaces (whether with alphabetic text, video, audio, animation, game design, or otherwise), but how they learn to think about interfaces not as mere tools or empty canvasses, but as active agents that shape rhetorical situations including the representation of the student herself.

Like all interfaces, soundwriting interfaces matter. They inform and shape our processes, our finished works, our private and public personae. They discipline our bodies; they write *with* us and in many cases *for* us. And even if our individual goals do not include interface hacking or development, we have an ethical responsibility to carefully interrogate those we choose to use and teach, and integrate some kind of critical approach into our curricula, lest our tools and their obscured and often problematic politics contradict our aims as scholars and teachers.

Works Cited

Ahern, Kati Fargo. "Tuning the Sonic Playing Field: Teaching Ways of Knowing Sound in First
Year Writing." *Computers and Composition,* vol. 30, no. 2, 2013, pp. 75–86.

Arola, Kristin L. "The Design of Web 2.0: The Rise of the Template, The Fall of Design."
Computers and Composition, vol. 27, 2010, pp. 4-14.

Bacon, Francis. *New Atlantis*. At the University Press, 1900.

Ball, Cheryl and Byron Hawk, eds. Special Issue: Sound in/as Compositional Space: A Next
Step In Multiliteracies. *Computers and Composition,* vol. 23, no. 3, 2006.

Boyle, Casey. "The Rhetorical Question Concerning Glitch." *Computers and Composition*, vol.
35, 2015, pp. 12-29.

Buck, Amber M. "The Invisible Interface: MS Word in the Writing Center." *Computers and
Composition*, vol. 25, no. 4, 2008, pp. 396-415.

Burgess, Richard James. *The History of Music Production*. Oxford University Press, 2014.

Cates, Jon. "þRʘҚ3n ɯR3✖✖◯ŖÐƵ (AKA: Broken Records: Hystories of Noise && Dirty
New Media)." *Gli.tc/h Reader[ror] 20111,* edited by Nick Briz, Evan Meaney, Rosa
Menkman, William Robertson, Jon Satrom, and Jessica Westbrook, Unsorted Books,
2011.

Ceraso, Steph. "(Re)Educating the Senses: Multimodal Listening, Bodily Learning, and the
Composition of Sonic Experiences." *College English*, vol. 77, no. 2, 2014, pp. 102-123.

Ceraso, Steph, and Jon Stone. "Sonic Rhetorics: A Mashed-up Introduction in Sound." *Harlot: A
Revealing Look at the Arts of Persuasion*, vol. 1, no. 9, 2013.

Gow, Gordon. "Spatial Metaphor in the Work of Marshall McLuhan." *Canadian Journal of
Communication*, vol. 26, no. 4, 2001.

Halbritter, Bump. "Musical Rhetoric in Integrated-Media Composition." *Computers and Composition,* vol. 23, no. 3, 2006, pp. 317-34.

Hammer, Steven. "Writing (Dirty) New Media/Glitch Composition." *Technoculture,* vol. 4, 2015.

Hawk, Byron. "*Stomp Box Logic*: Sirc and Sound." 65th Annual Conference on College Composition and Communication. Indianapolis, IN. March 19-22, 2014.

Hawk, Byron. *A Counter-History of Composition: Toward Methodologies of Complexity*. University of Pittsburgh Press, 2007.

Hawisher, Gail E. and Cynthia L. Selfe. "The Rhetoric of Technology and the Electronic Writing Class." *College Composition and Communication*, vol. 42, no. 1, 1991, pp. 55-65.

Host, Vivian. "Interview: Kaitlyn Aurelia Smith, Buchla Master." *Red Bull Music Academy Daily,* 8 Jan 2016, http://daily.redbullmusicacademy.com/2016/01/kaitlyn-aurelia-smith-interview. Accessed 30 Dec 2016.

Hurtig, Brent. *Multi-Track Recording for Musicians.* GPI Publications, 1988.

Madlib. "Blackfire." *Medicine Show No. 3: Beat Konducta in Africa*, Stones Throw Records, 2007.

McCorkle, Ben. "Resisting the 'Natural': Rhetorical Delivery and the Natural User Interface." *Emerging Genres in New Media Environments*, edited by Carolyn R. Miller and Ashley R. Kelly, Springer International Publishing, 2017, pp. 99-115.

McGee, Tim, and Patricia Ericsson. "The Politics of the Program: MS WORD as the Invisible Grammarian." *Computers and Composition*, vol. 19, 2002, pp. 453-470.

McLuhan, Marshall. *The Medium is the Message*. Gingko Press, 1967.

McQuiston, Warren. "How Bruce Springsteen's Nebraska Sparked a Home Recording

Revolution." *Performer Magazine,* 28 Aug 2015, http://performermag.com/music-news/how-bruce-springsteens-nebraska-sparked-a-home-recording-revolution/. Accessed 30 Dec 2016.

Menkman, Rosa. "Glitch Studies Manifesto." *Sunshine in My Throat*, 31 Jan. 2010, http://rosa-menkman.blogspot.com/2010/02/glitch-studies-manifesto.html, Accessed 1 Oct. 2012.

Murungi, John. *African Musical Aesthetics.* Cambridge Scholars Publishing, 2011.

Johnson, Nathan, and Meredith Johnson. "Glitch as Infrastructural Monster." *Enculturation* (2016).

Oram, Daphne. *An Individual Note of Music, Sound, and Electronics.* Galliard, 1972.

Palombini, Carlos. "Machine Songs V: Pierre Schaeffer: From Research into Noises to Experimental Music." *Computer Music Journal*, vol. 17, no. 3, 1993, pp. 14-19.

Reid, Alex. "Composing Objects: Prospects for a Digital Rhetoric" Presentation at the annual Computers and Writing Conference, Raleigh, NC, December 6-9, 2012.

Rice, Jeff. "The Making of Ka-Knowledge: Digital Aurality." *Computers and Composition*, vol. 23, no. 3, 2006, pp. 266-79.

Rickert, Thomas, ed. Special issue: Writing/Music/Culture. *Enculturation*, vol. 2, no. 2, 1999.

Rickert, Thomas. *Ambient Rhetoric: The Attunements of Rhetorical Being.* University of Pittsburgh Press, 2013.

Roads, Curtis. *The Computer Music Tutorial.* MIT Press, 1996.

Selfe, Cynthia L. and Richard J. Selfe, Jr. "The Politics of the Interface: Power and Its Exercise in Electronic Contact Zones." *College Composition and Communication,* vol. 45, no. 4, 1994, pp. 480-504.

Selfe, Cynthia L. "Technology and Literacy: A Story about the Perils of Not Paying Attention."

    College Composition and Communication, vol. 50, no. 3, 1999, pp. 411-436.

Selfe, Cynthia L. "The Movement of Air, the Breath of Meaning: Aurality and Multimodal

    Composing." *College Composition and Communication*, vol. 60, no. 4, 2009, pp. 616-63.

Sirc, Geoffrey. "Interchanges: Never Mind the Sex Pistols, Where's 2Pac?" *College Composition*

    and Communication, vol. 49, no. 1, 1998, pp. 104-108.

Sirc, Geoffrey. *English Composition as a Happening*. Utah State UP, 2002.

Smith, Ebonie. "The Father of the Atlantic Sound." *Atlantic Records.* 4 Dec 2013.

    http://www.atlanticrecords.com/posts/father-atlantic-sound-18236. Accessed 30 Dec

    2016.

Stedman, Kyle. "Remix Literacy and Fan Compositions." *Computers and Composition*, vol. 29,

    no. 2, 2012, pp. 107-123.

Stoever-Ackerman, Jennifer. "Splicing the Sonic Color-Line: Tony Schwartz Remixes Postwar

    Nueva York." *Social Text*, vol. 28, no. 1, 2010, pp. 59-85.

Stone, Jonathan W. "Listening to the Sonic Archive: Rhetoric, Representation, and Race in the

    Lomax Prison Recordings." *Enculturation*, vol. 19, 2015.

Taylor, Timothy D. *Strange Sounds: Music, Technology, and Culture.* Routledge, 2001.

VanKooten, Crystal. "Singer, Writer: A Choric Exploration of Sound and Writing." *Kairos*, vol.

    21, no. 1, 2016.