ABSTRACT

Title of Thesis: SOUND AND DOCUMENTARY IN CARDIFF AND MILLER'S 'PANDEMONIUM'

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From 2005 to 2007, Canadian artists Janet Cardiff and George Bures Miller automated a live performance of simple robots striking furniture detritus and pipes in the cells of Eastern State Penitentiary, a Philadelphia prison that once specialized in isolation and silence. Oscillating between referential and abstract sounds, *Pandemonium* suspended percipients between narrative and noise. So far scholars have investigated only the work's narrative aspects. This projects examines Cardiff and Miller's specific use of percussive sounds to position *Pandemonium* in dialogue with noise music, sound art, and documentary-related practices in contemporary art. *Pandemonium*'s representational sounds coalesce into a curious kind of concrete documentary that triggered a sense of radical proximity between the percipient's body and the resonant environment of Eastern State Penitentiary. In doing so, it explored the potential for sensory relations and collectivity in a complex, contemporary world.

SOUND AND DOCUMENTARY IN CARDIFF AND MILLER'S 'PANDEMONIUM'

by

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For Andrew.

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Chapter 1 *Pandemonium*—Sensory Assault and Deprivation

From 2005 to 2007, Canadian artists Janet Cardiff (b. 1957) and George Bures Miller (b. 1960) overwhelmed a cellblock at the Eastern State Penitentiary historic site with sound. They automated a live performance of real noises made by simple robots striking furniture detritus and pipes in the cells of this abandoned prison, which had once specialized in enforced silence and isolation. Ceramic toilets, iron bedsteads, and metal lightshades struck by screws and drumsticks rang out treble while wooden cupboards and a dozen steel barrels hit by felt-wrapped mallets resonated deep bass.[1] The looped composition comprised fifteen-and-a-half minutes of rhythmic music followed by thirty seconds inaction that framed environmental sounds. Beats emanated from cells up and down the corridor as if generated by ghostly inhabitants. Unfolding in a progressive narrative arc that accelerated to a thundering crescendo, the composition structured an interplay of communicative tapping and seemingly random organic noise, a call-and-response counterpoint of military-style demonstration and ecstatic dance beat. *Pandemonium* was also replete with pauses, discontinuities, and slippery sounds that resisted signification. It included the reverberation of this unstable acoustic environment,

[1] Sean Kelley (Senior Vice President and Director of Public Programming, Eastern State Penitentiary), in discussion with the author, August 14, 2014. The steel barrels, which the artists found in the prison yard, were artefacts of the penitentiary's mid-twentieth-century function as a fallout shelter.

shaped as it was by atmospheric shifts and flows of visitors.[2] *Pandemonium* was a vigorous perceptual experience in continuous flux.

This essay takes *Pandemonium* as its pivot point, examining through this one complexly resonant artwork the intersection of sound art and documentary the better to understand both fields of practice. In the first of this paper's three sections, I offer an account of *Pandemonium*'s operations and relation to its site, Eastern State Penitentiary, which had functioned as a prison from 1829 until 1971 and was by 2005 a museum about the institution's extraordinary place in American penal history. Renowned for its Romantic architecture, radial layout, and above all its controversial system of enforced silence and isolation, Eastern State Penitentiary presented an apt context in which to interrogate sound and the effects of sensory assault and deprivation on the individual and social body. Responding to these conditions, Cardiff and Miller, a married couple and artistic collaborators, produced a musical composition that oscillated between highly allusive sounds—conjuring an illusion in the cellblock that occupants were communicating, congregating, dancing, and rioting—and indeterminate, atmospheric sounds that continually morphed and undermined this haunting narrative.[3]

What little has been written about *Pandemonium* presents the work as a clever reenactment of inmates' real struggles to communicate during the penitentiary's silent years, an interpretation according to which the artwork gives voice to former occupants and reactivates the prison's history. I propose instead that *Pandemonium*'s peculiar mode

[2] Richard Torchia, "Beat Music," in *Pandemonium: Janet Cardiff and George Bures Miller*, exh. cat. (Philadelphia: Eastern State Penitentiary Historic Site, 2005), 29.
[3] See Adair Rounthwaite, "Hearing History: Storytelling and Collective Subjectivity in Cardiff and Miller's Pandemonium," in *Sonic Mediations: Body Sound Technology*, 193–207, eds. Carolyn Birdsall and Anthony Enns (Newcastle upon Tyne: Cambridge Scholars Publishing, 2011); *Pandemonium* exhibition catalog; and contemporaneous reviews compiled in the *Pew Pandemonium Final Report* (Philadelphia: Eastern State Penitentiary, March 6, 2006).

of noise-making suspends the percipient in a rousing middle space between narrative and noise. I ask what experiences of Eastern State Penitentiary *Pandemonium* made possible that other forms cannot and whether *Pandemonium* might function as a sonic documentary.

In addressing these questions, my project traces a relationship between music and representation, sound and realism. In the second section, this pursuit leads readers on an unusual art historical trajectory as I consider representational strategies in nineteenth- and twentieth-century music. Here I connect *Pandemonium* with narrative programme music and avant-garde noise music that foregrounded timbre, texture, percussion, as well as mechanically-produced sound, immersive extremes of volume, and popular music's intense appeals to the body from blues to rock, punk, and techno. Sound is revealed throughout to be inseparable from its affective and somatic functions, a force of emancipatory promise and of violent threat with profound potential to mobilize bodies. Ultimately, I position *Pandemonium* as exemplary of sound art, a field of practices codified in the later twentieth century that use sound as the physical and semantic material with which to investigate space and the social configurations of bodies in environments.

In a third section, I consider sound art against the "documentary turn" in contemporary art of the early 2000s that saw artists looking for credible forms with which to represent real events and experiences in all their subjective multiplicity. Taking Jeff Wall's notion of "near documentary" as a jumping off point, I locate a relationship for sound and documentary in the radical sense of bodily proximity conjured by a binaural field recording technique at the heart of Cardiff's audio walks. With a close examination

of *Words Drawn in Water* (2005), an audio walk produced roughly simultaneously with *Pandemonium*, I argue that its hyperreal, three-dimensional binaural audio functions analogously to *trompe l'oeil* painting as delineated by Michael Leja.[4] By conjuring biometric sounds of footsteps and breath, *Words Drawn in Water* triggers a sense of closeness in the percipient's body with that of Cardiff's narrator, priming the user to be susceptible to an intimate, sensory experience of the environment in question and to the many concrete ways in which meditating sensorially on that environment make its continuities and interconnections across history palpably material. It is these embodied qualities of sound that I argue operates as a form of documentary realism in *Pandemonium*. At Eastern State Penitentiary, Cardiff and Miller triggered a sense of radical proximity through sounds concretely *of* the cellblock. It was this visceral, thickening of the relationship between the body and its environment that made the percipient receptive to Cardiff and Miller's onslaught of references to noise music's spectrum of potential. The percipient's body was thus invited to become a medium through which sensory relations at Eastern State Penitentiary were felt to be material and present, alive and unresolved.

Much is at stake in this project. As a temporary and intangible work of art organized ten years ago by an independent curator at a site not primarily focused on art history, *Pandemonium* is vulnerable. My project sets out to preserve its records as far as possible. Attending to *Pandemonium* proposes an interpretation of Eastern State Penitentiary itself that is rather different than the official narratives on offer by the site and its historians. *Pandemonium* opens the possibility that Eastern Site Penitentiary's

[4] Michael Leja, "Touching Pictures by William Harnett," in *Looking Askance: Skepticism and American Art from Eakins to Duchamp* (Berkeley, CA: University of California Press, 2004), 125–152.

controversial system of sensory deprivation is neither so remote nor quite so fixed and absolute as it can feel in that imposing building. Rather than proposing to reactivate the penitentiary's history, *Pandemonium* demonstrated that such administration of the body in society was in fact still an open question and made a compelling case that this condition could elicit in 2005 as in 1829 a spiraling array of potential affects and responses. More broadly, this project steps beyond easy categories of realism and abstraction, exemplifying sound art as not some formalist abdication the social commitments of the "documentary turn" but caught up too in interrogating conflicted truths of memory, history, and politics. In an effort to better understand sound art's specific capabilities, I bring together English-language discourse that understandsit loosely as a branch of experimental music with German-language discourse that codifies more definitively its distinct spatial, sculptural, and volumetric qualities while reorienting both to acknowledge sound's tactile, corporeal qualities. Sound art thus emerges as a medium in which processes of sound, sight, space, and semantics collude both to function as and exceed documentary representation. Writing about the multisensory experience of *Pandemonium*, finally, is an opportunity thoroughly to reconsider the nature of aesthetic experience. There is no *Pandemonium* without urban planning, religion, penal philosophy, architecture, music, player pianos, robotics, psychoacoustics, atomic physics, and so on. Once we examine how this artwork actually functioned, of what histories and materials it was made, *Pandemonium* appears undeniably to conjugate sensory experience, to take sensory interdependence as its very subject.

Essential to my study is an imaginatively proprioceptive approach to *Pandemonium* that acknowledges its deliberate appeal to multiple senses and its

investment in affect as a mode of meaning-making.[5] To borrow a phrase from Caroline Jones: "embodied experience through the senses . . . is how we think."[6] Indeed, attending to the meaningful interplay of sensory experience in *Pandemonium* proves key to understanding the work's relationship to Eastern State Penitentiary, a place that worked to reshape modern society precisely by segmenting and regimenting the senses.[7] For this reason, I begin with an extended description of the artwork based on my own close listening to an artist-authorized recording of *Pandemonium* on headphones during visits to Eastern State Penitentiary. My description relies on installation photographs, interviews with the site's public programs director Sean Kelley and independent curator Julie Courtney, and an invaluable account of the work by artist and project facilitator Richard Torchia.[8] This intermodal approach to *Pandemonium* helps us to grasp the work as a full-bodied, somatic experience even while acknowledging that it is, for that very reason, ultimately irretrievable.

Recovering *Pandemonium*

Pandemonium began for its percipients in a peripatetic confrontation with Eastern State Penitentiary. Located in Philadelphia's downtown Cherry Hill neighborhood, the site was an operational prison from 1829 through 1971 then abandoned and reopened as a

[5] David Howes, "The Secret of Aesthetics Lies in the Conjugation of the Senses: The Museum as a Sensory Gymnasium," in *The Multisensory Museum: Cross-Disciplinary Perspectives on Touch, Sound, Smell, Memory, and Space*, eds. Nina Levent and Alvaro Pascual-Leone (Lanham, MD: Rowman and Littlefield, 2014), 286. My analysis relies on Howes' definition of "aesthetics" as "the conjugation of the senses," in which it is their interplay and not their separation that is key. Howes traces this concept to Alexander Gottlieb Baumgarten's 1750 *Aesthetica*, in which: "the aesthetic was rooted in the body, rather than the object, and turned on the disposition to sense acutely."
[6] Caroline Jones, "The Mediated Sensorium," in *Sensorium: Embodied Experience, Technology, and Contemporary Art*, eds. Caroline Jones and Bill Arning (Cambridge, MA: MIT Press, 2006), 5.
[7] Jones, 9–10.
[8] Eastern State Penitentiary's *Pandemonium* files maintained by Sean Kelley; Julie Courtney, Sean Kelley, and Richard Torchia, in separate discussions with the author, August 2014; and Torchia, "Beat Music."

prison museum in 1994.[9] Its eleven acres are enclosed by imposing perimeter walls.[10] The penitentiary faces Fairmont Avenue, a broad east-west thoroughfare that turns to parkway half a mile due west along the Schuylkill River, where it winds past two other stalwarts in Philadelphia's modernizing city infrastructure—the Philadelphia Museum of Art and Fairmont Water Works. One enters the penitentiary at its formidable south wall, a "severe and ordered" surface, 30-feet high and built of "long, very carefully jointed and coursed stone" **(Fig. 1)**.[11] Massive scale and medieval-inspired details like crenelated turrets suggest both fortress and ecclesiastical complex, "[injecting] notes of the heroic and sublime" consonant with its Romantic period conception.[12]

Within the walls, 15 cellblocks, constructed piecemeal between 1822 and 1959, reveal themselves gradually **(Fig. 2)**. From the prison yard, the visitor enters the outer limit of a cellblock and traverses its length to a large octagonal space. Here the penitentiary's radial plan becomes suddenly clear. Cellblocks extend from this central observation room, like spokes on a wheel. Free of partitions, the hub provides sightlines down the central axes of seven cellblocks original to architect John Haviland's (1792–1852) plan **(Fig. 3)**. Haviland conceived this design to promote, "watching, convenience, economy, and ventilation," for the purpose of administering an especially hygienic panopticon.[13] Cellblock seven, where *Pandemonium* held court, is the last built under

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[9] "Timeline," Eastern State Penitentiary, accessed March 3, 2015, http://www.easternstate.org/learn/timeline. Though reopened for public tours in 1994, the site would not be operational as a nonprofit organization until 1998.
[10] "Eastern State Penitentiary Fact Sheet," last modified February 26, 2009, http://www.easternstate.org/contact/press-room/press-releases/eastern-state-penitentiary-fact -sheet.
[11] *Eastern State Penitentiary Historic Structures Report* (Mary Ann Thomas Architects, 1994), 11 (hereafter cited as HSR).
[12] HSR, 11.
[13] Norman Johnston, *Eastern State Penitentiary: Crucible of Good Intentions* (Philadelphia: Philadelphia Museum of Art for the Eastern State Penitentiary Historic Site, 1994), 35; Jeremy Bentham, *The Panopticon Writings* (London: Verso Books, 1995), 43–44. Though Haviland's design is not a one-to-one

Haviland's supervision in 1836 and, "arguably the most visually dramatic block at Eastern State Penitentiary" **(Fig. 4)**.[14]

Barrel-vaulted like a cathedral, cellblock seven is 356 feet long, 30 feet high, and crowned by three colossal skylights **(Fig. 5)**. 131 cells flank a central aisle at ground level and in recessed upper galleries. According to Cardiff, the artists chose this space for its "high arched ceilings, two storeys of cells and beautiful skylights."[15] Cells repeat one after another in parallel rows, facing across an aisle. Narrow, rectilinear doorframes echo the orderly balusters of upper gallery railings. A balcony stretches between second-story catwalks, its sweeping vista culminating in a rounded, vertical window above the outer door, a luminous recapitulation of the cellblock's overall form **(Fig. 6)**. The block appears perfectly symmetrical, partitioned into equal, isolated units much as the individual person within was to be smoothed and reformed body and mind to the civic ensemble. Order now crumbles at the level of the unit, however; inside, each cell is a picture of material disintegration **(Fig. 7)**.

Being in the space is only obliquely suggestive of prisoners' experiences. The site instead provides a visual record of ways in which history folds in on itself. The air is cool and damp, stilled by the museum's conventional hush made yet more solemn by the subject of incarceration. When operations were suspended in 1971, Eastern State

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realization of Jeremy Bentham's 1787 Panopticon or "Plan for a Penitentiary Inspection-House," it incorporates the essential points of Bentham's plan, including its circular layout and Bentham's chief concern therewith "that the persons to be inspected should always feel themselves as if under inspection, at least as standing a great chance of being so . . ."; Michel Foucault, *Discipline and Punish: The Birth of the Prison*, trans. Alan Sheridan (New York: Pantheon Books, 1977), 195–228. Eastern State Penitentiary aspired to panopticism as described by Foucault as "enclosed, segmented space, observed at every point, in which the individuals are inserted in a fixed place, in which the slightest movements are supervised, in which all events are recorded," which "constitutes a compact model of the disciplinary mechanism."

[14] Sara Jane Elk, "Acknowledgements," in *Pandemonium*, exh. cat., 7.

[15] "Janet Cardiff and George Bures Miller, interview by Eva Scharrer," *C Magazine* (July 2005): 21 (hereafter cited as Scharrer).

Penitentiary was left to decay until the late 1980s.[16] Its selective restoration as a "stabilized ruin"—a curious, late-twentieth-century adaptation of a Romantic conceit—rendered it accessible for tours in 1994.[17] Now layers of paint peel and plaster flakes from walls. Dust and odd remnants of furniture comingle in the cells, left over from multiple periods in the site's 142 years as a dwelling. Cells are left in disrepair or selectively restored to approximate appearances at certain decades **(Fig. 8)**. Didactic wall panels mediate the visitor's interpretation, as does "The Voices of Eastern State" audio tour, included in admission, with its blend of documentary detail and sensational information about celebrity inmates and the site's use as a film set.[18]

Visitors more than likely heard *Pandemonium* before reaching cellblock seven **(Track 1)**.[19] Parts of the composition are terribly loud.[20] One might enter the corridor at any point in the sixteen-minute loop, beckoned by its sounds or following a tour route. How to attend, from which vantage and for how long, were decisions largely up to the individual. One person might stand transfixed through multiple cycles, at the entrance to the block or deep within the space. Another might wander up and down the cellblock for one full cycle, turn immediately to leave, or come and go freely, listening at a slight remove. The visual effect of the cellblock is so powerfully stunning, moreover, that taking it in may have, at first, overwhelmed efforts to listen. *Pandemonium* involved not

[16] HSR, 277. The city considered proposals by private developers to adapt the site as a supermarket or condominium before a historic preservation group intervened.
[17] Elk, 7.
[18] "'The Voices of Eastern State' Audio Tour," Eastern State Penitentiary, accessed January 31, 2015, http://www.easternstate.org/visit/regular-season/audio-tour. Introduced in 2003, the tour is narrated by actor Steve Buscemi, and each stop concludes with the effect of a slamming iron gate. Eastern State Penitentiary appeared as a mental institution in 1996 science fiction feature *12 Monkeys*, based on Chris Marker's *La Jetée* (1962), the latter cited by Cardiff incidentally as an abiding influence.
[19] Kelley discussion, August 14, 2014.
[20] Torchia, 28.

only listening and looking but also moving the body and feeling vibrations of sound pass from the ground through the feet and through the air to one's skin and hairs. These many simultaneous modes of sensing the artwork would have been impossible fully to disentangle even when they conveyed conflicting information.

The central trigger for this multisensory experience was music pulsating in the space **(Figs. 9 & 10)**. On the extant recording, *Pandemonium*'s compositional structure sounds deliberately untidy and ambiguous.[21] It progresses sequentially, indeed musically, with repeated, contrapuntal themes that build to a unified climax, but it also intermingles ambient noises to such a degree that the percipient wonders at moments if her ears might be tricking her into making sense of unintended soundings. *Pandemonium* begins with bass objects tapped in call-and-response patterns up and down the distance of the corridor **(Track 1A, 00:09–1:03)**, followed by a similar conversation between treble things **(Track 1B, 1:04–1:39)**. This code-like rapping becomes a pulse for the piece, taking up residence in other themes and resurging between later passages. Next, taps diffuse into environmental noises that only tentatively suggest settling foundations, clinking wind chimes, or rattling steam radiators **(Track 1C, 1:40–2:22)**. These aimless, abstract sounds, so at home in a stabilized ruin as to seem meaningless, pervade the composition as much as the tapping, returning repeatedly to temper its associative power.

Soon, these two modes blend. Sounds seem at one moment random and the next urgently significant. **(Track 1D, 2:23–3:20)**. This urgency takes firm, narrative hold for a minute as bass objects crack like gun shots and mount to an alarming volume in the company of rattling treble, but it diffuses just as suddenly when they die off **(Track 1E,**

[21] Cardiff and Miller, *Pandemonium*, recorded by Titus Maderlechner, 2005, compact disc.

3:21–4:15). After a few seconds of near-quiet, a double beat of bass drums advances. It reaches a pace like an adrenaline-fueled heartbeat and then ceases **(Track 1F, 4:16–5:25)**. An indeterminate, open period follows. Muffled stretches bring to the fore sounds of pigeons flying in and out of the ruin, but a moment later the corridor fills again with indomitable tapping **(Track 1G, 5:26–6:20)**. Discrete, repetitive knocks morph gradually into more grooving rhythms, overlapping as they build a dance beat **(6:21–6:32)**. Suddenly, the dance theme is undeniable **(6:33)**. As Cardiff described, "it feels like you're in a rave, like dance music, like boom-chicka-boom."[22] This brief, exuberant interlude **(Track 1H, 6:21–7:06),** teases the percipient then concludes abruptly with four rounds of rhythmic pounding **(6:55–7:06)**.

Methodical ticking ushers in a resonant, repetitive gong like a clock tower counting the hour 24 times **(Track 1I, 7:07–9:20)**. Midway through, its timbre transmutes into a low rumbling **(8:10–9:20)**, and its rhythm slows to an elegiac crawl **(8:45–9:20)**. After a long silence, a low, clattering *glissando* rolls up and down the cellblock like batons dragged across bars then beat against an arsenal of timpani **(Track 1J, 9:21–10:10)**. An open, transitional period follows, this time featuring indeterminate noises that grow threateningly loud and seem to congregate **(Track 1K, 10:11–11:20)**. An eight-beat treble striker counts off, like a conductor or click-track, slowly at first and then once more at twice the speed, initiating a raucous, extended reprise of the ebullient dance theme **(Track 1L 11:21–13:54)**. The dance beat rolls up and down the block in a second *glissando*, dissipating into ambient noise. Repetitive, unison blows fill the space and accelerate into *Pandemonium*'s climax **(Track 1M, 13:55–15:49)**, which sounds

[22] Scharrer, 21.

ultimately like a riot fueled by the libidinal release of the dance **(15:10–15:48)**. Dance beat and militant noises engage one another in a master-level call-and-response before sounding a double beat and coming to an end. Charged silence follows **(Track 1N, 15:50–16:02)**[23] until the tapped exchange signals another loop.

The cellblock announces itself as a totalizing visual experience, but *Pandemonium* coaxed visitors to look about themselves differently, in more localized ways, as they tracked the sources of these sounds. This iterative process of looking called into question the efficacy of the penitentiary's visual schema in real lived experience, concentrating its possible nuances and uneven qualities. As Torchia observed, "Visual access to the cells is limited. Those on the second floor are completely out of reach and those on the ground floor are unusually dim."[24] The grandeur and scale of the space solidified its impression of stillness, unperturbed by whatever was causing the sounds yet the sounds themselves exposed the falseness of this impression.[25] In her review of *Pandemonium* for *Art in America*, Carol Diehl corroborated a tension between the immediacy of the sounds and fact that they emanated from "unobtrusive," "hidden," and "unseen" sources.[26] In spite of its sublime reserve, the building itself was producing these noises, displacing its intended flows of power away from the singular center toward a plethora of actors emitting trajectories of sound in every direction.

Black cords "trailing out of all the cells on both floors" compelled visitors to "walk down the corridor to investigate" the source of these sounds.[27] Their live quality

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[23] The recording figures the silence between each loop with twelve seconds at the conclusion of the track as well as eight seconds at its beginning.
[24] Richard Torchia, "Beat Music," in *Pandemonium*, exh. cat., 22.
[25] Torchia, 22.
[26] Carol Diehl, "Reviews: Janet Cardiff and George Bures Miller at Eastern State Penitentiary," *Art in America* (January 2006): 125.
[27] Torchia, 22.

was apparent, and percipients soon caught their makers in action. A single robotic 'beater' stood in each cell, snug to its object **(Figs. 11, 12, 13)**. Each robot had a distinct visual character, comprising an armature of varying height such as a microphone stand or metal bucket rigged to a wooden drumstick or pedal, Plexiglas wand, metal screw, or felt-wrapped mallet. These strikers were controlled by PianoDisc solenoids, little motors used in player pianos. The thin black cords snaking out of the cells wired the solenoids to a MIDI (Musical Instrument Digital Interface) system with two computer-controlled, pressure-sensitive keyboards. Thick bundles of cable converged on one upstairs cell, revealing the presence of this central system there **(Fig. 14)**. Sinuous, rubber tubes spilled over the threshold with a menacing, organic character, like the tentacles of some nesting, alien man o' war.[28] At the same time, their obvious electronic function suggested artificial intelligence, a DJ booth, or central command on a submarine or spacecraft. The robotic beaters were similarly evocative hybrids. They comprised disparate prefabricated materials, industriously screwed together to perform their singular functions. Posted one to a cell, these automatons became semi-anthropomorphic presences, their appendages thwacking objects with apparent deliberation.

The keyboards each controlled one side of the aisle **(Fig. 15)**. They were wired so that each key sent electrical energy to a single solenoid, which converted it into magnetic force of a predefined pressure along a gradient **(Fig. 16)**. The pressure flipped a mechanical switch that pushed the striker into action to make contact with its object with a tap, bang, or crash depending on its setting. As Miller explained:

> It's a mechanical thing. Every sound you hear is an acoustically produced sound, no speakers. A computer controls all these, we call them 'beaters,' that hit

[28] Kelley discussion, August 14, 2014. Kelley pointed out the system's resemblance to a large jellyfish, its alien quality is my own observation.

> different things in each cell. And the way we composed it was that we had two keyboards connected to the system and every key was for a different room.[29]

Miller inventoried objects and charted their relative pitches **(Fig. 17)**. He added steel drums tactically to a dozen spaces to increase possible volume. His notes translated into a coding system for the keyboards that made legible their connections with the beaters **(Fig. 18)**. With *Tonmeister* Titus Maderlechner, the artists composed the sequence for the beaters to perform together and programmed it on a loop.[30]

Pandemonium's noise multiplied and metamorphosed in dialogue with both the architecture of the cellblock and the bodies of its visitors. Drawn in by suggestions of a ghost story, percipients found themselves instead in the company of robots. Though clearly functional objects, the beaters were uncanny in their own way, seeming individually incommensurate with the force and tenacity of their collective output. They caused mute objects suddenly to resonate, and those vibrations traveled up and down, back and forth through the volume of atmosphere contained in the corridor until deflected by a wall or channeled beyond the block. With hard, angular surfaces, the acoustic environment was bright but also modulated with the fuzzier sounding-boards of visitor bodies, curving vaults, and moist dust piles.[31] *Glissandi* occur twice in *Pandemonium*, and in those moments, "every object in every cell [seemed] to be struck in quick succession up and down the block . . . like an x-ray passing through whatever and whomever stands in its way."[32] *Pandemonium* offered a remarkably visceral experience

[29] Scharrer, 21.
[30] Maderlechner is a frequent Cardiff and Miller collaborator.
[31] Torchia, 20.
[32] Torchia, 28.

of this environment, bringing visitors bodies into intimate contact with a building and world of things that could otherwise feel remote.

Surrogate Intimacy

Pandemonium is a pivotal project for Cardiff and Miller who are married and have been partnered personally and artistically since the early 1980s. They met at the University of Alberta where Cardiff was an MFA student in printmaking and Miller an undergraduate painting student.[33] Their first collaboration was a feature-length Super 8 film.[34] In 1986 Miller completed a Photo Electric Arts program at Ontario College of Art and Design through which the couple had access to computer technology, film equipment, and a sound studio.[35] Though neither trained as a musician, Miller plays guitar and is something of an audiophile.[36] In the 1990s, Miller explored kinetic sculpture and Cardiff began to create the audio walks for which she would garner increasing acclaim. [37] They mutually assisted one another, but authorship rested with the individual who conceptualized the piece and led its execution.[38] Their first public collaboration *The*

[33] Cardiff and Miller, "Pleasure Principals: The Art of Janet Cardiff and George Bures Miller," interview by Robert Enright and Meeka Walsh, *Border Crossings* 20, no. 20, issue 78 (2001), accessed August 7, 2014. http://bordercrossingsmag.com/article/pleasure-principals-the-art-of-janet-cardiff-and-george-bures-miller (hereafter cited as "Pleasure Principals").
[34] "Pleasure Principals." The artists report that the collaboration began on their first date. They have not publicly screened their feature film *The Guardian Angel* and do not seem to consider it part of their collective oeuvre.
[35] "Inexplicable Symbiosis: A Conversation with Janet Cardiff," interview by Carolee Thea, *Sculpture* 22, no. 1 (Jan/Feb 2003): 54 (hereafter cited as "Inexplicable Symbiosis").
[36] Cardiff and Miller, interview by Carolyn Christov-Bakargiev, "Haus der Kunst: Artist's Talk," Haus der Kunst YouTube Channel video, 52:46, recorded April 12, 2012, uploaded April 16, 2012, https://www.youtube.com/watch?v=xMWd50TmuHs/, (hereafter cited as HDK Interview).
[37] Carolyn Christov-Bakargiev, "An Intimate Distance Riddled with Gaps: The Art of Janet Cardiff," in *Janet Cardiff: A Survey of Works Including Collaborations with George Bures Miller*, exh. cat. (Long Island, NY: P.S. 1 Contemporary Art Center, 2001), 20–26 (hereafter cited as "An Intimate Distance").
[38] "Pleasure Principals." According to Miller, "We're always talking ideas, but if we develop an idea together, then it becomes a collaborative project." Miller does the sound editing for Cardiff's audio walks.

Dark Pool debuted in 1995, and in 2001 they represented Canada at the Venice Biennale together with another collaborative piece, *The Paradise Institute*.

Cardiff and Miller persistently use technological devices to simulate a sense of proximity with bodies absent or nonhuman. These experiences seem designed to trigger in audience members a sense of real interdependence with the material world accompanied by profound longing for intimacy. Cardiff frequently uses recordings of the human voice channeled through subtly anthropomorphic audio speakers to achieve this effect. Her installation *To Touch* (1993), for example, features an old, wooden table with photocells hidden in its invitingly worn, tactile surface **(Figs. 19 & 20)**.[39] By running a hand across, users elicit an aural collage out of speakers mounted at ear level around the parameter of the room. Voices seem to converse and, in their pauses, to listen to one another.[40] *To Touch* heightens and conjugates the bodily sensations of touch and hearing to explore the extent to which modern hierarchies of vision have pacified the body and dematerialized its experiences of the world.[41]

Miller's sculptures such as *Simple Experiments in Aerodynamics 6 (Escape Velocity)* (1998) are spare, cyborg-like contraptions akin to the *Pandemonium* beaters **(Fig. 21)**. These induce a sense of bodily interdependence through motion.[42] Computer-controlled pistons actuate *Escape Velocity*'s spindly floor lamp suspended upside-down by its base. It swings out on a frenzied, centrifugal trajectory, reminding the percipient of the extent to which balance is precariously relational. Like the electro-mechanical system

[39] Laurel Woodcock, *Janet Cardiff*, exh. cat. (Edmonton, Alberta: Edmonton Art Gallery, 1993), 6.
[40] Woodcock, 7.
[41] Kitty Scott, "I Want You to Walk with Me," in *Janet Cardiff: The Missing Voice (Case Study B)*, exh. cat. (London: Artangel, 1999), 8.
[42] George Bures Miller, Wayne Baerwaldt, and Dana Samuel, *George Bures Miller: Simple Experiments in Aerodynamics, 6 and 7*, exh. cat. (Toronto: Mercer Union, 2001).

at the heart of *Pandemonium*, Miller's sculptures emphasize bodily entanglement with forces human and nonhuman, organic and inorganic. More recently, Cardiff has used the affective qualities of choral music to conjure presence in *The Forty Part Motet* (2001), for which she separately recorded each of the forty parts of Thomas Tallis's 1573 choral masterpiece "Spem in Alium" ("Hope in Any Other") and played them back through forty standing speakers, one for each channel **(Figs. 22 & 23)**.[43] The speakers surround the listener, each suggesting the person whose voice it transmits, and the listener moves at will from intimate proximity to immersion in their ensemble.

Eastern State Penitentiary

Eastern State Penitentiary turns out to be a remarkably apt setting in which to explore interconnection and intimacy, presence and absence. Inmates lived here in isolation and compulsory silence from 1829 until 1913. Haviland incorporated these planned policies into his design, dividing cells with twenty inches of masonry and routing heating and plumbing along corridors so that inmates could not easily access pipes to tap messages.[44] Prison staff wore thick woolen socks and sound-proofed meal-carts with leather straps so that their patrols would not shelter illegal communications.[45] Though enforcement was uneven, punishments for breaching the silence ranged from withheld meals to the straightjacket, iron gag, or days of confinement in a small, dark cell.[46] In fact, prison policy circumscribed sensory experience of most kinds.[47] Until 1903, "a hood

[43] Christov-Bakargiev, "An Intimate Distance," 17.
[44] Sean Kelley, "Eastern State Penitentiary and the Struggle for Silence," in *Pandemonium*, exh. cat., 37; Torchia, 20; Johnston, 50. Ample evidence suggests that inmates at Eastern State Penitentiary found ways to communicate, for example using a rapping alphabet and throwing notes across exercise yards.
[45] Johnston, 49.
[46] Kelley, 37; Johnston, 49 and 61.
[47] Johnston, 49.

was . . . placed over the prisoner's head" at intake, "to prevent his gaining 'topographical knowledge' of the prison layout or catching a glimpse of another inmate . . ." **(Fig. 24)**.[48] Each cell was outfitted with a private exercise yard in which inmates were allowed at most an hour of air per day.[49] Cells were whitewashed.[50] Masturbation was policed.[51] Visitors, and indeed news of the outside world in any medium, were prohibited.[52] Depriving the criminal body of sensory experience was understood as an expedient means by which to morally purify the body and administer its place in a modern system.[53]

Eastern State Penitentiary was part of a massive reimagining of Philadelphia in the early nineteenth century as a modern metropolis that nonetheless strived to live up to founder William Penn's Quaker ideals.[54] In this context, a rapidly growing population required public infrastructure—orphanages, alms houses, hospitals, schools, hygienic water supply, reliable transit.[55] The penitentiary was conceived as an exemplary force in this, "intricate web of social planning."[56] It would alleviate overcrowding at the city's Walnut Street Jail and respond to calls for reform by the Pennsylvania Prison Society, a group of prominent citizens who advocated Enlightenment rationality and Quaker

[48] Johnston, 49.
[49] Johnston, 49.
[50] Johnston, 50.
[51] Johnston, 60.
[52] Johnston, 60.
[53] Foucault, 30 and 208. According to Foucault, revolts against the prison in discourse and in praxis occur "at the level of the body" against the "very body of the prison . . . [its] materiality as an instrument and vector of power," because panopticism is a "physics of power," its domain "the whole lower region . . . of irregular bodies, with their details, their multiple movements, their heterogeneous forces, their spatial relations; [panopticism comprises] . . . instruments that render visible, record, differentiate and compare: a physics of relational and multiple power . . . in the bodies that can be individualized by these relation."
[54] HSR, 8–10; Johnston, 9–19.
[55] HSR, 8–10.
[56] HSR, 8–10. Eastern State Penitentiary had central heating and indoor plumbing before these systems were widespread in the United States.

compassion.[57] Faith in social progress and belief in the perfectibility of human nature came together in a tightly administered model of criminal justice. The Society held the purpose of imprisonment to be threefold: to deter the public from crime, to remove the perpetrator from the criminal environment, and to rehabilitate him or her through an experience of, "painfulness, labor, watchfulness, solitude and silence."[58] Its members believed rigorous solitary confinement would produce penitence and streamline behavior, neutralizing the threat of the unpredictable body to society.[59] As Eastern State Penitentiary processed its first inmate in 1829, Pennsylvania legislated the Philadelphia System, making solitary labor and habitation compulsory statewide.[60]

Eastern State Penitentiary quickly became a fully-fledged tourist destination. Delegates came to study the Philadelphia System on behalf of foreign governments.[61] Alexis de Tocqueville and Gustave de Beaumont sent a report to the French government in 1831 about its promising correlation of isolation and reform.[62] From 1862 to 1872, over 100,000 sightseers logged visits.[63] The prison sold admissions tickets and offered tours. Yet its defining practice of solitary confinement was proving untenable. Charles Dickens (1812–1870), who included Eastern State Penitentiary on his US tour, published a controversial critique in 1842 that equated sensory deprivation with torture:

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[57] Johnston, 26–29; HSR, 31–39.
[58] HSR, 34.
[59] See Jones, 7. Jones goes so far as to call the "fragmentation and colonization of the body" exemplified in the panopticon, "modernity's signal achievement."
[60] HSR, 37–38. New York's Auburn System, standardized nationally, espoused a competing philosophy of congregate labor and brutal retribution for crimes.
[61] Johnston, 56–57.
[62] "General Overview: History of Eastern State Penitentiary, Philadelphia," Eastern State Penitentiary, accessed March 3, 2015, http://www.easternstate.org/learn/research-library/history; Johnston, 76–77. Haviland's plan would be more or less replicated in Milan, London, St. Petersburg, Berlin, Paris, Beijing, Louvain, and Hakodate.
[63] Johnston, 57.

> . . . I hold this slow and daily tampering with the mysteries of the brain to be immeasurably worse than any torture of the body; and because its ghastly signs and tokens are not so palpable to the eye and sense of touch as scars upon the flesh; because its wounds are not upon the surface, and it extorts few cries that human ears can hear; therefore I the more denounce it, as a secret punishment in which slumbering humanity is not roused up to stay.[64]

Dickens' account articulated a widely held concern that the Philadelphia System was "maniac-making."[65] Meanwhile, the penitentiary's more pressing issue was overcrowding. By 1870, a swelling population exceeded the supply of individual cells.[66] Four new cellblocks added in 1877 and another in 1911 could not mitigate the situation, and the Philadelphia System was abandoned legally in 1913.[67]

Eastern State Penitentiary traded its "unearthly silence" for sounds that announced social change and the inevitable failure of human beings to conform the Philadelphia System. Women, who comprised a small percentage of the inmate population, were transferred in 1923 to a gender-segregated facility in rural Pennsylvania.[68] Increasing numbers of men, convicted of increasingly violent crimes, crowded the space. They formed bands, listened to radio, practiced religion, and played baseball, noisy physical activities all now conceded by administrators.[69] In 1933, a riot broke out. Reports blamed insufficient recreation, guard brutality, and resentment over uneven sentencing. [70] They noted that the architecture had betrayed its panoptical purpose in preventing the event as, "nooks and crannies make guard observation difficult."[71]

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[64] Johnston, 58; "General Overview," Eastern State Penitentiary.
[65] HSR, 60. *The Times* of London characterized Eastern State Penitentiary thus repeatedly in the 1840s.
[66] HSR, 180–181. Causes include transfers from Civil War army camps and rising crime.
[67] HSR, 231.
[68] Sean Kelley, "Women at Eastern State: Elderhostel Tour," supplied by e-mail to the author, February 16, 2015; HSR, 150. Women inmates likely occupied Cellblock Seven's upper galleries in 1862.
[69] Torchia, 21.
[70] HSR, 448–449.
[71] HSR, 449.

Change continued toward mid-century. Part of the massive structure was adapted as an air raid shelter during World War II and thereafter as a nuclear fallout shelter.[72] The facility was racially desegregated in 1961.[73] The penitentiary's most violent riot broke out on January 9, 1961, when an inmate asked an inexperienced guard to grant him access to a cell to retrieve a guitar and, after the guard complied, the inmate stabbed him, took his keys, and released prisoners.[74] Rioters prevailed for an hour, taking tactical hold of the octagonal center until 50 state police arrived, unleashing tear gas grenades and K-9 dogs.[75] This event cinched arguments to shut down Eastern State Penitentiary, a process completed one decade later. Once abandoned, its sounds became those of entropy and ecological proliferation as leaking water, feral cats, and Paulownia trees spread throughout the space.[76]

Cardiff and Miller were aware of some, though probably not all, of these historical details. They researched prisoners' writings and histories of capital punishment in the United States.[77] Sean Kelley sent them materials about Eastern State Penitentiary's architecture and history, and Richard Torchia told them about the prison's riots.[78] In the end, the subject of the work came out of the artists' interpretation of these basic historical facts, as summarized by Cardiff: "The whole concept of the cells was that they were torturing people through silence. [Prisoners] couldn't even hear tapping from the next person. They had indoor plumbing before the White House because they wanted

[72] HSR, 461; Erica Harman (Manager of Archives and Records, Eastern State Penitentiary), email to the author, August 15, 2015.
[73] HSR, 267.
[74] HSR, 478.
[75] HSR, 478.
[76] Kelley, "Struggle for Silence," 38.
[77] HDK Interview, 44:10–44:30.
[78] "Cover Letter," January 2002, *Pandemonium* files.

everyone to be so isolated they'd turn to God but what they turned to was insanity."[79] Cardiff and Miller responded disruptively to this slice of historical narrative on its own terms by employing sound as a defiantly communicative and connecting force. In Cardiff's words, "[*Pandemonium*] went from just tapping to creating a cacophony of noise to actually creating a club atmosphere."[80] It broke Eastern State Penitentiary's legendary rules, trading sensory deprivation for sensory assault, and rigged the built environment to demonstrate that its silence and totalizing visibility had been illusions all along.

The artists' decision to create so ephemeral an installation, rather than an audio walk for example, allowed Cardiff and Miller to interpret this history in a manner at once more provisional and more inclusive than the site's official version. They honed in on the way Eastern State Penitentiary's founders had attempted to reshape human relations by transforming the individual person—one who interrelates sensually to others through his environment—into a discrete, rational unit that conforms to an abstracted civic and moral system, a process consonant more broadly with modernization.[81] Cardiff and Miller included with their choice of found instruments not only the site's extraordinary silent period but also its later unraveling and transformation into a museum. *Pandemonium* revealed Eastern State Penitentiary to be an intriguingly unstable model of modernization, materializing in its very architecture the scale and power of that effort yet also representing an instance of its failure at the level of the sentient body. *Pandemonium* amplified that failure, flouting the modern denigration of "nonvisual senses . . . as coarse,

[79] HDK Interview, 44:10–44:30.
[80] HDK Interview, 44:10–44:30.
[81] Sally M. Promey, "Religion, Sensation, and Materiality: An Introduction," in *Sensational Religion: Sensory Cultures in Material Practice* (New Haven, CT: Yale University Press, 2014), 2–3.

uncivilized, and . . . potentially damaging."[82] Heightening sensory awareness of cellblock seven, *Pandemonium* invited each percipient's body to become a medium by which to meditate on Eastern State Penitentiary's material environment in order to discover aspects of its own sensory relations in the present.

Pandemonium's title encompasses intersecting notions of sound, place, and narrative. Milton invented the word in *Paradise Lost* (1667) as the proper name for, "the high Capital Of Satan and his Peers."[83] His coinage plays with the Latin suffix "-ium" used to indicate "the setting where a given activity is carried out," as in "gymnasium" or "sanatorium." [84] It lends a sense of categorical correctness to someone or something's belonging in a location. *Pandemonium*, then, denotes a place where demonic activities, or evil deeds, are most fitting. Mary Shelley's more figurative use in *Frankenstein* (1818) captures a tension between an individual's longing to belong and feeling demonized within a moralizing system.[85] In nineteenth-century travel writing, pandemonium came to signify noisy and chaotic places often with racial and primitivizing connotations. Several of the *Oxford English Dictionary*'s modern usages elide the term with rhythm and percussion in African-diasporan or nonwestern music. A passage in Mark Twain's *Roughing It* (1872) reads for example: "A great multitude of natives from several islands had kept the palace grounds well crowded and had made the place a pandemonium every night with their howlings and wailings, beating of tom-toms and dancing."[86] From its

[82] Jones, 2; Howes, 288.
[83] "pandemonium, n." OED Online, Oxford University Press, last modified December 2014, accessed February 3, 2015, http://www.oed.com.proxy-um.researchport.umd.edu/view/Entry/136751?redirectedFrom=Pandemonium.
[84] P. G. W. Glare, *Oxford Latin Dictionary* (London: Oxford University Press/Clarendon Press, 1968–1982), 981–983, accessed via Wiktionary January 31, 2015, http://en.wiktionary.org/wiki/-ium.
[85] OED Online. The citation from Frankenstein reads: "It presented to me then as exquisite and divine a retreat as Pandæmonium appeared to the dæmons of hell."
[86] Torchia, 28. The artists indicated to Torchia that they had come across this passage by Twain.

beginning, pandemonium classified beings in space along moral and civic lines. Its modern meaning points to ways in which noise has since been constructed to represent 'immoral' or 'uncivilized' elements in social hierarchies.

A Haunting Narrative

Cardiff and Miller do seem to have conceived *Pandemonium* as a program of core episodes, each with distinct narrative associations.[87] Torchia, who observed the work in progress, charts six movements.[88] The first begins with "what sounds like a knock at the door . . . [placing] the listener in the role of a third, silent party, perhaps a prison guard, monitoring a coded conversation."[89] The artists' promotional materials encourage this communicative interpretation: "Tip tap tip tap. Is that the sound of dripping or is it someone in a cell tapping a code on the wall?"[90] Torchia delineates a second episode in the free-form sequence of environmental sounds that underscore the entropic conditions of the building-as-ruin.[91] Diehl described the sounds that follow as a single onslaught: ". . . fits of rhythmic, almost musical sequences . . . [that] resemble African percussion and climax in total cacophony—pandemonium—a prison riot."[92] Torchia charts two militant passages bisected by a dance beat: "A violent explosion of gunshots . . . proceeds to a dirge-like march composed of unison blows" followed by "the most musical and

[87] Kelley discussion, August 14, 2014. The artists casually referred to episodes within the composition with nicknames like "Jailhouse Rock," but refused to identify these 'movements' with a text panel in the finished piece.
[88] Torchia's "Beat Poetry" is an invaluable account of the work *in situ*. While he defines six episodes, he also acknowledges the composition's indeterminate passages, silences, and repetitions.
[89] Torchia, 25.
[90] "Pandemonium | 2005," Janet Cardiff and George Bures Miller, accessed Jan. 31, 2015, http://www.cardiffmiller.com/artworks/inst/pandemonium.html; *Pew Pandemonium Final Report* (Philadelphia: Eastern State Penitentiary, March 6, 2006).
[91] Torchia, 25.
[92] Diehl, 125.

jubilant passage of the piece, a beat that sounds as if it were sampled from a rave," until at last, "there is no mistaking the uproar of a mounting riot . . . a frightening chaos, alarming in its scale and amplitude . . . "[93] Torchia counts a sixth and final episode in the "conspicuous pause" before *Pandemonium* begins again, a prolonged silence that makes indigenous noises audible.[94]

On its surface, *Pandemonium* set up an auditory illusion that ghosts were haunting the space. Torchia's episodes help to crystallize a storyline borne out by allusive percussive textures and the associative power of the penitentiary. Culture blogger Libby Rosof reported, "It wasn't hard to imagine a story line for the noises—enforced marches, pounding heartbeats, tapped communications and beaten frustrations."[95] According to Diehl, "the sense that these are instruments wielded by ghosts is overwhelming . . . the piece is a palpable evocation of the boredom, frustration and irresistible need to communicate that were no doubt felt by the unlucky participants in this idealistic penal experiment."[96] *Pandemonium* played with the same powers of suggestion that draw dozens of "paranormal investigation teams" and television programs like *America's Ghost Hunters* to Eastern State Penitentiary every year.[97] The museum itself exploits the narrative of haunting in an annual Halloween fundraiser.[98]

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[93] Torchia, 28.
[94] Torchia, 29.
[95] Libby Rosof, "Cell Music," *theartblog.org*, May 15, 2005, accessed August 20, 2014. http://www.theartblog.org/2005/05/cell-music/.
[96] Diehl, 125.
[97] "Real Ghost Sightings," Eastern State Penitentiary, accessed March 3, 2015, http://www.easternstate.org/halloween/ghosts. "'Pandemonium' at Eastern State Penitentiary." YouTube video, 01:19, posted by 'tagjim,' June 4, 2006, https://www.youtube.com/watch?v=cYMl-cY25Nw. A video of *Pandemonium* uploaded to YouTube in June 2006 has elicited more than 8,700 views and a string of comments based on assumptions that it purports to evidence paranormal activity.
[98] "Terror Behind the Walls," Eastern State Penitentiary, accessed March 3, 2015, http://www.easternstate.org/halloween. Initiated in 1991, "Terror Behind the Walls" is the site's most popular and longest-running program, which turns the prison into a massive haunted house where actors play ghosts of criminals and the 'mentally ill.'

Adair Rounthwaite reads *Pandemonium* through Michel Foucault's *Discipline and Punish* (1975) and Walter Benjamin's "The Storyteller" (1936) as an attempt to, "[use] sound to create a new narrative for the prison's history . . . [to] reactivate . . . and 'actualize [it] in the present."[99] Rounthwaite argues that *Pandemonium* makes visitors self-conscious of the limits of vision-dominated efforts to understand its history. *Pandemonium*'s demand for phenomenological engagement reorients visitors. It "hijacks . . . [the] process of narrative association . . . that occurs naturally when entering the cellblock"—we can presume she refers here to the notion of haunting—and transforms it into a collective, aural exploration "that makes the story a part of [the listener's] own experience."[100] To Rounthwaite, *Pandemonium*'s robotic beaters are insensible witnesses of the unknowability of history, which is paradoxically dependent on acts of witnessing to be absorbed into collective consciousness.[101] While I agree that *Pandemonium* invites physical engagement with the site and triggers a sense of interconnection, I propose that *Pandemonium*'s particular uses of sound do not function to reactivate lost histories of Eastern State Penitentiary so much as to underscore its force and potentialities in the present.

[99] Rounthwaite, 195–196.
[100] Rounthwaite, 202–203.
[101] Rounthwaite, 204–206.

Chapter 2 Sound Art—Narrative and Noise

For all its suggestions of narrative, *Pandemonium* relied heavily on an ostensibly abstract form of instrumental music. Classical Western art music traditionally has worked to exclude any sound that would reference the world at large. Allusive sound is barred in music's very structure, which divides musical tone (sounds with periodic vibrations such as tuned instruments and vocal chords) from noise (ambient or concrete sounds with nonperiodic vibrations).[102] As Douglas Kahn explains, Western art music has, "long-standing habits of imagining that sounds transcend or escape meaning or that sounds elude sociality despite the fact they are made, heard, imagined, and thought by humans."[103] Kahn refers to conventions that hold 'absolute music' to be fundamentally abstract and therefore require composers to banish narrative and purge their work of imitative sounds. Modern music issued a series of challenges to this taboo, however, and *Pandemonium* compressed a host of these referential strategies into its sixteen minutes.

In the 1830s, European programme music set out deliberately to evoke extra-musical narratives.[104] The genre takes its name from written program notes that often parsed musical movements into narrative episodes for the listener. Though programme music actually predates the nineteenth century and intersects with ongoing practices of opera, ballet, and film scoring, it was codified and most richly exploited in the Romantic

[102] Douglas Kahn, *Noise, Water, Meat: A History of Sound in the Arts* (Cambridge, MA: The MIT Press, 1999), 10.
[103] Kahn, 4.
[104] Roger Scruton, "Programme Music," Grove Music Online, Oxford University Press, accessed February 23, 2015, http://www.oxfordmusiconline.com/subscriber/article/grove/music/22394/.

period contemporaneous with Eastern State Penitentiary's early history.[105] Programme music relies on synesthetic correspondences between music and visual arts or lyric poetry to evoke colorful associations in the listener's mind. Hector Berlioz's (1803–1869) psychedelic *Symphonie fantastique* (1830), for example, represented with ninety instruments the experiences of a love-stricken artist as he poisoned himself with opium. Modest Mussorgsky's (1839–1881) *Pictures at an Exhibition* (1874) simulated with piano an attentive promenade through the galleries.

Approaching the twentieth century, programme music sharpened into singular character studies or impressions of phenomena as in Richard Strauss's (1864–1949) tone poem *Don Quixote* (1897) and Claude Debussy's (1862–1918) 'Nocturnes.'[106] Debussy's focused sonic images, the sea in *La Mer* (1903–1905) for example, pushed the idea of musical tone as coloristic timbre to such an extreme that it exceeded programme music's representational calling and ushered in a modern mode of expressive abstraction. Debussy played with timbre and intensely delayed crescendos to "free music from formal convention."[107] In *Jeux* (1912), his last orchestral work, Debussy's experiments took "cinematographic form . . . [through] constant motivic renewal in which undulating fragments gradually evolve into a scalar theme which is itself broken off at its violent climax."[108] *Pandemonium* seems to reference this formal shift from Romantic to modern

[105] G. M. Tucker and Kenneth Chalmers, "Programme Music," *The Oxford Companion to Music*, Oxford University Press, accessed February 23, 2015, http://www.oxfordmusiconline.com/subscriber/article/opr/t114/e5370/.
[106] Tucker and Chalmers, "Programme Music." Debussy references James Abbott McNeil Whistler's 1870s painting series with this moniker.
[107] Robert Orledge, "Debussy, Claude," *The Oxford Companion to Music*. Oxford University Press, accessed February 23, 2015, http://www.oxfordmusiconline.com/subscriber/article/opr/t114/e1846/.
[108] Orledge, "Debussy, Claude.."

music by fluctuating between narrative episodes and phenomenally textured passages and culminating in its own delayed climax.

In the twentieth century, noise replaced narrative as the material with which to challenge and innervate music. The avant-garde sought to make available to music material heretofore excluded.[109] Artists denaturalized the distinction between tone and noise, demonstrating that non-periodic vibrations were in fact resident in all sounds—in the initial sounding of a tone, for example, and in the enunciation of consonants.[110] Rather than transgress musical convention entirely, experimental musicians recuperated noise in a way that corresponded with preexisting elements of Western art music or could be appropriated from non-Western musical sources: dissonance, timbre, and percussion.[111] These they organized into music's rhythmic structures. Noises that refused to let go of mimetic qualities they further manipulated through mechanical processes.[112]

In his 1913 *Art of Noises* manifesto, Italian futurist Luigi Russolo (1885–1947) argued for an expansion of musical timbre to include the entire spectrum of concrete sounds that animate the modern, mechanized world. He declared: "We will delight in distinguishing the eddying of water, of air or gas in metal pipes, the muttering of motors that breathe and pulse with an indisputable animality, the throbbing of valves, the bustle of pistons, the shrieks of mechanical saws . . . "[113] Russolo outright rejected the distinction of tone and noise, arguing that all noises could be assigned a degree of pitch that would make it possible to organize them relative to one another "rhythmically and

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[109] Kahn, 69.
[110] Mary Russo and Daniel Warner, "Rough Music, Futurism, and Postpunk Industrial Noise Bands," in *Audio Culture: Readings in Modern Music*, eds. Christoph Cox and Daniel Warner (New York: Continuum, 2004), 49.
[111] Russo and Warner, 49; Kahn, 82.
[112] Kahn, 82.
[113] Luigi Russolo, "The Art of Noises: Futurist Manifesto," 1913, reprint, *Audio Culture*, 12.

harmonically."[114] A year later, Russolo debuted the *Intonorumori*, an acoustic sound generator built to execute these principles by mechanically manipulating noises into usable, areferential form.[115]

In the 1920s, blues singers Ma Rainey (1886–1939) and Bessie Smith (1894–1937) made of their voices modern noise instruments, reaching millions of listeners with now-classic recordings then at technology's cutting edge. Rainey and Smith made meaning out of the very vibrations of their vocal chords, by turns growling and explosive.[116] They exploited timbre, texture, pacing, and diaphragmatic strength to deliver words in such a way as to overpower and subvert their denotative functions. They absorbed syncopated rhythms of the train or the modern city into a thoroughly musical organization.[117] Marshalling call-and-response, the core blues pattern which also structures *Pandemonium*, they raised collective consciousness to protest the status quo while sustaining individual agency within multiple, simultaneous perspectives.[118]

Edgard Varèse (1883–1965) honed in on noise at newly perceptible, molecular levels. He defined music open-endedly as "organized sound," clarifying that noise was nothing more than a cultural construct— "any sound one doesn't like."[119] Scored for thirteen players negotiating an eclectic array of forty percussion instruments, his *Ionisation* (1933) is a thrumming five minutes forty-five seconds of rhythmic counterpoint:

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[114] Russolo, 12.
[115] Micaela Mantegani, "Luigi Russolo, Italy | 1885–1947," Ubuweb: Historical, accessed March 3, 2015, http://ubuweb.com/historical/russolo/index.html/.
[116] Hazel V. Carby, "It Just Be's Dat Way Sometime: The Sexual Politics of Women's Blues," *Radical America* 20, no. 4 (1986), 13 and 17.
[117] Carby, 15–16.
[118] Angela Y. Davis, *Blues Legacies and Black Feminism: Gertrude "Ma" Rainey, Bessie Smith, and Billie Holiday* (New York: Vintage Books, 1998).
[119] Edgard Varèse, "The Liberation of Sound: The Electronic Medium," 1962, reprint, *Audio Culture*, 20.

> Opening with a hushed murmur of bass drums, gongs and hand-cranked sirens, the music picks up momentum in its ninth measure when a military snare drum raps a jagged tattoo, bongos burbling alongside. A smaller snare drum chatters in contrast; maracas, claves, tambourine and guiro (a scraped gourd) form an insect chorus in the background . . . sirens and clanking anvils evoke an urban jungle. Rude eruptions repeatedly jut through simmering surfaces. In the last 17 bars a celesta and tubular bells produce the work's only definite pitches; also added is a piano, its keys mashed in clusters with a forearm. The piece ends as mysteriously as it began, with a sonorous pianissimo fermata.[120]

Ionisation elicits rhythm and timbre from objects of unstable pitch.[121] Its narrative program, if it has one, relates to the process by which the movement of electrons reverses the charge of an atom, anticipating electronic music after the late 1950s that would, "[work] with nothing but flows of electrons run through filters and modulators . . . to produce a deeply physical and elemental form of music."[122] *Ionisation*'s military and jungle motifs created a metaphoric atmosphere for molecular attraction and repulsion. Varèse's use of the siren was an especially potent musicalization of noise, organizing a diverse world of sounds into a "gradient of all possible pitches."[123] Kahn describes such *glissandi* as "the perfect modernist anthem," balancing form and subject matter in "beautiful parabolas of sound" that evoked the droning modern city.[124]

Already in the 1920s, George Antheil (1900–1959) put siren and electric instruments to use to modernize the ballet score. He responded to Ferdinand Léger's commission for music to accompany screenings of *Ballet Mécanique* (1924) with a

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[120] Steve Smith, "Banging Out a Revolution In Just 91 Measures," *New York Times*, July 16, 2010, http://www.nytimes.com/2010/07/18/arts/music/18varese.html?_r=1&/.
[121] Sidney Finkelstein, Liner Notes, *EMS 401: Complete Works of Edgar Varèse*, Volume 1, 2007, compact disc, accessed March 3, 2015, via Wikipedia, http://en.wikipedia.org/wiki/Ionisation_%28Var%C3%A8se%29#References/.
[122] Jed Distler, "Book Review: The First Recordings of Edgard Varèse and Charles Ives," 1997, ClassicalNet, accessed March 3, 2015, http://www.classical.net/music/recs/reviews/distler/slonimsky.php; Christoph Cox, "Beyond Representation and Signification: Toward a Sonic Materialism." *Journal of Visual Culture* 10, no. 2 (August 2011): 155.
[123] Kahn, 79.
[124] Kahn, 79–90.

composition for, "electric bells, hammers on anvils, car horns, and mechanical pianos."[125] A switchboard sat at the center of Antheil's sound universe. His 1925 score for "Mr. Bloom and the Cyclops," for example, features a switchboard controlling sixteen mechanical pianos, eight xylophones, and an orchestral array of instruments transmitted by gramophones.[126] *Pandemonium*'s very functionality depended on a late-twentieth-century adaptation of the player pianos used by Antheil that were at peak commercial prominence in the 1920s; its MIDI system evoked Antheil's switchboard actuators.

In the second half of the twentieth century, artists pushed the amplitude of noise—volume—to the limits of human hearing. John Cage (1912–1992) amplified barely audible sounds, demonstrating that noise is pervasive and silence a myth.[127] Cage frequently recounted the strong impression made on him by a visit to the anechoic chamber at Harvard University in 1951.[128] In this space of near-total sensory deprivation he heard two sounds, one high and one low. The engineer in charge explained that these noises were Cage's nervous system in operation and his blood in circulation. No matter how deprived its environment the human body—indeed all matter—generates energetic sound.[129] Cage's student the fluxus artist Dick Higgins (1938–1998) mined the opposite pole of the immersive noise spectrum with works like *Loud Symphony* (1958), screeching feedback generated by his passing a microphone in front of a loudspeaker for half an hour.[130] Higgins and his peers, especially La Monte Young (b. 1935), explored loudness

[125] "Antheil, George." *Encyclopedia of Popular Music*, 4th ed. Oxford University Press, accessed March 2, 2015, http://www.oxfordmusiconline.com.proxy-um.researchport.umd.edu/subscriber/article/epm/71144/.
[126] Kahn, 125–126.
[127] Kahn, 227–231.
[128] "John Cage, a visit to the anechoic chamber," YouTube video excerpted from Nam June Paik's 1973 video *Global Groov*e, 00:44, posted by 'brooklynstreaming,' March 19, 2013, https://www.youtube.com/watch?v=jS9ZOlFB-kI/.
[129] Jim Drobnick, "Listening Awry," in *Aural Cultures* (Toronto: YYZ Books, 2004), 9.
[130] Kahn, 228.

as a way to listen to music from within, "establishing a common space of auditive being for both the musicians and the audience," where individual autonomy seemed to evaporate into vibrant, collective being.[131]

In the rock and roll arena, music crossed a noise threshold in 1969 when Jimi Hendrix (1942–1970) addressed the crowd at Woodstock with the *Star Spangled Banner*, his protest wailing through amplifiers powered at ten watts and hooked up to sixteen massive loudspeakers.[132] Bands like Led Zeppelin, Deep Purple, and The Who broke records in the 1970s with concerts exceeding 120 decibels. Noise defined the countercultural punk aesthetic of the mid-1970s and 1980s, proponents of which boycotted musical technique in protest of its complicity in consumer culture.[133] A subsequent wave of anti-establishment noise bands salvaged industrial refuse, using sheet metal and oil drums as instruments.[134] A powerful interface of noise, rhythm, and identity politics propelled Afro-diasporic electronic music in the 1970s, 1980s, and 1990s, as traced in the Black Audio Film Collective's documentary *The Last Angel of History* (1995) from a pre-history in the blues of Robert Johnson (1911–1938) to the avant-garde jazz of Sun Ra (1914–1993), futuristic funk of George Clinton (b. 1941), Detroit techno of Derrick May (b. 1963), and on into the future.[135]

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[131] Kahn, 231–233.
[132] HDK Interview, 36:30–39:15. These are Miller's own loosely estimated figures for Hendrix's equipment settings, which are legendary and subject to much speculation.
[133] Russo and Warner, 52.
[134] Russo and Warner, 52.
[135] Steve Goodman, *Sonic Warfare: Sound, Affect, and the Ecology of Fear* (Cambridge, MA: The MIT Press, 2012), 1–2.

Sonic Force

Pandemonium performed a veritable hit parade of these representational strategies. Its episodic structure imitates programme music with allusive sounds that tell a riotous ghost story. At the same time, *Pandemonium*'s emphatic preference for the percussive and textural over the melodic and harmonic infuses the composition with noise that is obstinately musical. Following Russolo, Miller scaled percussive beats by relative pitch and built a mechanical instrument to administer their transmission. *Pandemonium*'s rumbling call-and-response politics evoked Rainey and Smith's blues. Its all-percussion ensemble, textured with two dramatic *glissandi*, invoked Varèse, and its PianoDisc MIDI system referenced Antheil's switchboards. Charged silences drew on Cage's "all sound," and violent crescendo mimicked transgressive tactics from Debussy and Higgins to Hendrix and punk. *Pandemonium*'s found instruments referenced *musique concrète* and industrial noise rock's counter-cultural salvage ethos.[136] Paradoxical for so acoustic a performance, *Pandemonium*'s pervasive sampling and MIDI control system managed to riff on electronic music as well.

Along with these noise-music tactics, *Pandemonium* appropriated their range of meaningful, affective propositions, from military-inflected violence to joyful congregation. After all, music fails to absorb noise absolutely into some abstract system that would evacuate its worldly, corporeal qualities. Even alongside its musical meanings, sound signifies dynamic process, iterative perceptual experiences, and variegation of movement. Sound propels ecstatic collectivity, violent threat, and their interface in the mobilized, rhythmic body, positing a generalized protest against systems that would use

[136] In a more punning way, they also nod to Erik Satie's ambient *Furniture Music* (1917).

the body against itself, channeling its force in a way that would neutralize this expansive capacity for sensorial experience.[137] Militaristic imagery accompanied noise music from Italian futurism's "poetics of shell shock . . . and war machines" to Afrofuturism's "guerrilla . . . warrior-clans."[138] So too has sound all along excited rhythmic sensual dance, magnetizing bodies and collectivizing their sensations.[139] These two interwoven themes of rave and riot, and their mutually entangled affects of arousal and aggression, rage and joy, infuse *Pandemonium* with "sonic force" as theorized by music theorist Steve Goodman.

With sonic force, a concept Goodman adopts from the Black Audio Film Collective, Goodman demonstrates sound to be inseparable from its somatic functions. Sonic force denotes the ways in which sound is, "both seductive and violent, abstract and physical . . . a phenomenon . . . [with] power to caress the skin, to immerse, to sooth, beckon, and heal, to modulate brain waves and massage the release of certain hormones within the body."[140] Sonic force represents a continuum of sound's potential, exceeding the boundaries of human hearing. At one pole, sound is deployed for ". . . the strategic aim of crowd dispersal, to the dissipation of a collective energy, to repulsion and dissolution of clusters, and to the individualization of the movement of bodies," echoing Eastern State Penitentiary's founding mission.[141] At the other pole, sound's "objective is that of intensification, to the heightening of collective sensation, an attractive, almost magnetic, or vertical force, a force that sucks bodies in toward its source."[142] Rather than

[137] Cox and Warner, "Music and Its Others: Noise, Sound, Silence, Introduction," in *Audio Culture*, 6.
[138] Goodman, 2 and 6–7.
[139] Goodman, 11.
[140] Goodman, 10.
[141] Goodman, 10.
[142] Goodman, 11.

elevating one sonic trajectory over the other, *Pandemonium* spins them together as if spiraling threads along a single, curving amplitude—from sub-audible vibration to immersive eruption. *Pandemonium*'s looping repetitions are both semantic representations and concrete materializations of sonic force as matter's roiling potential. In figuring this full spectrum, *Pandemonium* made one unequivocal statement against stilling the body. Powers that would claim to discipline away its sensory relations with a world in process *Pandemonium* exposed as false.

Volume in an Expanded Field

Pandemonium drew its force out of the specific, spatial environment of cellblock seven. The work's uncompromising site-specificity, along with the representational quality of its sounds, embed it in the late-twentieth-century phenomenon of sound art. Sound art encapsulates a diverse field of artistic practices that engage sound as material, medium, or concept and yet remains resolutely intermedia, fusing elements that "fall conceptually between media that are already known."[143] While incontrovertibly a fluid and dynamic category, sound art is best understood as distinct from experimental music due to its sustained involvement with postminimalist concerns around site-specificity and sculpture in an expanded field, as well as the body's centrality as a medium in action and performance art.[144] These medial considerations become socially charged in sound

[143] David Toop, *Sonic Boom: The Art of Sound* (London: Hayward Gallery, 2000), 107; Helga de la Motte-Haber, *Sonambiente Berlin 2006: Klangkunst/Sound Art* (Heidelberg: Kehrer, with Berlin: Akademie der Künste, 2006), 23; Dick Higgins, "Intermedia," *Leonardo* 34, no. 1 (2001): 52.
[144] Cox, "Beyond Representation," 145; Volker Straebel, "Zur frühen Geschichte und Typologie der Klanginstallation," in *Klangkunst, Musik-Konzepte Neue Folge*, ed. Ulrich Tadday (Munich: Richard Boorberg, 2008), 38; for a genealogy of the body's central role in action and performance art see Kristine Stiles, "Performance Art," in *Oxford Bibliographies Online: Art History*, accessed March 15, 2015, http://www.oxfordbibliographies.com/view/document/obo-9780199920105/obo-9780199920105-0047.xml?rskey=ncdzYF&result=23.

installations like *Pandemonium* that use the material of sound to investigate relationships between sensing bodies and their aggregation in physical environments.

The term sound art has a suite of origin stories pointing to the genre's codification in the 1980s and institutionalization in the 1990s. Canadian electroacoustic composer Dan Lander is credited with coining the term in the mid-1980s, as is American composer William Hellerman with the 1984 exhibition *Sound/Art* at New York's Sculpture Center.[145] Sound art exhibitions proliferated in the 1980s and 1990s, with a spate of high profile shows around 2000, as Cardiff and Miller completed their training and emerged as professional artists.[146] Sound art garnered especially robust scholarly and public attention in Germany, and Berlin, where Cardiff and Miller lived part-time since Cardiff received a DAAD grant and residency in 2000, was elevated as a world center for making and experiencing work in this mode.[147]

Sound art's pre-history typically charts a course, much like the one tapped by *Pandemonium*, from the work of modern composers to free jazz and minimalist music, from dada poetry, futurist noise, and phonography to *musique concrète*, culminating in

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[145] Alan Licht, *Sound Art: Beyond Music, Between Categories* (New York, NY: Rizzoli, 2007), 10; Licht, "Sound Art: Origins, Development and Ambiguities," *Organised Sound* 14, no. 1 (April 2009): 3; Kahn, 364. The term sound art cropped up independently in Australia in the mid-1980s, as well.

[146] Notable examples include: *Für Augen und Ohren: Von der Spieluhr zum akustischen Environment. Objekte. Installationen. Performances* (Berlin: Akademie der Künste, 1980); *Sound In Space: Adventures in Australian Sound Art* (Sydney: Museum of Contemporary Art, 1995); S*onambiente* (Berlin: festival in 20 venues, 1996 and 2006); *I Am Sitting in a Room: Sound Works by American Artists 1950–2000* (New York: Whitney Museum of American Art, 2000); *Sound Art —Sound as Media* (Tokyo: NTT, 2000); *Sonic Boom: The Art of Sound* (London: Hayward Gallery, 2000); and *Sons et lumières: une histoire du son dans l'art du XXe siècle* (Paris: Centre Georges Pompidou, 2004).

[147] Andreas Engström and Åsa Stjerna, "Sound Art or Klangkunst? A Reading of the German and English Literature on Sound Art," *Organised Sound* 14, no. 1 (April 2009): 11–18; Motte-Haber, ed. *Klangkunst* (Munich: Prestel, with Berlin: Akademie der Künste, 1996); Bernd Schulz, *Resonanzen: Aspekte der Klangkunst* (Heidelberg: Kehrer, 2002), 14. Curator Bernd Schulz asserts that sound art has been, "a major focus of the primarily project- and intermedia-oriented program of the Stadtgalerie Saarbrücken since its foundation in 1985," and notes that "Klangkunst" is an imperfect translation of the term given the affiliation of the German noun "Klang" with musical tones in contrast to the more expansive meaning of "sound" in English; Cardiff and Miller received background materials about *Pandemonium* to their Berlin address and traveled from Berlin for the installation and opening, *Pandemonium* files.

the work of Cage, Karlheinz Stockhausen (1928–2007), and their fluxus offshoots.[148] Sound art also has important extra-musical dimensions related to minimalist practices.[149] Motte-Haber designates sound art as a confluence of concerns related to installation, sculpture, and public space and insists that it be defined as much by visual as by auditory aspects—"Klangkunst ist zum Hören und zum Sehen bestimmt."[150] Sight and sound converge in a holistic interplay of the senses triggered by sculptures and installations that use the traditionally durational material of sound to investigate architecture, environment, and the body.[151]

Sound art's emergence as a category in the 1980s consolidated experiments in sound sculpture and installation begun in the late 1950s.[152] Carsten Seiffert, who founded Berlin's Singuhr Sound Gallery in 1996, explains: "In my understanding, the term sound art primarily covers sound installations and sound sculptures that can be experienced in a unique physical space . . . Space itself becomes a medium of creation, and due to an artistic engagement with it and in it, turns into a place."[153] Composer Alan Licht locates the earliest sound installations consonant with this site-specific definition

[148] For variations on this genealogy, see Kahn; Straebel, 24–40; Toop, 107–116; and Anne Thurmann-Jajes, "Sound Art," in *Sound Art: Zwischen Avantgarde und Popkultur* (Cologne: Salon Verlag, 2006), 30–33. Toop is the only author among these rightly to include "Harlem jazz inventions" as sound art precedent. African American artists generally are absent from histories of sound art in spite of the significant role given sound in African American modernism across genres. As Jonathan Sterne points out, "when W.E.B. Du Bois wanted to rethink the role of race in American life, he turned to sound as a key modality for thinking through African American culture." See Sterne, "Sonic Imaginations," in *The Sound Studies Reader* (New York: Routledge, 2012), 2, and, as a starting point, W.E.B. Du Bois, *The Souls of Black Folk*, 1903, reprint (New York: Barnes and Noble Classics, 2003).
[149] Brandon LaBelle, *Background Noise: Perspectives on Sound Art* (New York: Continuum International, 2006), xii; Toop, 117; Licht, "Sound Art: Origins, Development and Ambiguities," 5.
[150] Motte-Haber, *Klangkunst: Tönende Objekte und klingende Räume*, Handbuch der Musik im 20. Jahrhundert, vol. 12 (Laaber: Laaber-Verlag, 1999), 13.
[151] Engström and Stjerna, 11–13.
[152] LaBelle, xii.
[153] Carsten Seiffarth, "About Sound Installation Art," *Kunstjournalen B-post*, 2012, accessed January 13, 2015, http://www.kunstjournalen.no/12_eng/carsten-seiffarth-about-sound-installation-art/..

in the Corbusier-designed Philips Pavilion at the 1958 Brussels World's Fair: Varèse's *Poème électronique* and Iannis Xenakis' (1922–2001) *Concret PH*.[154] The term "sound installation" appeared around 1971, when artist Max Neuhaus (1939–2009) applied it to his own spatial sound works beginning with *Drive In Music* (1967).[155]

Crucially, sound art dispenses with the musical priority to dissolve sound's references to the meaningful world. Lander describes sound art as a diverse field of practices united first and foremost by an interest in sound's capacity for signification.[156] "Ripe with meaning and content distinguishable from the meaning and content of musical expression," Lander argues, sound art "[confronts] the meaning(s) of the noise we produce."[157] Sound art differs from music in its articulation of space and its concerns with the social meanings of sounds, which it refuses to accept as pure or abstract.[158] It explores sound as "intrinsically and unignorably relational."[159] Sounds transmit according to the acoustic character of the particular place in which the artwork is situated, and each percipient experiences them there according to her distinct physiology and position.[160] Curator Bernd Schulz defines sound art as an extension of Rosalind Krauss's logic of sculpture in the expanded field: "an art form . . . in which sound has become material within the context of an expanded concept of sculpture . . . for the most

[154] Licht, "Sound Art: Origins, Development and Ambiguities," 5.
[155] Licht, "Sound Art: Origins, Development and Ambiguities," 5.
[156] Dan Lander, "Introduction," in *Sound by Artists*, eds. Dan Lander and Micah Lexier, 1990, reprint (Toronto: Blackwood Gallery and Charivari Press, 2013), 10.
[157] Lander, 11–14.
[158] Barbara Barthelmes, "Sound Art in Musicological Discourse," in *Sound Art: Zwischen Avantgarde und Popkultur* (Köln: Salon Verlag, 2006), 49–50.
[159] LaBelle, ix.
[160] LaBelle, ix; Straebel, 42.

part works that are space-shaping and space-claiming in nature."[161] Volume is a useful concept with which to integrate these discourses:

> Volume: measure of a space, and volume: amplitude of sound. Consider volume as the variability of that space in sound. Consider volume as something within but wholly separate. Consider volume as the invisible and unmarked presence of sound. Consider volume as the intertwine [sic] of the spatial and the sonic . . .[162]

Sound art, to summarize, is relational, sculptural, volumetric, semantically engaged, and socially charged.

Pandemonium belongs unequivocally to the sound art context, so much so that it insists we not misunderstand the work as a soundtrack added to its site. Rather, the building itself transmitted *Pandemonium*'s message that sonic force belongs to the sentient body and is meaningful in structuring its relations. Percipients were unlikely to recognize every musical reference in *Pandemonium* (Cardiff and Miller appropriated so thoroughly that the present analysis can suggest only some of its key trajectories), but their message transmitted through its sheer, affective accumulation of noise strategies. *Pandemonium* investigated its subject—the stabilized ruin of a real place and its implications for ongoing sensory relations in the world—using noise as a powerful concept and concrete, physical material. *Pandemonium* depended on the social histories and architectural volume of Eastern State Penitentiary, both its serial repetition and the sublimely reverberant scale that could give itself over at any minute to immersive cacophony. *Pandemonium* awakened that space with a century of allusive noise to trigger a concrete experience of the present.

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[161] Schulz, 14; Rosalind Krauss, "Sculpture in the Expanded Field," *October* 8 (Spring 1979): 30–44.
[162] Christof Migone, "Volume (Of Confinement and Infinity) A History of Unsound Art," in *Le son dans l'art contemporain canadien*, ed. Nicole Gingras (Montreal: Éditions Artextes, 2003), 81.

Composing *Pandemonium*

Cardiff and Miller's initial proposal for *Pandemonium* helps elucidate the connection between the work's sonic force and its interpretation of Eastern State Penitentiary.[163] It suggests that *Pandemonium*'s sounds served a documentary purpose. Julie Courtney approached Cardiff in 2001 about creating an audio walk for Eastern State Penitentiary.[164] The site was preparing to launch its audio tour at the time, and Torchia suggested Cardiff for an intervention to repurpose its audio devices.[165] Courtney had just experienced Cardiff's *The Missing Voice, Case Study B* (1999) in London and felt that the walk's capacity for, "shifting [the user] between realities" of a given place would translate in an intriguing way to the penitentiary, which Courtney described as, "a perfect place for one of Janet's signature walks with its mix of history, creepiness, and ghosts—a gorgeous, if heartbreaking, environment."[166] Cardiff responded with interest to Courtney's outreach, scheduling a site-visit for 2002, but dispelled the assumption that she would work in the walk format.[167] Cardiff suggested instead an installation related to *Forty Part Motet*, involving a local composer or chorus.[168]

Courtney and the site's staff crafted a grant application to the Philadelphia Exhibitions Initiative, seeking support "to invite internationally recognized audio artist

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[163] Julie Courtney supplied an undated proposal for Eastern State Penitentiary and credited it to Cardiff and Miller in e-mail correspondence with the author, August 22, 2014 (hereafter cited as *Pandemonium* proposal).
[164] Courtney introduced site-specific installations by contemporary artists to Eastern State Penitentiary in 1996 with an exhibition co-curated with Todd Gilens. See *Prison Sentences: The Prison as Site/The Prison as Subject*, exh. cat. (Philadelphia: Moore College of Art and Design, 1995). The practice of inviting artists to interpret the site has since continued under the supervision of a review committee of artists, curators, and scholars.
[165] Torchia facilitated Courtney's introduction to Cardiff. Torchia is an artist, as well. His installation *Daylights* turned parts of Eastern State Penitentiary into a camera obscura from 1997 to 2002.
[166] Courtney, 12–13.
[167] Courtney discussion, August 22, 2014.
[168] Courtney discussion.

Janet Cardiff to design a project for the cellblocks of this now-silent landmark."[169] They outlined two possible directions for the project: a vaguely articulated "Motet form," or as many continued to hope, "the artist may decide to create an audio tour, as she has for several other locations."[170] When Cardiff and Miller visited Eastern State Penitentiary in December 2002, they were reticent about their plans but expressed strong interest in cellblock seven, which could not accommodate visitors at the time.[171] It required a new roof, repairs to the skylights, restoration of the balcony, and public safety features like emergency lighting and alarms.[172] The site got started on these repairs, using funds awarded in support of a project by Cardiff. Additional grants helped complete the stabilization in time for *Pandemonium* to be installed in April 2005. Cellblock seven opened to the public along with *Pandemonium* that May.

Cardiff and Miller proposed an installation for Eastern State Penitentiary that would blend documentary-style testimony with sonic illusion of bodily presence through 45 audio speakers.[173] The speakers would occupy a "skylit cellblock," each to a cell so as to "represent a person."[174] The proposal summarized:

> The piece we are conceiving would be a musical composition made of multiple voices and percussion instruments in a composition that would be a hybrid between a multi-layered documentary style audio piece and a polyphonic choral harmonic piece. The composition would reflect and explore the stories, history and ghosts of the site.[175]

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[169] *Philadelphia Exhibitions Initiative Grant Proposal*: *Janet Cardiff* (Philadelphia, PA: Eastern State Penitentiary Historic Site, 2002), *Pandemonium* files [hereafter *Pandemonium Grant Proposal*.]
[170] *Pandemonium Grant Proposal*.
[171] Courtney discussion; Courtney, "Of Site and Sound," 13.
[172] Elk, 7.
[173] *Pandemonium* proposal.
[174] *Pandemonium* proposal.
[175] *Pandemonium* proposal.

The artists imagined a work in three parts, evolving from spoken testimony to choral song to percussion. After a collage of voices read quietly from writings about Eastern State Penitentiary, talking about its architecture and describing personal incarceration experiences, they would come together in song and then morph into "percussive sounds from the cells themselves such as banging on the walls and bars."[176] The proposal outlines interplay between the individual and the congregation: "One of the themes of the composition would be the relationship of the singular to the communal, and the intimate connection of the listener to the individual but also the intensity and almost fear felt in being surrounded by a large group of male voices."[177] To begin, "One voice would pass on a message to another . . . and build to waves of voices heard together as if they were praying."[178] The second part intensified this feeling of congregation as, "singing would move harmonically from cell to cell and then join together at times in chorus."[179] Parts would then merge and crescendo: "The composition would start very simply and build so that it would be quite terrifying and powerful at the climax and then loop to the silence of the beginning."[180]

Many core aspects of this early iteration are residual in *Pandemonium*'s final form. Speakers inhabit cells as robotic beaters eventually would, and percipients direct their own experiences, "from many vantage points, for example from the entrance to the hallway as a traditional audience member would, or from within the work by walking through the sound as they pass the cells."[181] The last of the three parts represented the

[176] *Pandemonium* proposal.
[177] *Pandemonium* proposal.
[178] *Pandemonium* proposal.
[179] *Pandemonium* proposal.
[180] *Pandemonium* proposal.
[181] *Pandemonium* proposal.

same percussive textures through recorded sounds that *Pandemonium* ultimately produced live. Though it dispensed with the human voice, *Pandemonium* nevertheless maintained the interplay between individual and collective with its call-and-response pulse and dance and military themes. Finally, the compositional arc, from quiet beginning through terrifying climax, was identical to their proposed format. The proposal provides clear evidence that Cardiff and Miller knew from the start what kind of affect they were after for Eastern State Penitentiary and how they might achieve it in a looping sequence.

Cardiff and Miller made a series of choices while developing *Pandemonium* that, in light of their extant bodies of work and initial proposal for Eastern State Penitentiary, raise intriguing questions about the relationship the work proposes for documentary and music. They refused the invitation to produce an audio walk in favor of a more abstract spatial installation with choral music. This abstracting impulse was revised, somewhat, in the proposal, which integrated "documentary-style" testimony and choral music into a narrative of interpersonal communication, prayer, congregation, and collective rebellion. That the piece would now culminate in percussive sound, however, suggested a further move away from melody. The final version of the work subsumes all traces of explicit vocal narrative into textural, percussive music. *Pandemonium* seems at first the most thoroughly abstract and musical of Cardiff and Miller's works to date, yet in opting for acoustic sound it turns out to be their most concrete.[182] Together these choices invite a closer examination of *Pandemonium* as documentary.

[182] Torchia, in discussion with the author, August 18, 2014.

Chapter 3 Documentary—"Waking the Dead"

When Cardiff and Miller elected to engage nonfictional subject matter at a real historical site, they tapped the tradition of documentary. *Pandemonium* materialized at a moment when documentary-related strategies were broadly resurgent in contemporary art, in fact. This trend, which has since been designated art's "documentary turn," gained traction at *Documenta 11* under the artistic directorship of Okwui Enwezor.[183] This five-part art event held in 2001 and 2002 in Vienna, New Delhi, St. Lucia, Lagos, and Kassel presented debates, symposia, and film screenings addressing global political topics from democracy to creolization. It culminated in Kassel in summer 2002 with the exhibition *Documenta 11_Platform5*, featuring documentary-style photographs, films, and video works by artists from forty-five countries, including the Black Audio Film Collective (1982–1998), Alfredo Jaar (b. 1956), Shirin Neshat (b. 1957), and Jeff Wall (b. 1946).[184] Co-curator Mark Nash describes the exhibition's turn to documentary as an effort, "to explore a range of artistic practices that, in one way or another, attempted a connection with social and political reality."[185]

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[183] Mark Nash, "Reality in the Age of Aesthetics," *Frieze* 114 (April 2008), accessed September 10, 2014, http://www.frieze.com/issue/article/reality_in_the_age_of_aesthetics.

[184] "Documenta 11," Documenta Archiv für die Kunst des 20. und 21. Jahrhunderts, accessed March 3, 2015, http://www.kassel.de/miniwebs/documentaarchiv_e/08206/; Okwui Enwezor, "Documenta 11, Documentary, and the Reality Effect," in *Experiments with Truth*, exh. cat. (Philadelphia: The Fabric Workshop and Museum, 2004), 97.

[185] Nash, "Reality in the Age of Aesthetics." Nash lists among related exhibitions his own *Experiments with Truth* at the Philadelphia Fabric Workshop and Museum (December 3, 2004–March 12, 2005), as well as *Come and Go: Fiction and Reality* at the Calouste Gulbenkian Foundation, Lisbon (November 2007–June 2008) and *The Cinema Effect: Illusion, Reality, and the Moving Image* at the Hirshhorn Museum, Washington, DC (February–September 2008).

Documentary has born a complex and dynamic relationship to "social and political reality" since its inception in the nineteenth and early twentieth centuries. Documentary realism is predicated on the indexical power of photographs, films, or sound and video recordings, enlisted as "traces of the real" to provide and verify evidence about the world.[186] Yet evaluating a documentary's credibility has been, from the beginning, a matter of stylistic convention and context. In the 1860s, photography was used to record expanding industry, colonial expedition, and war and thereby to authenticate ideologies propelling those efforts.[187] Staging aspects of a photograph was, for many, an acceptable way to enhance its symbolic weight.[188] Documentary filmmakers of the 1920s, like Robert Flaherty (1884–1951) and John Grierson (1898–1972), employed re-enactment and didactic voice-over in their pursuit of realism.[189] As a 1932 British *Film in National Life* report stipulated: "A deliberate documentary film must be a transcript of real life, a bit of what actually happened, under *approximately* unrehearsed conditions."[190]

Grierson characterized documentary as "the creative treatment of actuality," pointing to the tensions between the genre's operations as "information and recording" and "rhetoric and aesthetics."[191] Practitioners of documentary have balanced these dual aspects in diverse ways. Russian filmmaker Dziga Vertov (1896–1954), for example,

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[186] We might imagine documentary's realist conventions thus functioning as an inverse to Western art music's nonreferential regimen.
[187] Terri Weissman, "Documentary Photography," Grove Art Online, Oxford University Press, accessed March 11, 2015, http://www.oxfordartonline.com/subscriber/article/grove/art/T2229236.
[188] Weissman, "Documentary Photography," Grove Art Online.
[189] Carl Plantinga, "What a Documentary Is, After All," in *Documentary*, ed. Julian Stallabrass (London: Whitechapel Gallery, 2013), 60.
[190] "documentary, adj. and n." OED Online, March 2015, Oxford University Press, accessed March 19, 2015, http://www.oed.com.proxy-um.researchport.umd.edu/view/Entry/56332?redirectedFrom=documentary. Emphasis mine.
[191] "documentary, adj. and n." OED Online.

demonstrated a distinct approach to the problem in his *Kinoks-Revolution Manifesto* (1919), which called to overhaul cinema's manipulative fictions with newsreel reportage. Beginning in 1922, Vertov's *Kino-Pravda* ("Film Truth") series disseminated footage of everyday life in an experimental flow free of conventional narrative.[192] Documentary's patina of authenticity combined with rhetorical malleability has made it, throughout its history, a tool for political persuasion of every stripe. Technological advances have repeatedly influenced documentary criteria. Light-weight cameras and photomechanical processes drove photojournalism in the 1930s. Portable film equipment with synchronized sound ushered in direct cinema of the late-1950s. Viewer expectations regarding stylistics of 'the real' shifted in every case but made documentary no less 'approximate,' unmediated, or free of agenda.[193] Leveraged variously as propaganda, research tool, aesthetic frontier, and catalyst for populist social change, documentary stylistics have taken diverse forms and adapted to many purposes.

These tensions—between objective fact and ideology, between direct recording of events and their creative interpretation—came under a wave of especially intense scrutiny in the 1970s. Poststructuralist and feminist critiques held documentary to be a falsely universalizing abstraction, a mode that totalized particular segments of experience and exploited the bodies of its often-marginalized subjects.[194] Postmodern thinkers deconstructed historical narrative and its legitimation by selective documentary evidence. They exposed the instability of photographic signification and argued that historical

[192] "Chronology of Documentary History," UC Berkeley—Media Resources Center, accessed March 19, 2015, http://www.lib.berkeley.edu/MRC/docexhibit/docuchron.htm.
[193] Weissman, "Documentary Photography," Grove Art Online; Carl Plantinga, "Film and Documentary," in "Film" entry, *Encyclopedia of Aesthetics*, Oxford University Press, accessed March 11, 2015, http://www.oxfordartonline.com/subscriber/article/opr/t234/e0209.
[194] Weissman, "Documentary Photography."

representation is purely a function of rhetoric.[195] Artists taking up documentary strategies at the turn of the twenty-first century faced a paradox, then, wherein ever more widespread cultural reliance on documentary images was coupled with habitual distrust in them.[196]

Artwork of the "documentary turn" engages this ambivalence, working in the interstices of "the aesthetic and the ethic . . . artifice and authenticity . . . fiction and fact . . ."[197] Fiction plays a central role, so much so that the "turn" is sometimes called "documentary-fiction."[198] Artists use fiction to address the limits of the archive and the documents it holds from which so many perspectives remain excluded and therefore perpetually invisible. Enwezor, who has written extensively on contemporary documentary, emphasizes the ways in which photographs, especially those depicting atrocities, leave out psychic and multisensory dimensions of experience.[199] Memory, moreover, is an unreliable arbiter of a document's accuracy and yet it is in many cases the only channel by which to reflect on experience. Accuracy, therefore, proves not always to be the most useful barometer of truth. Artists of the "documentary turn" strive to go beyond merely phenomenal testimony so that their work "surpasses the evidentiary

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[195] David Green and Peter Seddon, "Introduction: Art, Historiographical Practice and the Ends of History," in *History Painting Reassessed: The Representation of History in Contemporary Art* (Manchester: Manchester University Press, 2000), 2–3.
[196] Lind and Steyerl, "Introduction: Reconsidering the Documentary and Contemporary Art," in *The Green Room*, 11.
[197] Lind and Steyerl, 16.
[198] Weissman, "Documentary Photography," Grove Art Online.
[199] See for example, "Documenta 11, Documentary, and the Reality Effect," in *Experiments with Truth* (2004); "Documentary/Verité: Bio-Politics, Human Rights and the Figure of 'Truth' in Contemporary Art," in *The Green Room* (2008); "What is it?: The Image Between Documentary and Near Documentary," in *The Storyteller*, eds. Claire Gilman and Margaret Sundell, 73–82 (New York: Independent Curators International, 2009); and "Documentary's Discursive Spaces," in *Berlin Documentary Forum 1: New Practices Across Disciplines*, ed. Hila Peleg, 9–15 (Berlin: Haus der Kulturen der Welt, 2010); Enwezor, "Documentary's Discursive Spaces," 14.

. . . is beyond the event and not coded in representation."[200] They aim to agitate the spectator's critical and ethical apprehension, "[asking] the viewer to approach [the documentary-related work] as not only just [sic] a fact of something real in the world, but also something true, in the social condition of that world, that is difficult to support in a single film frame or photographic image."[201] With an analogy curiously apt for *Pandemonium*, Enwezor calls the document a ruin that exposes, "a gap in knowledge of the event which can only be inscribed through acts of memory . . . the 'waking of the dead' . . . an intimate, proximate relationship to events that lie beyond the inscriptible, that is to say beyond the image."[202] In this framework, the "documentary turn" describes artists examining those aspects of experience obscured in the process by which collective narratives are constructed out of documentable facts. Treating undocumented experience as no less real for its contingency, these artists entertain fiction as a means to reflect on and memorialize dimensions of reality not officially preserved.

"Documentary turn" artists use strategies like storytelling, historical reenactment, and constructed archives or counter-monuments to resuscitate documentary in an open-ended, exploratory way. They raise questions about the relationship of the past to the present and future.[203] They put narrative to work but disrupt conventions that it must be linear, logical, unified, or even factual, blending fact and fiction to evoke sensory textures of lived experience. [204] Writing about projects in this mode by American multimedia artist Matthew Buckingham (b. 1963), Mark Godfrey clarifies: "the point has not been to

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[200] Enwezor, "Documentary's Discursive Spaces," 14.
[201] Enwezer, "Documenta 11," 101.
[202] Enwezor, "Documentary's Discursive Spaces," 15.
[203] Christine Ross, "Ecology," in *The Past is the Present; It's the Future Too: The Temporal Turn in Contemporary Art*, 2012, reprint (New York: Bloomsbury, 2014), 107–108.
[204] Marie Fraser, "Tell Me, or The Narrative and Its Paradoxes," in *Raconte-Moi/Tell Me*, exh. cat. (Montreal: Musée National des Beaux-Arts du Québec, 2005), 100.

intertwine and confuse fiction and documentary modes of representation as much as to treat works of fiction themselves as historical documents that are as valid starting points for reflections on present conditions as conventional documents might be."[205]

Carrie Lambert-Beatty uses the term parafiction to describe artworks that fabricate narratives so credibly as to be (at first) believed.[206] Audiences accept these fictional scenarios because the artist goes to great lengths to match the conventions by which facts are accredited in contemporary culture, invoking endorsement by institutional spokesperson or corporate branding. Parafictions seem plausible because the artist, "refuses to separate the epistemological and the emotional," so that audiences invest personal belief in the story.[207] Breaking that trust triggers strong emotions that can stimulate critical thought about which versions of reality are, in fact, plausible. [208] These operations work to renew belief that alternative realities are worth pursuing.[209]

While artists of the "documentary turn" are generally skeptical of images and single objective histories, they nonetheless ask audiences to consider the narratives they construct as partially meaningful and provisionally connected to something real. "Truth emerges as in-process," and artworks too enter into its articulation.[210] These artists work with historical figures, places, or objects, "striving less to . . . abandon fact for fabulation than to establish an authentic connection to reality that acknowledges the inevitably subjective nature of this relationship."[211] If documentary traditionally staked its truth claims on creatively persuading audiences of the accuracy of its evidence, recent art of

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[205] Mark Godfrey, "The Artist as Historian," *October* 120 (Spring 2007): 170.
[206] Carrie Lambert-Beatty, "Make-Believe: Parafiction and Plausibility," *October* 129 (Summer 2009): 54.
[207] Lambert-Beatty, 77n73.
[208] Lambert-Beatty, 78–82.
[209] Lambert-Beatty, 78–82.
[210] T.J. Demos, "Storytelling in/as Contemporary Art," in *The Storyteller*, 98–99.
[211] Gilman and Sundell "The Storyteller," in *The Storyteller*, 8.

the "documentary turn" presents unabashedly fictional details just as persuasively to expand the possibilities for what and who counts as real.

Pandemonium operates as documentary but does so neither by organizing ostensibly accurate details into a persuasive narrative nor by constructing a plausible fiction. It is quite distinct from both documentary-turn art and documentary in the longer tradition above all in its exclusion of anything resembling indexical representation. Photographs, films, videos, and audio recordings, fabricated or otherwise, do not figure in *Pandemonium*. Its sounds may conjure images like, to use my own phrasing, "batons dragged across bars" and "a riot fueled by the libidinal release of the dance," but these are more likely derived from percipients' memories of prison riots in Hollywood films and personal experiences of dance clubs than any real trace of inmate experience at Eastern State Penitentiary.[212] *Pandemonium*'s indeterminate passages, its abrupt dissipation just as it begins to tell a story, thwarts didactic purpose. The narrative it proposes most readily, that ghosts are haunting the cellblock, depends for its plausibility on an implausible Romantic belief in the paranormal. At the same time, *Pandemonium* distinguishes itself from work of the "documentary turn" by presenting real evidence: nonfictional found materials including an actual penitentiary building, its ideologically-charged infrastructure, and the furniture used by its inhabitants. Its resolutely acoustic method of producing live sound further enhances its concrete, nonfictional character.

[212] Torchia, 25.

Trompe l'Oreille and Near Documentary

To get at *Pandemonium*'s own peculiar form of documentary, we must detour slightly into a close examination of a related work that Cardiff and Miller produced roughly contemporaneously—the audio walk *Words Drawn in Water* (2005) commissioned by the Hirshhorn Museum and Sculpture Garden for the National Mall and Smithsonian Institution. *Pandemonium* builds on a particular narrative strategy developed by Cardiff in audio walks such as this one, which is analogous to Jeff Wall's notion of "near documentary." Wall applies this term to a subset of his own work that represents people as if authentically engaged in everyday, offhand situations **(Figs. 25 & 26)**. These apparently spontaneous images are actually reconstructions.[213] According to Wall:

> . . . they are pictures whose subjects were suggested by my direct experience, and ones in which I tried to recollect that experience as precisely as I could, and to reconstruct and represent it precisely and accurately. Although the pictures with figures are done with the collaboration of the people who appear in them, I want them to feel as if they easily could be documentary photographs. In some way they claim to be a plausible account of, or a report on, what the events depicted are like, or were like, when they passed without being photographed . . .[214]

Wall's photographs are not direct evidence of reality, though they are certainly acts of memory with an intimate relation to the events they represent. Wall achieves lifelike effects through his effort to recollect, reconstruct, represent, and report the details of a situation that he claims actually to have witnessed. This process raises the possibility that had a photograph actually been taken of the event in question it might appear somehow less true to Wall's experience than does his reconstruction. With the framing of his

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[213] "Jeff Wall: Glossary," Tate Modern, accessed March 3, 2015, http://www.tate.org.uk/whats-on/tate-modern/exhibition/jeff-wall/resources/jeff-wall-glossary/.
[214] Cited in Michael Fried, "Conclusion: Jeff Wall's 'Adrian Walker,'" *Studies in the History of Art* 72, Symposium Papers XLIX: French Genre Painting in the Eighteenth Century (Washington, DC: National Gallery of Art, 2007), 299.

photographs and this story of his process, Wall brings the viewer physically near his subjects and psychically near himself. "Near," in "near documentary" indicates not only that these photographs are "not quite" documentary, but also that they are "proximate" documentary, having been witnessed from a close vantage and internalized to memory.

Even more than the camera, audio recording requires physical proximity to its source to register a crisp imprint of sound. For the most part, Cardiff and Miller record real, live noises expressly for Cardiff's audio walks rather than relying on digital or Foley effects. Cardiff and Miller use a 'binaural' stereo recording technique to produce three-dimensional sounds, which curator Carolyn Christov-Bakargiev cleverly terms *trompe l'oreille*.[215] Binaural recording debuted in 1881 at the Paris Opera's Palais Garnier.[216] Pairs of microphones were placed along the front edge of the stage, seven inches apart to simulate natural ear spacing in the human head and thereby capture an embodied, acoustical experience. These two channels of sound were transmitted through double telephone lines to subscribers wearing special headsets. Contemporary binaural recording, recently revived for virtual reality design, involves tiny, omnidirectional microphones inserted into the ear-shaped molds of a mannequin head of the scale and density of an average human head **(Fig. 27)**.[217] It captures the shifting balances in frequency as sounds curve around the head and traverse the ridged topographies of each ear.[218] Left and right channels are kept completely separate and played back unmixed

[215] HDK Interview.
[216] Janet Cardiff, "The First Page," in *Janet Cardiff: The Walk Book*, ed. Miriam Schaub (Vienna: Thyssen-Bornemisza Art Contemporary, Vienna, Austria, in collaboration with Public Art Fund, 2005), 4.
[217] Mona Lalwani, "Surrounded by Sound: How 3D Audio Hacks Your Brain: A Century-Old Audio Technology is Making a Comeback Thanks to VR," The Verge, February 12, 2015, accessed March 20, 2015, http://www.theverge.com/2015/2/12/8021733/3d-audio-3dio-binaural-immersive-vr-sound-times-square-new-york.
[218] John Sunier, "Binaural in Depth," The Binaural Source, accessed March 20, 2015, http://www.binaural.com/SunBinArticle.html.

through the left and right drivers of a pair of headphones.[219] The listening experience simulates localized acoustic conditions to a startlingly precise degree.

Cardiff and Miller use this method to record many of the sounds for the audio walks in the exact location where the user will hear them, producing a hyperreal auditory experience. To curator Kitty Scott, "Cardiff's sound embodies a realism grounded in place."[220] The artists very deliberately engage the *trompe l'oeil* tradition, transferring its illusionistic deception from eyes to ears.[221] According to Cardiff:

> . . . the rhetoric around ideas of reality through artists has always been interesting to me . . . how linear perspective made people think about how they were getting into the realness of the world, the realness of the painting, and then that continued with ideas of photography and how that was *so* real. One thing George and I have attempted to do is continue this dialogue but it's become . . . you have to get *so close*, like right now everybody's obsessed with 3D. It's not necessarily the Buddhist search for the now but a similar kind of thing—the search for connection to someone else, a search for somehow getting so real that you're really there . . .[222]

Binaural sound becomes the means by which to get "so close" to reality in the audio walks. It enters the user's body with a kind of physical immediacy less available to images. Accounts by users invariably emphasize how startlingly lifelike the walks are: "Is the buzzing fly circling your head . . . an actual fly or an aural invention?"[223] As is typical, Julie Courtney marveled that her first walk experience provoked a bodily response: "When I put on the headphones and turned on the player, I heard a woman's voice that was so vivid that I kept turning around to see who was standing behind me."[224]

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[219] Sunier, "Binaural in Depth."
[220] Scott, 12.
[221] Cardiff confirms the artists' explicit engagement with the *trompe l'oeil* tradition in "Cardiff and Miller - The Modern Art Notes," interview by Tyler Green, podcast 38, July 26, 2012, podcast audio, *The Modern Art Notes*, MP3, 49:30, http://blogs.artinfo.com/modernartnotes/2012/07/the-modern-art-notes-podcast-cardiff-miller.
[222] HDK Interview, 09:30–11:00.
[223] Scott, 11.
[224] Courtney, "Of Site and Sound," *Pandemonium*, exh. cat., 12.

Late-nineteenth-century critics similarly hyperbolized *trompe l'oeil* paintings' capacity to deceive.[225]

As Michael Leja has so persuasively argued, however, the real power of *trompe l'oeil* resides in its "uncanny *frisson*" of convincing and unconvincing aspects.[226] *Trompe l'oeil* makes viewers "succumb viscerally to an illusion at the same time that they recognize it as an illusion," and "seeing through the illusion does not diminish its effects."[227] Even as viewers shrewdly unpack the optical trickery that conjures volumetric objects on a flat surface, Leja explains, they reach out to touch painted simulations of letters, ticket stubs, or sheet music that seem disorientingly real given their relative, dimensional similarity to the flatness of the canvas **(Fig. 28)**.[228] Cardiff's audio walks likewise hold belief and disbelief in dynamic suspension. Dimensional sounds, like the buzzing fly, do not so much convince the user as impress her into asking how the artist achieved so thorough an illusion.[229] Meanwhile, the user gives herself over to the biometric sounds of the artist's footsteps, inner monologue, and breath.

A "bait-and-switch" mechanism of the kind Leja ascribes to *trompe l'oeil* painting occurs in much of Cardiff and Miller's work. They coax their audiences toward one illusion in the audio walks as well as in works like *Paradise Institute* only to "pull the rug out from under it" to reveal that they have actually taken them somewhere quite different.[230] Entering the user's body, sounds that at first seem to produce a deceptive external soundscape turn out to insinuate themselves into the user's consciousness

[225] Leja, 128.
[226] Leja, 133.
[227] Leja, 152.
[228] Leja, 137–139.
[229] Leja, 130. As with *trompe l'oeil*, in Cardiff and Miller's work "the real attraction [becomes] the challenge of understanding the mechanism of the hoax."
[230] See for example Christov-Bakargiev's interview with Cardiff in "An Intimate Distance," 24.

through their strange continuity with her own body.[231] They elicit an overwhelming conviction that the artist very recently stood where the user stands, saw what the user sees.[232] Like worn pieces of paper in *trompe l'oeil* paintings, these sounds imply a "residual human presence." [233] This presence heightens all the senses, particularly that of touch, and activates a psychic longing for social communion and intimacy.

Words Drawn in Water and Synchronic History

Cardiff's audio walks layer documentary-style testimony about a particular historical site into this *trompe l'oreille* situation. *Words Drawn in Water* (33 minutes, iPod shuffle) guides users from the Hirshhorn Museum along the Mall to the Smithsonian Castle and Freer Gallery.[234] Similarly to Wall's photographs, the audio track achieves great verisimilitude through binaural recording even as its narrator—voiced by Cardiff—refuses to assert fact. Addressing the user conspiratorially ("I want us to walk now—get up and go to the left"), she persistently hedges the credibility of her information, issuing caveats that each idea is something she 'thinks she remembers' or 'may have heard somewhere.' Trust is further complicated by the deliberately blurry relation of the narrator persona to Cardiff's own autobiography.

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[231] Christov-Bakargiev, "An Intimate Distance," 22. As Christov-Bakargiev puts it, "Her voice seems to emerge from within your own body. You slip in and out of 'being her'. . . participants begin to breathe and walk in synch with the virtual body on the tape or CD, blurring the distinction between self and other."
[232] For a useful discussion of this surrogacy effect in relation to theories of performance, see Josette Féral, "How to Define Presence Effects: The Work of Janet Cardiff," in *Archaeologies of Presence: Art, Performance and the Persistence of Being,* eds. Gabriella Giannachi, Nick Kaye, and Michael Shanks (London: Routledge, 2012), 29–49.
[233] Leja, 140–145. "The impulse to touch Harnett's paintings is not simply a check against the limited evidence provided by vision but a synesthetic response to a strong visual evocation of tactility."
[234] Object File (*Words Drawn in Water*, 2005), Hirshhorn Museum and Sculpture Garden, Smithsonian Institution, Washington, DC.

Interspersed with this direct address are field interviews Cardiff recorded in Washington, DC.[235] Their function as documentary evidence is obscured by their subjects' semi-anonymity: a man, perhaps a guard, humorously tells Cardiff about the commission of Auguste Rodin's *Monument to Balzac* (1891–1898, cast 1965–1966); a women, purportedly a fifth-generation, DC-resident, talks about her grandfather, an African American laborer listed in a directory of DC property owners; a man, who seems to be a docent, explicates Rodin's *The Burghers of Calais* (1884–1889, cast 1953–1959); another man, apparently a veteran, describes his reaction to the representation of horror on the faces of figures in a new war memorial; a man and woman discuss a third party's plans to move back to California after struggling to find a job. Each recording loads auditory signals about the speaker's age, race, and relation to Washington, DC yet renders them impossible to verify. Personal, narrative fragments surface and fade, leaving the user to decide what, if any, message they deliver about the site.

Words Drawn in Water also includes found or reenacted footage. A rich bass-baritone performance of *Ol' Man River* frames the walk at beginning and end. The solo from the musical *Showboat*, which debuted on Broadway in 1927, is sung with pathos from the perspective of Joe, a formerly-enslaved man now working as a stevedore. Paul Robeson (1898–1976) portrayed this role iconically on stage and in the 1936 film. In later performances, Robeson subverted *Showboat*'s sentimentalizing racial stereotype and empowered the song as protest. Cardiff's narrator tells of her mother's devotion to the star and memories of his concerts. She seems indirectly to reference the performer's

[235] "Interview with the artist, July 2005," interview by Kelly Gordon, Hirshhorn Museum, accessed March, 3, 2015, http://www.hirshhorn.si.edu/collection/directions/#detail=/bio/directions-janet-cardiff-words-drawn-in-water/&collection=salvatore-scarpitta/.

1940s appearances in Toronto and Windsor, Ontario, in solidarity with Canada's communist party and Ford Motors strikers.[236] The walk samples Martin Luther King, Jr.'s 1963 "I Have a Dream Speech," Jimmie Stewart's coded anti-Vietnam War monologue as Charlie Anderson in the 1965 Hollywood Western *Shenandoah*, a cowboys-and-indians skirmish from the 1960s television series *Daniel Boone*, and American news commentators circa 2004 discussing the then-ongoing Iraq War. The audio track layers numerous sound effects: applause, rain, water birds, helicopters, Native American drums and chanting, cavalry, fireworks, and bags unzipping for security. Field interviews, found footage, and effects might cohere into a sonic litany of ecological and social injustices figured by the National Mall, meditating on their divergences from purported national ideals, if not presented by so transparently unreliable a narrator.

Cardiff embeds this reality-based material in an imaginative narrative of time travel. The motif of water structures time as fluid and synchronic, while making sumptuous appeals to all five senses. After the opening strains of *Ol' Man River*, Cardiff's persona brings up James Abbott McNeill Whistler's (1834–1903) Thames River "Nocturnes" (1870s) and directs the user's attention to the massive fountain at the core of the cylindrical Hirshhorn building (1966–1974), remarking: "It's strange to think about, but a molecule from that river back then could be in this fountain now. Winding its way down the drain, through the pipes on its way to the Potomac River. Next year that same

[236] Laurel Sefton MacDowell, "Paul Robeson in Canada: A Border Story," *Labour / Le Travail* 51 (Spring 2003), 177–221. Robeson performed in Toronto in 1942 and 1945 at a gathering of Canada's communist party. In 1945 he performed at a meeting of Ford Motors strikers in Windsor, ON, and in 1948 he performed at Toronto's Massey Hall. Robeson's US passport was revoked in 1950 on suspicion of Soviet sympathies. During his domestic house arrest, he gave a concert at the US border of British Columbia attended on the American side by 5,000 spectators and on the Canadian side by 25,000 to 30,000.

molecule could be in an apple you'll eat."[237] She leads the user to another fountain in the sunken sculpture garden, up along the Mall where she recalls a visit in pouring rain to the Vietnam Memorial, then into the Smithsonian Castle where she meditates on James Smithson's bones floating across the ocean and offers the user a drink from the water fountain.[238] The narrative also leaps forwards in time midway along the walk when Cardiff's observations seem to time-lapse into a dystopian future.[239]

The climax of the tour begins as Cardiff's narrator pauses in front of the Freer Gallery. There she remembers having felt disoriented by a small piece of mirror she saw lodged in the sidewalk: "For a second I thought it was a bit of sky sunk into the earth." Inside the museum, past another fountain, a formidable *Kongorikishi* figure, and *Nocturne: Blue and Silver—Battersea Reach* (1870–1875), the walk concludes in Whistler's Peacock Room (1876–1877).[240] Here the sound quality changes altogether, dampened and interiorized through the effect of binaural recording. Time travel seems to materialize as Cardiff's voice describes the artist at work in the room's original location, home of shipping magnate Frederick Richards Leyland. She keys this description to all the user's senses—smells of paint and burning coal, a soothing promise of warm tea, and the striking of a match to light a cigarette. She guides the user out an illusory front door into London rain and abruptly bids goodbye.

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[237] Cardiff's narrator continues: "Thoughts and memories are like that too . . . connecting from one time to another and from one person to another."
[238] James Smithson died and was buried in Rome, Italy, in 1829. His remains were disinterred in 1904 and brought to Washington, DC, by Smithsonian Regent Alexander Graham Bell.
[239] In a hushed paranoid tone, Cardiff's narrator says: "All the sudden there are no buildings. Muddy fields, emptiness, Washington monument is gone. What is this?"
[240] Of this fourteenth-century *Kongorikishi* figure, Cardiff's narrator says: "He's a time traveler too. Six centuries ago he was a tree."

Words Drawn in Water never convinces as time travel, nor does it mean to. The narrative is partly a pretense to keep the user in close proximity with the artist's sonic presence. The *trompe l'oreille* illusion depends on, "how our body reacts to the intimacy of this other body layered on top."[241] Using sound, Cardiff convinces our bodies to adopt her gait and mirror her breathing. We begin not only to see and hear but also to feel, both in terms of sensuous tactility and embodied emotion. She makes our nervous systems receptive and malleable to sensory experiences and their affects. In this way, the walk primes the user's body for interpersonal contact, much in the manner ascribed by Leja to *trompe l'oeil* paintings.[242] Cardiff's walks trigger this intimate affect not by palpably rendered things, but through invisible waves of sound. By the end of the walk, the listener is charged with longing for intimate, interpersonal communion for which the only target is an ambiguous, personal narrative about a symbolically-laden, ideologically-charged public place.

The walk layers documentary fragments and paradigmatic associations with past, present, and future topographies of the site. Making sense of these elusive materials is a possible outlet for the somatic desire to connect. More than a pretense, the fictional narrative of time travel suggests concrete ways in which interrelation across time and distance could be, in fact, quite plausible and near at hand like the droplet of water that migrated from the nineteenth century into your mouth. Given the pun with James Smithson's surname, the wedge of sky-reflecting mirror likely references Robert Smithson's 1969 essay *Incidents of Mirror-Travel in the Yucatan* and related artworks in which he attempted to disintegrate nineteenth-century narratives of progress and

[241] "Inexplicable Symbiosis," 56.
[242] Leja, 147 and 151.

positivism.[243] As Jennifer Roberts argues, Smithson's mirrors, "act literally to decompose or to ruin the illusion of continuous space," subverting a perspectival system structured to control and systemize spatial, sensory, and thereby social relationships.[244]

Cardiff invokes Smithson not only in stream-of-consciousness word play but, crucially, to invoke his efforts at "cancelling historical time" by embracing a crystalline model of ruin and renewal in which history does not unfold in a linear progression but enfolds in its own dynamic, enveloping, cyclical processes.[245] Like Smithson, Cardiff and Miller offer a robust critique of models of history that would configure documentary evidence into a totalizing and anthropocentric teleology of progress. *Words Drawn in Water* makes an argument that time does not recede irrevocably along a singular trajectory into the past. It sets out to demonstrate how past and future events suspend dynamically together in specific material environments grounded more or less fleetingly in a particular time and place.[246] Cardiff and Miller train the percipient's awareness on the multiple, ongoing histories—some private and some public, some documented and some intuited or imagined—that compress at any given moment within a bounded physical environment. The percipient is invited, through the audio walk's *trompe l'oreille* illusion, to sense residual presences of other sensing bodies in the physical substance of that given environment, whether through consideration of visible objects or invisible forces. These sensations trigger desire for intimate connection which invite the user to reflect in a more careful and sustained way on her own complex relationship to that place

[243] See "Interview with Robert Smithson for the Archives of American Art/ Smithsonian Institution," July 14, 1972, http://www.robertsmithson.com/essays/interviews.htm. Robert Smithson notes that he may in fact be descended from the Smithsonian founder; Jennifer Roberts, *Mirror Travels: Robert Smithson and History* (New Haven: Yale University Press, 2004), 86–113.
[244] Roberts, 101.
[245] Roberts, 110–111.
[246] Ross, 106.

in which she is briefly enmeshed. Acts of memory take shape not as some retrospective projection into a separate past, then, but through sustained corporeal meditation on the sensible substances of a particular, experiential present.

Pandemonium continued these efforts by Cardiff and Miller to create an experience of feeling *so* close to someone else, "that you're really there." Its live, sonic assault absorbed the percipient's body in an intimate encounter with Eastern State Penitentiary's physical environment, replete as it was with historical materials that were also concretely of that place in the present. Cardiff and Miller used the conventions of programme music combined with the suggestive power of the Romantic ruin to reel percipients into an entertaining illusion that cellblock seven was haunted by ghosts who reenacted a fantastical version of their own histories. While the ghostly illusion was unconvincing, its intriguing mechanics sustained the percipient's attention. All the while, noise triggered forceful, sensory response until its sheer volume pulled the rug out from the illusion altogether, landing the percipient concretely in the here and now. At the same time, the artists loaded the composition with signifiers from the history of noise music. This spectrum of noise—alarmingly loud and whisperingly soft, harbinger of conflict and of congregation—penetrated the percipient's body, revealing it to be continuous with the cellblock's acoustical space and material history.

Conclusion: *Pandemonium*, Radical Proximity, and Protest

Pandemonium cannot be recovered through photographs, audio recordings, or even videos because it was not, as Motte-Haber wrote of sound art, "zum Hören und zum Sehen bestimmt"—not *only* meant to be heard and seen that is, but also meant for the percipient to feel, to touch, and be moved by. It afforded an intense, somatic experience.

Like Christoph Cox's characterization of the most significant sound artworks of the past five decades, *Pandemonium* was an, "[exploration] of the *materiality* of sound: its texture and temporal flow, its palpable effect on, and affection by the materials through and against which it [was] transmitted."[247] In Don Ihde's phenomenology of sound, the percipient apprehends space by listening within it. Hearing one object in Eastern State Penitentiary's cells strike another object revealed the shapes of both, their textures and compositions, the incidents of their surfaces, the hollow or solid characters of their interiors.[248] Their sounds made the space around them tangible and alive.[249] These sounds were concretely *of* the cellblock, so proximate as to be indistinguishable from that environment, which they revealed to be vibrant and effervescent, iterative and in process, rather than some pile of mute and static artifacts.

Sound scanned the cellblock and penetrated its contents, including human percipients. As Jim Drobnick puts it, "the act of listening . . . inevitably invokes corporeality, it envelops listeners, and . . . it resounds within the body."[250] *Pandemonium*'s sounds entered the body surreptitiously as tactile vibrations at the low end of the audible spectrum, so much so that during a rumbling *glissando* Sean Kelley asked himself, "Is this safe?" [251] Similar to the way Cardiff's walks produce virtual proximity with the artist's body, *Pandemonium* nurtured proximity between the

[247] Cox, "Beyond Representation," 148–149. Two invaluable online repositories of sound art recordings are: Monoskop, "Sound art," last modified Nov. 25, 2014, accessed Jan. 16, 2015, http://monoskop.org/Sound_art; and UbuWeb, "UbuWeb: Sound," accessed Oct. 30, 2014, http://www.ubu.com/sound.
[248] Don Ihde, *Listening and Voice: A Phenomenology of Sound* (Athens, OH: Ohio University Press, 1974), 60–70.
[249] Ihde, 71.
[250] Drobnick, 10.
[251] Andra McCartney, "Soundscape Works, Listening, and the Touch of Sound," in *Aural Cultures*, 179; Sean Kelley discussion and Torchia, 32n26.

percipient's body and the environment of cellblock seven itself. It was an experience of radical closeness, not merely 'near' documentary but evidence of being thoroughly enmeshed.[252]

Pandemonium invited the percipient's body to become the medium by which to experience Eastern State Penitentiary—"waking the dead" of real, traumas that "lie beyond the inscriptible."[253] It drew its evidence from the site's materiality, testing the theory of memory proposed by mathematician and philosopher Charles Babbage (1791–1871) in his 1837 *Ninth Bridgewater Treatise*: "The air itself is one vast library, on whose pages are for ever written all that man has ever said or woman whispered . . . perpetuating in the united movements of each particle, the testimony of man's changeful will."[254] *Pandemonium*'s treble and bass beater, like the high and low sounds of Cage's life systems in the anechoic chamber, sounded matter's refusal to give up moving and interacting. *Pandemonium* documented the inevitable failure of an effort like Eastern State Penitentiary to conform a sentient body to an abstract system that denies its sensuality and irreducible interdependence with the world.

Pandemonium did not limit this act of memory to the Philadelphia System's extraordinary years of silence and isolation. Like *Words Drawn in Water*, *Pandemonium* argued for a synchronic model of history, in which ". . . threads of time collide, cross and intertwine, looping back on themselves." [255] Its programmatic narrative ushered the listener through 1960s riots and 1970s neglect. Its noise-makers were nineteenth-century bedframes, twentieth-century toilets, and, to dramatic effect, Cold War-era steel drums.

[252] Drobnick, 10; Fraser, 101.
[253] Enwezor, "Documentary's Discursive Spaces," 15.
[254] Kahn, 211.
[255] Kahn, 108.

Its electronic actuator (MIDI system, cords, and solenoids) injected the piece with a dystopian science fiction aesthetic that nodded also to the future. At the same time, *Pandemonium* referenced its own, twenty-first-century noise culture. Its dance passages invoked the relentless, percussive techno that originated in Detroit around 1988 and warped its way through rave culture of the 1990s.[256] Berlin had become a world center for techno as it was for sound art, presenting days-long dance parties in massive, industrial buildings scaled similarly to cellblock seven **(Fig. 29)**. At the same time, Cardiff and Miller include *Pandemonium* in a suite of works with which they tried to respond to their experiences of reality during the presidency of George W. Bush (2001–2009) **(Figs. 30–32)**.[257] While they were conceptualizing *Pandemonium*, the United States military began its "shock-and-awe" campaign in Iraq. Images of torture at Abu Ghraib circulated in the news media. Reports emerged, just after *Pandemonium* opened, of the Israeli air force deploying "sound bombs" in the Gaza Strip.[258]

Pandemonium loaned shared space to this full range of noisy associations, signifying fear and pleasure, magnetizing arousal and violent aggression, ruthless domination and raucous insubordination, spiraling chaos and systematic discipline. It heightened percipients' awareness of their own sentient bodies in relation to a

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[256] Denise M.M. Dalphond, "Detroit Techno," Grove Music Online, Oxford University Press, accessed March 2, 2015, http://www.oxfordmusiconline.com.proxy-um.researchport.umd.edu/subscriber/article/grove/music/A2256341.

[257] HDK Interview, 40:00–44:44. These include *Feedback* (2005), *The Killing Machine* (2007), and *The Murder of Crows* (2008). In contrast, Cardiff made an effort to distance herself from politics in *Words Drawn in Water*: "The Mall was one of the most difficult and the most fascinating sites I've used . . . I have to say that doing a walk in the capital of America in this current political situation was antithetical to my creative process. I had to turn off my negative feelings about the Bush administration in order to produce the piece. It made me realize how difficult it is not to become political in Washington."

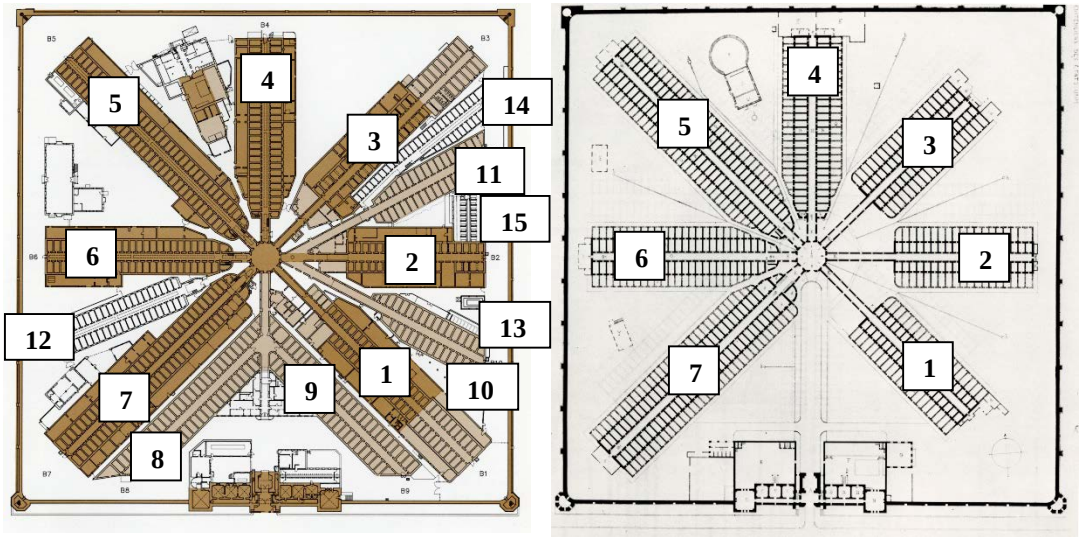
[258] Goodman, xiii. Sonic booms are the, "high-volume, deep-frequency effect of low-flying jets traveling faster than the speed of sound," with reported effects similar to, "the wall of air pressure generated by a massive explosion."

panopticon, symbol *par excellence* of the body's modern subjugation.[259] It affirmed the body's defiant relationality, its sensual, ecological interdependence and filled the space with audible allusions to reality's conflicted forces. It seemed to suggest that the history of Eastern State Penitentiary was neither remote nor resolved and delineated no single future for sensory relations. Inducing a charged, physical state, it invited the percipient to reflect, perhaps even to act, on her capacity to feel and to congregate. It made a compelling case that our bodies remained as entangled with systems of power in 2005 as they were in 1829 and that this condition could elicit, then as now, a spiraling array of potential responses. To make its case, *Pandemonium* harnessed sonic force, propelled by an onslaught of references to the defiantly meaningful and affective noises used both from the outside in to regiment bodies and from the inside out to motivate their transgression of systems that would deny their sensual interdependence. *Pandemonium* took an unequivocal stand against false claims that sounding bodies could be fixed, noises neutralized. Whether it spurred so active and pointed a corporeal meditation depended on the individual, but for all who witnessed it *Pandemonium* droned on, loop after loop, sounding its ecstatic protest.

[259] Foucault, 195–228.

Figures

Figure 1. Eastern State Penitentiary south wall and entrance seen across Fairmont Avenue. Photo by the author, August 2014.



Figures 2 and 3. (left) Plan of Eastern State Penitentiary existing structures as of 1993. Marianna Thomas Architects; (right) John Haviland's plan for Eastern State Penitentiary as constructed, 1837. Labels added by the author, April 2015. Courtesy of Eastern State Penitentiary Historic Site.

Figure 4. Cellblock seven from ground level. Photo by the author, August 2014.

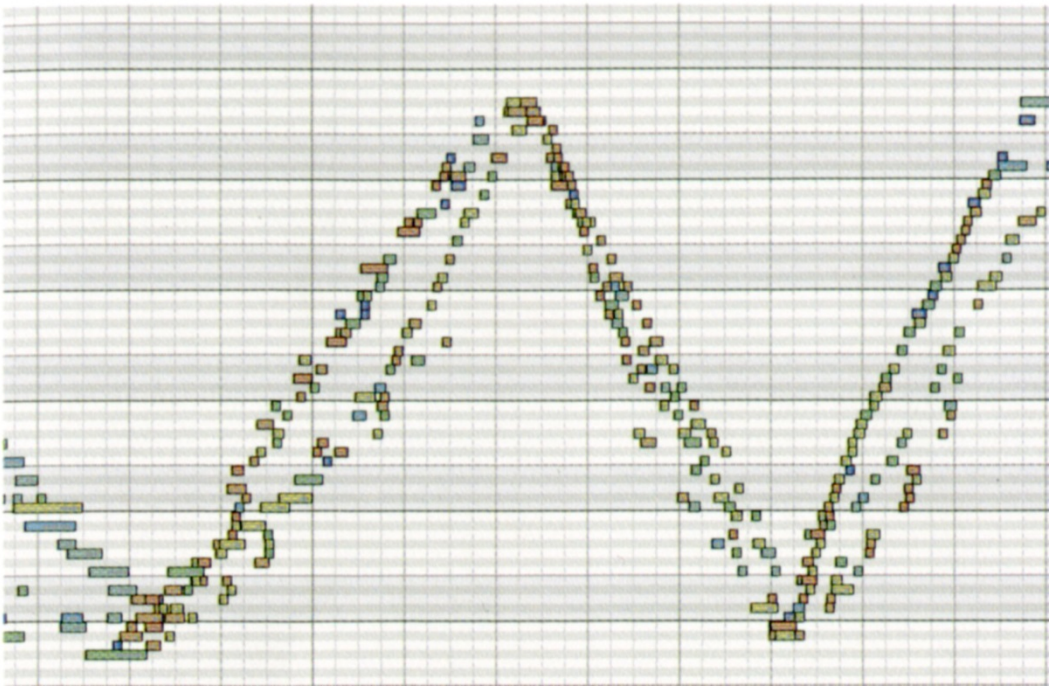

Figure 5. Cellblock seven skylight. Photo by the author, August 2014.

Figure 6. Cellblock seven from balcony. Photo by John Woodin, 2005. Courtesy of Eastern State Penitentiary Historic Site.

Figure 7. Cell interior in abandoned state. Photo by Albert Vecerka. Courtesy of Eastern State Penitentiary Historic Site.

Figure 8. Cell restored to 1830s appearance. Photo by Tom Berault, 2001. Courtesy of Eastern State Penitentiary Historic Site.

Time sequence →



Location of beater in cell along cellblock seven (upper and lower stories superimposed as two trajectories). →

Figure 9. Matrix editor view of *Pandemonium* score. Labels added by the author, April 2015.

Figure 10. Waveform view of *Pandemonium* recording in Adobe Audition.

Figure 11. Robotic beater in a cell, *Pandemonium*. Photo by Sean Kelley, 2005. Courtesy of Eastern State Penitentiary Historic Site.

Figures 12–13. Selection of *Pandemonium* beaters in situ. Photos by John Woodin, 2005. Courtesy of Eastern State Penitentiary Historic Site.

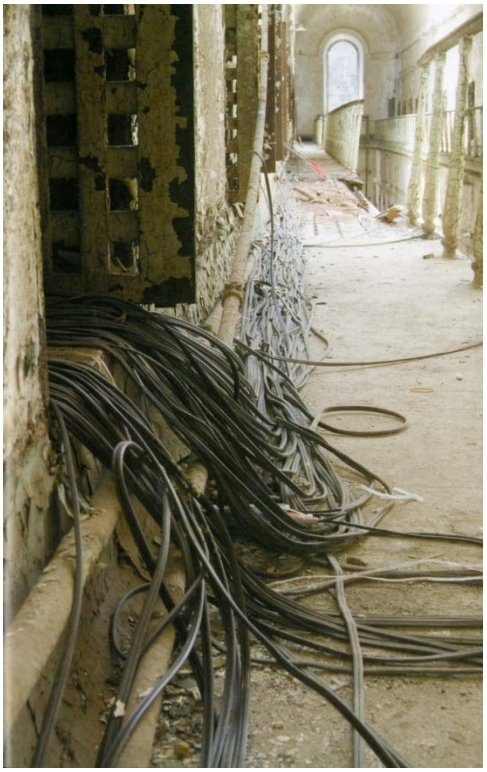


Figure 14. Control room containing MIDI system. Photo by John Woodin, 2005. Courtesy of Eastern State Penitentiary Historic Site.

Figure 15. Keyboard controllers. Photo by John Woodin, 2005. Courtesy of Eastern State Penitentiary Historic Site.

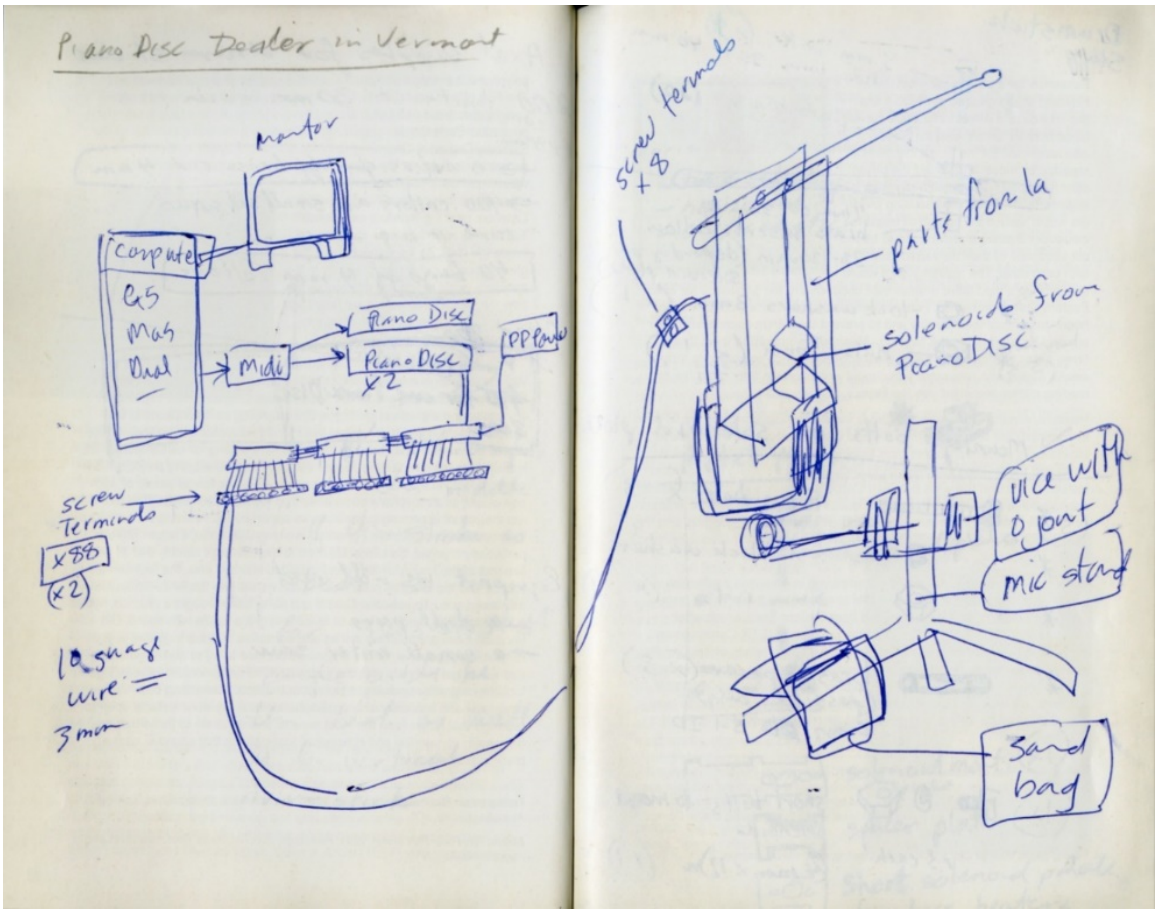


Figure 16. MIDI and beater diagram from George Bures Miller's notebook. Courtesy of Eastern State Penitentiary Historic Site.

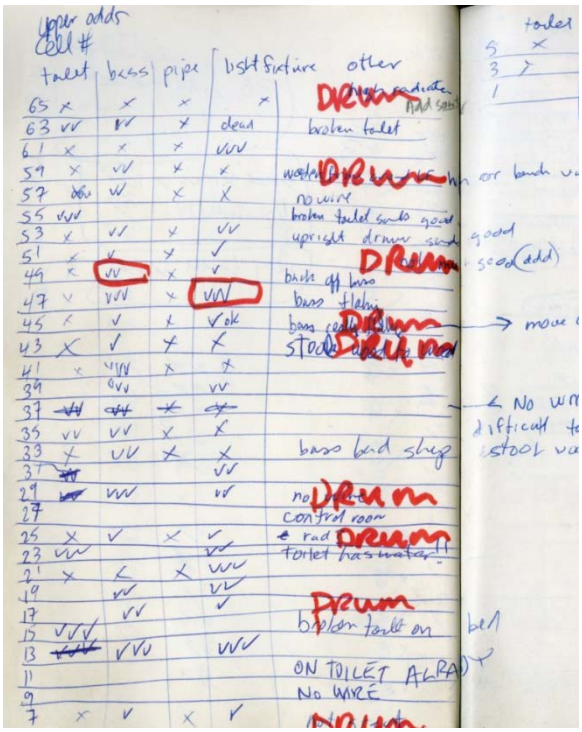


Figure 17. Inventory from George Bures Miller's notebook. Courtesy of Eastern State Penitentiary Historic Site.

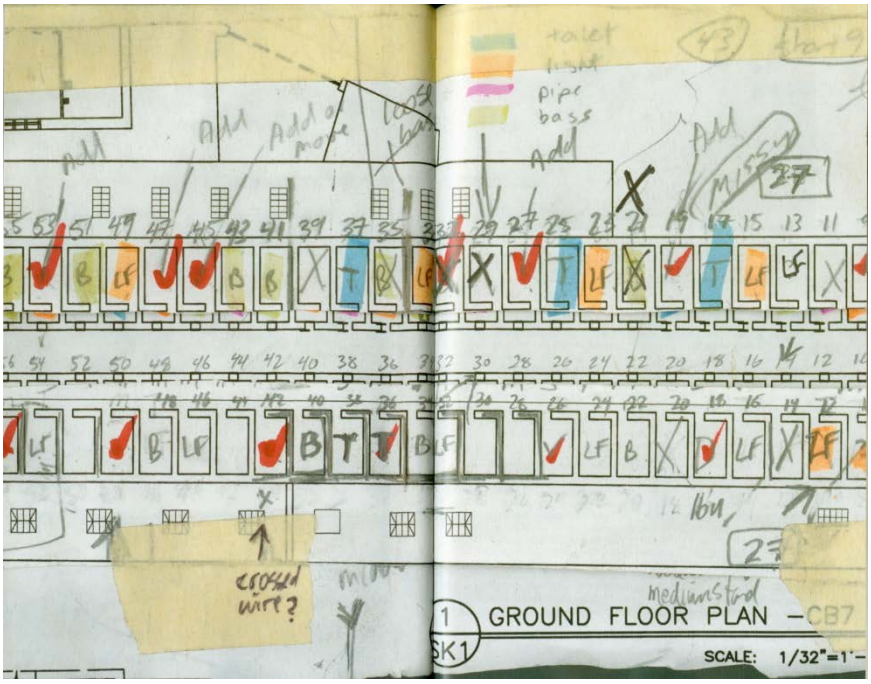


Figure 18. Layout from George Bures Miller's notebook. Courtesy of Eastern State Penitentiary Historic Site.

Figure 19–20. Janet Cardiff, *To Touch*, 1993. Wooden carpenter's table, electronic photo cells, 16 audio speakers. Dimensions: Table: 38.58 x 55.12 in., room size variable. Photo: Nancy Robinson Watson. © Janet Cardiff; Courtesy of the artist and Luhring Augustine, New York.

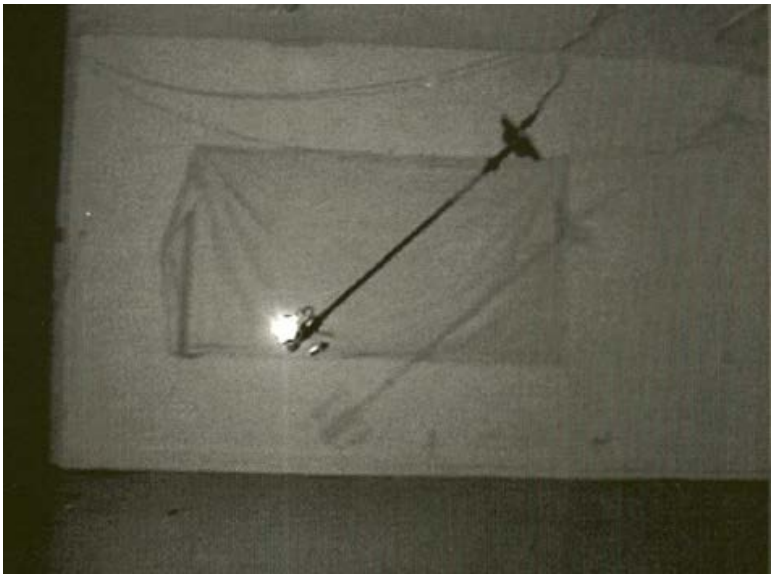
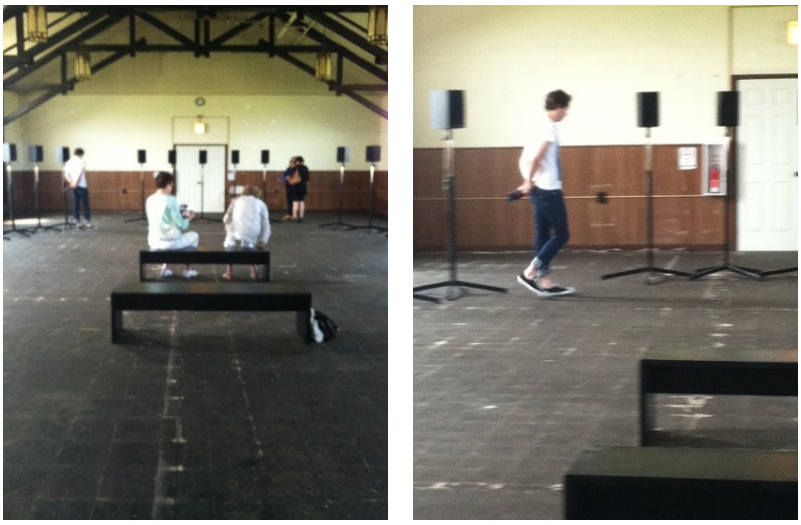


Figure 21. George Bures Miller, *Simple Experiments in Aerodynamics 6 (Escape Velocity)*, 1998. Mixed media with compressed air, pneumatic pistons, electronic circuit, lamp stand and light bulb. © George Bures Miller.



Figures 22–23. Janet Cardiff, *The Forty Part Motet*, 2001–ongoing. Multimedia installation exhibited at Fort Tilden's military chapel, Rockaway Beach as part of Rockaway! public arts festival, 2014. Collection of MoMA, New York. Photos by the author, August 2014.

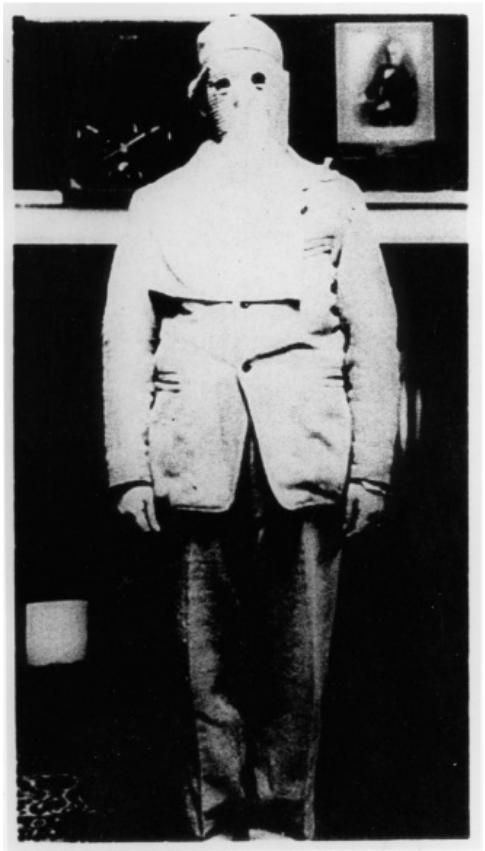


Figure 24. Masked prisoner in Eastern State Penitentiary, late 19th century. Courtesy of Eastern State Penitentiary Historic Site.

Figure 25. Jeff Wall, *A man with a rifle*, 2000. Transparency in lightbox, 88.98 x 113.78 in. Courtesy of the artist.


Figure 26. Jeff Wall, *Overpass*, 2001. Transparency in lightbox, 84.33 x 107.6 in. Courtesy of the artist.

Figure 27. Janet Cardiff and George Bures Miller recording audio for *Jena Walk (Memory Field)*, 2006. Photograph by Thomas Bernst. © Janet Cardiff and George Bures Miller; Courtesy of the artist and Luhring Augustine, New York.

Figure 28. William Harnett, *The Old Violin*, 1886. Oil on canvas, 38 x 23 5/8 in. National Gallery of Art, Washington, DC.

Figure 29. Tresor techno club and record label, Berlin, founded 1991 in the vaults of a former-East Berlin department store.

Figure 30. Janet Cardiff and George Bures Miller, *Feedback*, 2004. Guitar amplifier, wa wa pedal, electronic equipment. 42 in. x 29 ¾ in. x 14 in. Duration: 2.5 minute loop. © Janet Cardiff and George Bures Miller; Courtesy of the artist and Luhring Augustine, New York.

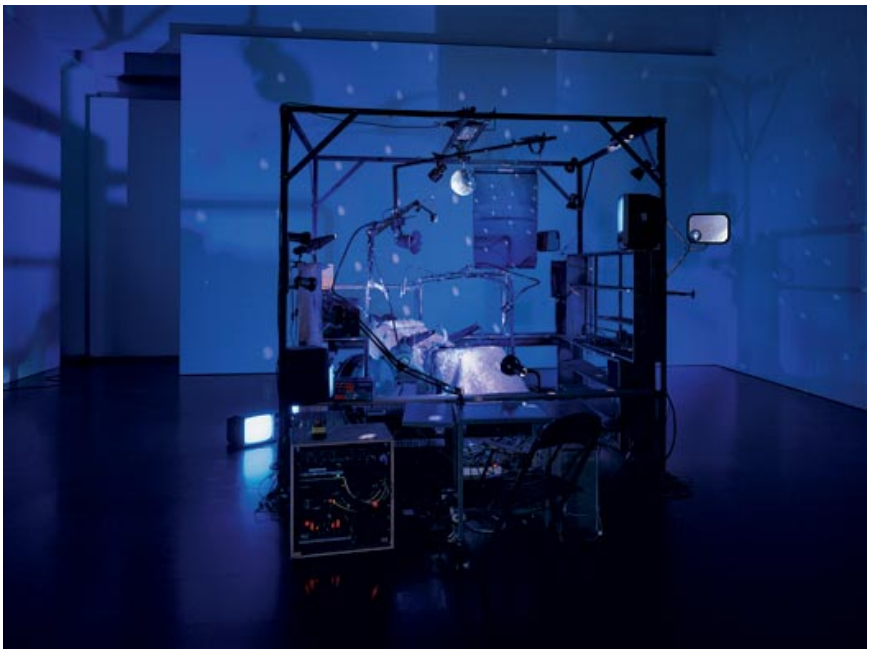


Figure 31. Janet Cardiff and George Bures Miller, *The Killing Machine*, 2007. Mixed media, audio installation, pneumatics, robotics. 7 ft. 10 in. x 13 ft. 1.5 in. x 8 ft. 2.5 in. Duration: 5 minutes. Photo by Seber Ugarte and Lorena López. © Janet Cardiff and George Bures Miller; Courtesy of the artist and Luhring Augustine, New York.

Figure 32. Janet Cardiff and George Bures Miller, *The Murder of Crows*, 2008. Mixed media installation, audio speakers, amplifiers, computer, electronics, miscellaneous media. Dimensions variable. Duration: 30 minutes. The installation was made possible with the generous support of Thyssen-Bornemisza Art Contemporary, Vienna, Freunde Guter Musik e.V. Berlin, The Canada Council, and Bowers and Wilkins Speakers. Installation view at the Nationalgalerie im Hamburger Bahnhof, Staatliche Museen zu Berlin. Photo by Roman Maerz. © Janet Cardiff and George Bures Miller; Courtesy of the artist and Luhring Augustine, New York.

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