DATs, MiniDiscs and The Self-idiomatic Archive
Michael T. Bullock

Abstract
The author discusses recent efforts to archive his personal catalog of live recordings on Digital Audio Tape (DAT) and MiniDisc and the challenges that arise in returning to these once popular, now defunct formats. The materialized history represented by the objects puts pressure on the memories of what they contain.


The Era: 1992–2005
The decade-plus in question covers two formative phases in my musical life, the first as an undergraduate at Princeton University (1992–1996). During this phase, I started approaching free improvisation with the encouragement of PhD candidate Curtis Bahn [2]. The DATs from this time represent exploratory work: jams, rehearsals and my first electronic composition.

The second phase (1996–2005) was a period of intense activity in electroacoustic improvised music in the Boston area, centered around—though not exclusive to—the Zeitgeist Gallery in Cambridge, MA. The electroacoustic improvised music of this second phase was the focus of my dissertation research, for which I coined the term self-idiomatic music [3]. Parts of this archive will be made available online as part of my ongoing book project The Kind of Music We Play, based on my dissertation work [4].

The Formats
DAT offered the elusive promise of “CD quality” in a compact, portable format. But DAT technology was fragile, and transfers to a computer could be problematic. MiniDisc offered a cheaper, more rugged alternative. The audio was compressed, but acceptably so. You could buy MDs at convenience stores, at a fraction of the cost of DATs ($2 vs. $10) [5].

There are likely shoeboxes full of MiniDiscs in the closets of improvisers everywhere. The MiniDisc serves as a time capsule of that era; the small, dependable devices were popular among DIY musicians. I hope this archive encourages more self-idiomatic musicians to dust off those shoeboxes and revisit the roots of modern improvisation [6].

Results
Most of the recordings are live performances of self-idiomatic improvised music, generally involving groups of two to six musicians. I approached these recordings with a mixture of excitement from the positive memories of these times and dread that some memories would not hold up to scrutiny.

What did I expect to find, beyond the music itself? For live recordings, details about venues: the ambient sound quality, the approximate number of people in attendance, their mood and receptivity. Audiences for self-idiomatic music during this period tended to be small and tight-knit; even when visiting a new city, performers could expect a warm welcome, with little expectation of having to prove oneself to an audience who, through Internet exposure, was already primed to listen.

Transfer and review of all the MDs in my possession was completed on 27 March 2017. Certain patterns emerged: Some musicians and groups were represented many times, while others were hardly represented at all. For example, The BSC—an eight-piece ensemble, active since 2000, on which I have written extensively in the past [7]—is nonexistent in my
archive. This is because that group’s founder, Bhob Rainey, brought his own MiniDisc recorder to our performances, filling his own shoeboxes with MDs. Musicians underrepresented in my collection include vocalist Liz Tonne, thereminist James Coleman and guitarist Chris Cooper. But other musicians from the community are heavily represented: for example, cellist Vic Rawlings, trumpeter Greg Kelley, tapes player Howard Stelzer, saxophonist David Gross, trombonist Tucker Dulin and bassist/vocalist Seth Cluett. I toured the U.S. extensively with these musicians; thus many of these MDs were recorded outside of Boston. My archive, which I had considered a document of Boston improvisation, is just as much a document of its dissemination to other DIY scenes in Baltimore, Wichita, Chicago and Salt Lake City.

Approaching these recordings anew has led me to ask questions about memory as it relates to music performance and the history of a community. A recording—especially a piece of removable, discreet media—can evoke memories by its presence, but the memories evoked don’t always align with the medium’s memory that materializes upon playback. How do the memories of musical experimentation compare to my current musical life? Was I more willing to take chances then, or do I feel freer now? Economic realities have little direct impact on self-idiomatic music, but plenty of indirect impact; venues open and close on the whims of the real estate market, and short-lived concert series move from galleries to living rooms to warehouses. There is little outside pressure on the artist to play it safe; rather the pressure can come from the medium’s memory that materializes upon playback. How do the memories of musical experimentation compare to my current musical life? Was I more willing to take chances then, or do I feel freer now? Economic realities have little direct impact on self-idiomatic music, but plenty of indirect impact; venues open and close on the whims of the real estate market, and short-lived concert series move from galleries to living rooms to warehouses. There is little outside pressure on the artist to play it safe; rather the pressure can come from the memories themselves, the little plastic boxes sitting unheard for years. A decade or more of experience helps me to hear what parts of this music are still fresh, to let go of the parts that are stale, and to put the music in its place so the pressure of history can turn into the resource of memory.

References and Notes

1 Michael T. Bullock, “Self-Idiomatic Music: An Introduction,” Leonardo 43, No. 2 (141–144). A term coined by the author to encompass individual and community approaches to experimental improvised music, to replace or supplement older terms including non-idiomatic and free improvisation.


3 See Bullock [1].


5 When Zooms and similar devices hit the market in the mid-2000s, DATs and MiniDiscs were quickly forgotten by many musicians. My portable DAT and MD recorders both died young, victims of overuse and the fragility of moving parts.

6 This process is also in response to conversations with librarian Alyssa Pacy of the Cambridge, MA Public Library. Pacy is currently developing an online archive of improvised music created in that city, which started with the video tape collection of Joe Monteiro, a Boston-area improviser who began attending performances regularly around the turn of the 21st century. Monteiro would frequently bring his Digital 8mm camcorder to document a performance, later giving VHS copies to each musician. Alyssa Pacy and Joe Monteiro, email correspondence.


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SOUNDWALKING SALZBURG, FORTY YEARS LATER

Laura J. Cameron and Matt Rogalsky

ABSTRACT The authors follow a 1975 soundwalk through old Salzburg, Austria, forty years after its creation, reflecting on issues of sonic lasting, transience, accessibility and futurity.

Matt Rogalsky [in the entrance to St Peter’s cemetery, Salzburg, singing with machine drone sound]: “Here’s a nice little space! . . . hummmmm.”

Laura J. Cameron [reading from soundwalk map]: “. . . Only slightly marred by the fan noise as you enter, the place should be alive with birdsong . . .”

MR: “Slightly marred?! Please! That’s a lovely sound!”

Delight, frustration, incredulity—we felt all these things as we took instruction from a time capsule: a little hand-drawn map of the center of the Altstadt of Salzburg, Austria, crowded with notes. It explained when, where and why to be at each of seven locations during a tour of about an hour and a half, and provided suggestions of ways to be active, critical listeners and soundmakers in the old city.

This map would most likely be familiar to anyone connected with the practice of sonic exploration known as soundwalking. Developed in situ in 1975 by members of the World Soundscape Project (WSP: Howard Broomfield, Bruce Davis, Peter Huse, Jean Reed and R. Murray Schafer) with the cartography completed later by Wendy Pearce, this walk was first published in the 1977 WSP volume European Sound Diary [1]. The map is readily seen today in the online version of the Handbook for Acoustic Ecology edited by Barry Truax [2].

From the perspectives of our different areas of study—

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music and geography—we have been introducing students to soundwalking for a long time. We have favored a map-based approach, and we have presented the Salzburg Soundwalk time and time again as a nice example that students might emulate. We did this without ever having experienced the walk ourselves, of course.

In the summer of 2015, we found ourselves in Mozart’s city, visiting friends installing work at the Museum der Moderne. We had great fun on a sequence of stormy nights, looking out from the museum, which rides like a castle above the city, listening with our parabolic microphone out into the storms and the streets of the Altstadt far below. On our last day in the city, we realized we had been teaching a guided tour of the 1975 Salzburg Soundwalk for years, and we were about to miss an opportunity to actually follow the map ourselves. We wondered, could it be done? In a place like the Altstadt, were heritage laws and sonic traditions such that the timings and instructions would still make sense? The starting point for the walk is still easily found: Mozart’s birthplace, at 5:40 p.m. But would we hear all the bells that are mentioned, some of which are sonic cues to keep the walk on schedule? Would we be able to enjoy finding an eigentön in the hallways of the Department of Philology? Would the windows on Kapitelgasse still be mysteriously buzzing, years later? We invite readers to follow along with us on our entire walk [3].

When we work with students on soundwalks, we emphasize the following: critical listening, with thought given to some terms from the WSP such as keynote sound, soundmark and sound signal; soundwalking as a compositional activity, involving sensitivity to things composers typically are concerned with—spectrum, dynamic range, contrasts, transitions; and, perhaps most important, the need for a soundwalk to be—like most scored compositions—reasonably repeatable (while recognizing that no element of a local soundscape is likely to have complete permanence). At the same time, we encourage wariness of moralistic noise/non-noise binaries and attunement to issues of accessibility and exclusion. What rules govern this soundscape? What is silenced? Who can participate? In the Salzburg map’s instructions we felt, for example, a tension between invitations to linger and listen and admonitions to hurry along. The soundwalk is carefully timed and the old city might contain physical obstacles for people less mobile than ourselves.

The fact that some sounds will change gives additional depth to a soundwalk: What will future listeners experience when they return in our footsteps? Soundwalks record specific political and sonic geographies. And yet, in this epoch of the Anthropocene, the idea of sonic lasting, and the ethical demand for long-term thinking, creates new considerations. If we were to create a soundwalk to last 50, 100, 1000 years, what would it include? Which keynote sounds and soundmarks would we privilege, and what vision of futurity would be imagined? The makers of the Salzburg Soundwalk, implicitly criticizing the sonic outcomes of the Industrial Revolution, did not foresee that forty years later the noisy fan they derided would provide us such sonic delights. And moving from the gentle drones of the entranceway into the cemetery, what far-reaching soundwalking commitments are entailed in ensuring that it will continue to be as “alive with birdsong” as it was in 2015?

Acknowledgments

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References and Notes

3 Our Salzburg Soundwalk can be freely downloaded here, including a photo album: <https://mattrogalsky.bandcamp.com/album/salzburg-soundwalk-1975-2015>.


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CORPOSING A HISTORY OF ELECTRONIC MUSIC

Nick Collins

ABSTRACT A current research project led by the author has collated nearly 2,000 historic electronic music works for the purposes of musicology; nonetheless, this collection is highly amenable to composition. New pieces can be realized by rendering a selected chronology of electronic music history. The context is a wider field of compositional endeavor in “corposition” over large audio databases especially opened up by new research in music information retrieval.

The neologism corposition is a portmanteau of “corpus” and “composition” indicating musical works that exploit a large collection of music files. Corposition has precedents in the audio database searching of concatenative synthesis [1], in example sets of a given musical style in algorithmic composition [2] and in sample libraries and plunderphonics, including mashups [3]. Prototype corpositions might include electroacoustic works founded on multiple sources, such as Daphne Oram’s Pulse Persephone (1965), a compilation of sounds from Commonwealth countries, or Karlheinz Stockhausen’s Telemusik (1966), which ring-modulates together musics from around the world. On a different scale

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Mass analysis of audio files has been heavily investigated in recent decades in the field of music information retrieval (MIR), and music based on MIR methods might alternatively be called MIRsic; in homage to the notion of big data, the term “big music” has also been applied [7] (one hopes that this doesn’t belittle all non-big music). I called more than ten years ago [8] for composers to protest automatic genre recognition systems by such techniques as deliberately interlinking supposedly distant genres or flooding markets with mass-generated musical outputs with awkward metadata labeling and nonstandard content. Active engagement by composers with the technologies of MIR has much continuing potential, where large corpora not only can provide raw sample material but also can be automatically analyzed to inform compositional decision-making over sources; additionally, the metadata, such as year of composition, can help to govern the structure of a final work.

A recent project on which I am principal investigator (“Large-scale corpus analysis of historical electronic music using MIR tools,” funded by the Arts and Humanities Research Council) has seen the compilation of 1,878 works of historic electronic music circa 1950–1999 for musicology [9], but such a database can also be used in musical creation. Rather than presenting the “history” of electronic music, my compositions described here sonify a single possible trajectory amongst many, providing a snapshot of the works gathered, their changing timbres and technologies over time, and the biases of the curators.

A two-minute-long 16-channel electroacoustic tape piece was first premiered in June 2015, using a provisional 1,000-work subset of the final corpus. A progression from 1950 to 1999 at one second per year was formed from short extracts of corpus pieces; the unequal holdings over the chronology led to different densities of material around the 16 channels. After a silence for reflection, the piece regressed in time the opposite way, this time with works overlapping each other as they survived for a few seconds following spatial arcs through the room. Finally, after another pause, the piece returned to 1999, this time traveling 50 years in one second.

The concept permits multiple realizations; since the actual composition code is generative, rather than “a history” it might be more pertinent to speak of “histories,” as the weights of individual pieces are shifted within each mix. My more recently rendered one-second version, “50 Years of Electronic Music in One Second,” was premiered for the second Leap Second festival (archived online [10]). Such a one-second viewpoint is the inverse of a work like Trevor Wishart’s *Imago* (2002), which creates a 25-minute work from a single clink of wine glasses; here a week of audio is used to render a highly time-compressed output.

To accompany the completion of the research database and this article, a final cut is available [11].

Corposition gives an explicit route for a composer to reveal a relationship with the past. Successive layers of precedent and influence can be peeled back as historic time becomes a compositional parameter, or alternative nonchronological routes can be explored based on extracted audio features and associated metadata.

### References and Notes


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**LOOP**

A Circular Ferric Memory in Slow Decline

Mat Dalgleish

**Abstract** The author describes the manipulation of time and memory in his work **LOOP**, a tape-based sound installation started in 2004.

Many of my artworks are hybrid assemblages of obsolete and contemporary technology. The use of the obsolete is most immediately apparent in my work **LOOP**, a long-running (2004–present) sound installation that I built out of a Fostex X-34 four-track recorder and C90 cassette tape. The Fostex X-34 is in many ways unexceptional: Its sound and build quality are adequate at best. Indeed, most notable is perhaps that, by the time of its release in April 2000, it was arguably already rendered obsolete by the rise of MiniDisc recorders and audio-capable home computers. Nevertheless, the X-34 fit the modest budget of a Birmingham schoolboy, and I acquired a lightly used and moderately discounted ex-demo unit about three months after its launch. The accessibility of the cassette tape was also key: While its popularity had significantly diminished after its late 1980s peak, blank tapes remained readily available locally.

After around 15 months of recording mainly guitar-led song demos, I moved to a computer DAW, and the four-track sat unused until Christmas 2003. However, for an undergraduate sculpture student at Northumbria University with an increasingly “digital” arts curriculum (Photoshop, video production, etc.), the materiality and hands-on physicality of the cassette tape offered an antidote to the bland sterility of the computer lab. In this sense, my work bears similarities to work by John Richards [1]. The basis of the cassette tape’s appeal was twofold. One, if the cassette tape had once been simultaneously useful and (subject to its contents) relatively valuable, it had become, for the majority of people and for most purposes, worthless and throwaway. These qualities enabled the kind of perilous experimentation that would have been far less permissible with a more precious technology. Two, no longer required to perform the function intended by Phillips in 1962 and therefore unshackled from its prior sociocultural weight, its possibilities appeared unbounded and ripe for radical reimagining.

**LOOP** relies on modification to both the four-track recorder and the C90 cassette tape. More specifically, I sliced open the side of the recorder and removed part of the plastic case of the cassette (Fig. 1). This enables the tape to be teased out and passed approximately 100 feet around a series of homemade rollers mounted on steel structures positioned around the gallery space. The tape was then cut and spliced in a circular loop.

The ambient sound of the gallery space is captured via the four-track’s inbuilt microphone and recorded onto the cassette tape. The recorded section of tape does not immediately pass over the playback head; sounds are not heard until the tape has completed its circuit around the steel structures in the gallery (Fig. 2), resulting in a temporal delay of around two minutes.

Time and memory are manipulated at multiple levels that correspond to minutes, days and years. Firstly, the environment’s very recent audible past is constantly folded back into itself, much like William S. Burroughs’s aural “poisoning” of London’s Moka Bar [2]. One of the most prominent effects is that, as sounds reappear, their spatiality can become rearranged and unfamiliar; the phantom can be spatially separated from its source. Another prominent effect is that the proximity of the installation’s loudspeakers to the microphone results in sound playback being recaptured and rerecorded (i.e. an acoustic feedback loop). As with Alvin Lucier’s *I Am Sitting in a Room* [3], the intelligibility of the tape with each recirculation is progressively eroded by the cumulative effect of architectural acoustics and technological mediation. Second, although the same length of tape is rewritten over and over, this circular memory is never totally or pristinely erased. Traces of the past slowly accumulate, their layers collapsed into a condensed document of a specific space and period of time. Third, the **LOOP** installation has, to date, had five iterations over the last twelve years, its physical form changing (to some

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to explore emergent devolution.

utilizing "the largest feedback loop in the world," the Internet Audio Cyclotron, or IAC, is an information destruction system and a de novo musical instrument, conceived and designed by the authors to subvert the functionality of networks and compression algorithms (technologies normally used for storage, reproduction or dissemination). The IAC considers the ideas of Metzger, Attali and Lucier [1–3], among others, pertaining to memory and repetition, auto-destructive art and nonlinear, generative creation.

The performer introduces seed audio into the system, which is encoded using a compression algorithm. The encoded signal is then transmitted, via the Internet, to a distribution server and streamed to listeners. An instance of this decoded audio stream is reintroduced into the encoder. Interaction with the signal, via mixer interventions and the introduction of further seed audio, forms the performative element of the instrument. Each cycle alters the seed sound and introduces a matrix of delays, compounded and layered, with each subsequent round.

Repetition, time lag, compression artifacts and introduced noise become integral to the mastery of the IAC "instrument." Understanding how these parameters interact fosters a connection between the musician and the system. As a means of performance and composition, the IAC offers a method for the creation of dynamic indeterminacy. Chafe writes that "path delays themselves can . . . be used to constitute network sound objects. . . . Recirculating echoes are used to create instrument tones. . . . One can, in fact, ‘play the network’” [4]. The simplest seed can take on a life of its own, conjuring up sheer glee in the musician sending motifs through the global networks, to be returned evermore destroyed and recycled, scrambled, altered and reinvigorated, spurring new inputs and interactions.

The choice of the MP3 codec (encoder/decoder) is deliberate, although the use of other algorithms (such as AAC or Ogg Vorbis) is possible. The MP3 system is, as Sterne [5] writes, "tuned to . . . the hierarchy of taste cultures that are still so central to medium aesthetics." It is salient to note that "no gongs, no distorted guitars, no polyrhythms or backbeats were used in the original tests" carried out by "earwitnesses" during the development of the codec. Mono-cultural perception, and the subjective definition of what can be acceptably compressed, is digital hegemony, and it is this hegemony that we knowingly subvert or undermine with our performance(s), by aiming to reframe these "earwitness" decisions in the context of noise rather than that of reproduction.

Aurosion: Eroding Sonic Landscapes with the Internet Audio Cyclotron [6] was a collaborative, long-form studio performance by the authors, broadcast on 6 June 2016 by the radio station ResonanceExtra, in Brighton, U.K. The piece, whose seed material consisted of field recordings from locales as diverse as the laboratory and a tropical mangrove forest, lasted six hours and utilized an IAC configuration spanning 15,000 kilometers (from London to Dallas, Texas). The piece was loosely divided into ten sections, each with collections of samples from specific locales. Each piece was gradually seeded, then "played" until artifacts emerged to shape the piece, before decaying naturally.

During Aurosion, many noise artifacts were introduced, both algorithmic and artist generated, resulting in an un-repeatable microstructure, with elements distinct from the seed sounds, and which became more prominent over time. For example, in the section "River," emergent sounds were reminiscent of a heavy body being dragged along the ground, or perhaps a hydrophone sunk deep into a stagnant
pool of water. In the section “Devon” the output became pre-Anthropocenec, Jurassic, larval; a devolution of signal, a regression in time, winding back the code.

Summary
The IAC can be seen as an act of organic rebellion against the tyranny of the algorithm. However, as Metzger states, auto-destructive art is “not interested in ruins, (the picturesque)” [7]. The point of the process is to demonstrate other possibilities: Cumulative audio seeds and mixing interventions create mutable sonic landscapes with prehistoric or unworldly atmospheres. By the end of an IAC piece, an infinitesimal fraction of the original signal remains, the vast majority having been discarded by the encoding algorithm, but cumulations of compensations for data loss create new signal. The IAC, in practice, presents the artist with both a method for the destruction of audio and, simultaneously, a method of creation.

References and Notes
7 See Metzger [1] p. 64.

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ENVIRONMENTAL HISTORIES AND PERSONAL MEMORY
Collaborative Works in Sonification and Virtual Reality
Richard Graham

This short paper will present an overview of two historical data projects developed at the Sensory Computation/Experimental Narrative Environments Lab at Stevens Institute of Technology between 2015–2017. The first project focuses on the sonification of environmental data derived from a ubiquitous sensing network embedded in Tidmarsh Living Observatory in Plymouth, Massachusetts. The second project presented in this short paper explores a history of instrument gesture data as a basis for interactivity in a virtual scene. This short statement discusses these two projects and their creative implications.

Sonifying Tidmarsh (2015)
Tidmarsh Farms is the combination of two cranberry farms, established in 1982, based in Plymouth, Massachusetts. Currently, both locations are undergoing restoration in order to preserve the wetland corridor. These wetland restoration projects protect and improve marshes, allowing their natural functions to be reclaimed. The Living Observatory aims to provide a better understanding of “ecological processes, human lifestyle choices, and climate change adaption” [1]. Sensor nodes developed by the Responsive Environment Group (ResEnv) at the MIT Media Lab are embedded throughout the marsh in order to record how the marsh is responding to the restoration process. Sensor nodes capture environmental data such as barometric pressure, humidity and soil moisture. The goal of this project was to explore and extend typical approaches to sonification [2], specifically parameter mapping sonification, as a basis for audio effects processing. In this case, parameter-mapping sonification (PMSon) refers to a series of one-to-one mappings where changes in sound structure are informed by contours of a dataset.

As a creative tool, data sets were used to sculpt timbres, textures and spaces in the resulting music. The Chain Pow library for Max/MSP [3] allows any user to request sensor node data from any historical period dating back to the initial sensor installation. In this presentation (Fig. 1), historical data for barometric pressure, humidity and luminance for a 24-hour period (April 4–5, 2015) controlled the playback speed, direction, grain size, amplitude and pan parameters of a granular synthesis system design in the visual programming language Max/MSP. Fundamentally, the contours of the sensor data were superimposed onto sounds generated by a musical instrument. Repeating cycles of data provided the necessary conditions to parse underlying environmental processes by taking into account the cognitive load of the

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listener [4]. These repeating historical strata may also reveal significant environmental correlations. The resulting fixed-media composition for six loudspeakers was presented at an MIT Media Lab members’ meeting in October 2015 [5,6].

**Disrupt/Construct (2017)**

Memory is malleable. Whether intentionally or otherwise, human beings have a tendency to misremember parts of their personal histories. Misremembering may provide the means to manage a troubled past—a method of self-preservation—an escape from prior traumatic events. Accepted personal narratives may not necessarily be representative of the truth even though they may be based on factually accurate information or what an actor may presume to be the case [7].

**Disrupt/Construct** (Fig. 2) is a collaborative piece by Richard Graham and Christopher Manzione regarding the origin of object and place. An improvising musician and a visual artist, equipped with virtual reality headset and hand controllers, explore assumptions about personal memory and the disruption of automatic trust in paramnesia. A history of the musician’s instrumental gesture data is recorded and mapped to determine a variety of interactions between sounds and objects within a complex virtual scene. Each scene is composed of landscapes that are meaningful to the performers (Fig. 3). The visual artist has a degree of control over the unfolding virtual environment through a motion tracking system, which allows a performer to use virtual objects to trigger audio samples within a superimposed timbre space. The audience views a video projection of the first-person camera within the virtual environment in addition to viewing the performers in the physical performance space. Textures and meshes within the VR environment are representative of objects and places from the performer’s past. As a result, the performer is effectively mixing images and sounds from different personal experiences and producing unique historical amalgams. These new events create a historical confusion necessary to disrupt assumptions held by the performer about their past, which may be extended into assumptions about musical vocabulary used in creative practice.

This VR-based music performance aims to explore how one can forge relationships in a performed ecology by extrapolating a representation of its past, present and future in VR. As Schacter states, “Memory is inherently constructive . . . we remember by rebuilding the past from bits and pieces—and the same ability helps us imagine the future” [8]. Furthermore, the piece explores where the music performer may be situated along the “virtuality continuum” as presented by Milgram in 1994 [9]. This piece premiered at Stengade in Copenhagen as part of the New Interfaces for Musical Expression (NIME) conference in May 2017 [10]. Future versions of this work will allow direct physical interaction with past, present and future musical events through a more refined timbre feature extraction and motion tracking performance system [11].

**References and Notes**

ABSTRACT The Piano Mill is a tower in the forest of New South Wales designed and purpose-built to house 16 reclaimed pianos. Architect Bruce Wolfe conceived it as a massive sound sculpture incorporating a steampunk look and nineteenth-century acoustical devices. To launch The Mill the author composed a new work, All’s grist that comes to the mill, that responds to the architecture, the natural environment and Australian colonial heritage.

A vast number of pianos in the homes of suburban, rural and outback Australia are decaying artifacts of the country’s colonial history. Whether the notion that Australia was once home to more pianos per capita than anywhere else in the world is fact or myth [1], the instrument clearly played a central role in constructing cultural identity by perpetuating a tangible link to Europe.

Architect Bruce Wolfe used the idea of reclaiming and repurposing unused pianos as the starting point for a bold new building-cum-musical instrument, The Piano Mill. The Mill is a copper-clad tower in the forest (Fig. 1) on a property near Stanthorpe, Queensland, designed and purpose-built to house 16 pianos. For the Easter 2016 launch of The Piano Mill, I composed a new work, titled All’s grist that comes to the mill, that responds to the architecture, the natural environment and Australian colonial heritage.

Fig. 1. The Piano Mill exterior. (© Erik Griswold)

Fig. 2. Cara Tran performs on one of The Mill’s antique pianos. (© Greg Harm)
ogy are both echoed in Bruce Wolfe’s minimalist steampunk design. From the beginning, he conceived the project not as a collection of individual pianos but as “forming a complex instrument in its own right... a building powered by sixteen pianos” [2]. Wolfe explains the evolution of the tower-like structure:

The idea was to have these pianos packed fairly densely into a space and the design result is something of a cube; a floor plate of about 4.5 meters square allows 2 standard size upright pianos against each external wall. Two stories height produces sixteen pianos [3].

Some elements of the design were conceived with special consideration of sound. Each external wall contains large vents running from top to bottom, which can be opened and closed during performance to alter the acoustics. An enormous set of five tuned grader blades hangs from the rafters, a rustic carillon played with hammers. Adding to the steampunk look of the building are two Dr. Seussian cop-per megaphones protruding from the building’s underbelly. Connected via large plumbing pipes to selected upstairs pianos, they act as sonic periscopes. Listeners can place their ears next to the megaphones to experience a decidedly 19th-century method of amplification (Fig. 3).

Presented with such an audacious new toy, I set about composing: brainstorming and testing musical concepts. Armed with a portable digital recorder, I climbed inside The Mill to play and record samples of various musical textures I had created, later assembling them digitally to model the sound of the 16 pianos played simultaneously. The piece that emerged took inspiration not only from the distinctive architecture and idiosyncratic qualities of the pianos but also from a range of historical piano sources and the natural environment. Avant-garde piano music is referenced in tributes to Conlon Nancarrow and Arnold Schoenberg. Birdsong, insect sounds and weather patterns are strong influences. The work includes mass forearm clusters, frantic black key glissandi and shimmering microtonal chords and arpeggios.

A pervasive sense of nostalgia is most apparent in the central interlude, entitled Three famous parlour themes, in which we hear Beethoven’s Für Elise, Chopin’s E minor prelude and Debussy’s Claire de lune resonating through the walls and wafting from the louvers of The Mill. Musical themes were divided into fragments and assigned to each of the 16 pianos. As the composition progresses through each famous strain phrase by phrase, microtonal differences among the pianos, decaying mechanisms, rotting felt, broken strings and stuck keys reveal surprising variations in the music. Complete but fractured renditions of the pieces leave us with a strange sense of dislocation and nostalgia. The depths and degrees of degradation wrought by time, environment or neglect are highlighted. There is a palpable sense of the land reclaiming the instruments and the fragility of cultural memory. At the premiere, this feeling was heightened by the ambient sounds of thunder, rain, crickets and croaking frogs.

References and Notes

3 Bruce Wolfe [2].

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FOLTO GIARDINO

Hybrid Cross-Pollination of Score, Performance, Installation and Technology

Jonathan Impett

ABSTRACT This article presents a series of works for chamber ensemble (incorporating both scored and improvised material), electronics and an installation of long strings. The folto giardino of the title [derived from Mozart/Da Ponte] is a listening, performing environment in which a dramaturgy of relationships, of knowing, hearing, understanding or ignoring, can be played out. Such an approach is offered as a way of thinking about form and material when dealing with the hybrid resources typical of contemporary musical work.

The paradigmatic contemporary sound work is a hybrid of notated, improvised, computational, electronic and installation components, with access to materials across time and geography. This presents challenges to the artist in terms of interrelating the natures of materials and representations; solutions bring significant implications for the conception, construction and performance of works. In a technological environment, questions of form (why what should happen when—including starting and stopping) and of the identity...
of the work are transformed. Presumably, such an identity and the key to decision-making are not located in a collage of instruments/objects/technology, a collection of text or data and a choreography of actions. Rather they inhere in the bounding relationship of these elements. In this essay I propose an approach based not on “content” but on hearing, remembering and cultural resonance. I explore this through a sequence of such hybrid works: Folto giardino.

The works described here—one a context, materials and dramaturgy for improvisation, the other a fully notated score—arise from three fundamental assumptions, responses to the above situation:

1. Musical phenomena can be viewed in terms of the distributedness of determination, of decision-making. Every musical event (improv to opera, experiment to extravagant) can be understood as the product of a series of decisions—actions facilitated and constrained by technology, technique, taste, imagination, context and habit. The map of such actions through time, through social and technological constructs, will be unique for each event, but the maps are commensurable. What is different in our contemporary technological context is the possible shape of such maps—the space of potential has evolved rapidly, but the concepts, models and discourse of music less so. The potential geographical, social and technological distribution of determining actions is vastly expanded—likewise the temporal scope: more access to the historical and local past, more decision-making brought into the precise conditions of the present.

2. Wave phenomena provide a natural model for time-based art, including sound. They can account for most “musical” or “generative” structures and can function on micro/timbral or macro/formal scales. A wave metaphor (for that’s what we’re dealing with) allows sound to be understood not in terms of objects but as an illuminating (enaudiating?) energy. It illuminates spaces, actions and events.

3. Theater—real or imagined—is a situation in which acoustic actions and memory, acoustic spaces and acoustic perceptions interact in the constructing of a form. The drama is a product of perceptions of those on stage modulating perceptions of the audience. As a well-tested model for consciousness, it affords abstraction, multiplicity and nonlinearity [1].

A folto giardino (dense garden) is the setting for the last act of Mozart’s Le Nozze di Figaro. Da Ponte’s stage directions in the score were the most detailed and complex to date (1786) [2]. However socially biting, his model is essentially that of farce: parallel locations, concealment, misrepresentation—a model of the mind, of the inseparability of knowledge and emotions. Mozart’s score provides another layer of commentary, of information and connections. At the same time, the knowledge of the audience is carefully managed. From this we can abstract an acoustic drama: Who knows what, hears what, remembers what?

An evolving map of spatial, listening and knowing relationships can be drawn. The configuration of hearing-spaces for the performers changes over time. Within these, not only do new networks of speaking and listening evolve but new “knowledge” is overheard or revealed. Importantly, a picture of prior knowledge emerges nonlinearly with the unfolding of the drama. The approach now becomes one of agent-based modeling. From this dynamical map, a set of virtual spaces is designed, populated by individual behaviors: physical, social, sonic, possibly rhythmic or pitched, and relationships that evolve with other individuals or groups. Some of these are realized electronically, but the principal behaviors are represented in parts for particular musicians. Notational lessons are learned from early opera aperta works (Pousseur), from Cardew, from Braxton, but important ideas derive from the dynamics of chamber music performance, with their fluid internal hierarchies and negotiations.

The dynamics of the works are determined by instructions to listen to or for certain sounds, to play in relation to others or to the physical installations in which the works are situated, or to remember moments from the performance or from the associations it invokes—including Mozart’s model. Different networks thus emerge across the performance. In addition to the sound processing—a parallel drama of which we hear the silhouette in the processed live sound—local acoustic environments are produced electronically; several of these may coexist, producing a pattern of micromodulation that may also impede or distort the performers’ perception. These spaces are constructed virtually and then populated by wave-emitting agents that can listen selectively and estimate their own contribution to a particular scenario; the drama plays out on a microlevel. Microacoustic phenomena—normally inaudible—are generated by simulating the room acoustic and fed back to the musicians electronically.

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Other "given" materials are produced by the same wave models and virtual spaces, their behaviors rendered and notated using OpenMusic.

A physical folto giardino mediates between the virtual and human actions. An installation of long wires of different metals and gauges (6–12 m of copper, brass and steel) stretches across the room and above both performers and audience. It is activated by transducers, fans and the actions of a percussionist, and listens through contact mics and laser reflection. It thus creates an active acoustic space, as well as a filtering feedback system on which the musicians can also perform. The live sounds are processed by a population of different kinds of filtering agents—an enveloping ecosystem of new voices. The behavior of these agents is directed by a wave model that derives its parameters from the live input; the environment and its inhabitants are coupled as a single system. Elements of the performers’ material, and ghosts of that from farther back in the compositional process, return in faint outline, filtered through the installation. They appear in developing conversations or subsequent scenes: things heard, or things previously heard, that condition the common present.

The garden itself is both acoustic environment and memory, bearing the traces of the events that take place within it. The physical memories of experienced performers interact with their digital counterparts; each has a different relationship with performance and historical time. Listening is contiguous with local and cultural memory: They involve rehearsal, reflection, reconstruction. To return to the theatrical metaphor, the scenography becomes the script.

Folto giardino I (Florence, 2016) (Fig. 1) is written for an improvising ensemble (electric violin, electric guitar, synth/electronics, piano) and solo percussionist, with computers, 4-channel sound diffusion and long string installation. The percussionist plays a vital role in mediating between the installation and the ensemble [3].

Folto giardino II (Hannover, 2017) develops the same basic materials in a fully notated score for woodwind trio, string quartet, keyboard, electric guitar and percussion, with the same installation and technology as before. Preceded by Boccherini’s string quintet Musica notturna delle strade di Madrid, echoes of that work are retained by the listening environment, his research with the role of technology between compositional thought, performative action and the listening environment, his research with the role of technology and educator. His music is largely concerned with the relationship between compositional thought, performative action and the listening environment, his research with the role of technology in contemporary and historical models of musical thought. He is Director of Research at the Orpheus Institute, Ghent, and associate professor at Middlesex University, London.

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SOUNDS OF WOW
Tape Composition and the Poetics of the Index
Joseph Kramer

ABSTRACT Sound artist Joseph Kramer discusses the function of indexical signs when working with magnetic tape and tape loops to elicit a nonsymbolic connection to the past. Compositional and technological strategies using custom devices to employ indexical signification are described.

I have been using magnetic tape in composition and performance for more than a decade, and many of the resulting works seem to conjure an acute feeling of memory, past or nostalgia—even when these notions are not explicit in a composition’s other formal elements. While there are multiple reasons for this, I am particularly interested here in the linguistic concept of the index. Through both intuition and explicit intention, I have employed indexical modes of signification to create work with a sense of direct physical connection to past moments.

The Index

The type of sign known as the index is distinct from an arbitrary symbol, like the letter “A,” or the pictographic representation of icons, in that the index’s relationship to its referent is the direct result of a physical interaction between the sign and the thing to which it refers. Footprints in the snow are an index of a creature’s movements, and a layer of dust may serve as an index of passing time. In the case of audio tape, sounds of wow, hiss and flutter serve as indexical marks of the recording’s production. While these sounds may also be conditions of playback, their presence points to the fact that the sound being heard is an artifact of the past.

The Modified Boombox

In 2003, I completed the first in a series of a signal processing devices that would become central to my practice. Its signal-delay system utilizes a dual-cassette boombox and two cassette shells, modified to pass tape from the record head to the playback head of the other well. Engaging both record and play transports allows the boombox to record a sound and play it back a few seconds later. The tape is...
The Index in Selected Works

Indexical signification appears in my first solo composition, *My Last Summer* (2004), which I created using transfers from my first modified boombox. Unlike digital delay effects, which repeat segments of audio but ultimately forget them upon power down, my dual cassette tapes preserve sounds until they are overwritten by subsequent recording passes. This work contains remnants of tests I made while developing the device in 2003, digitized a year later and used as raw material for this composition. Though many sounds were altered, the remaining effects of the tape mechanisms enhance the understanding of this work as a reflection on events from the past, independent of consideration of the rhythms, harmonies or other formal aspects of the composition.

Commissioned for the exhibition *Home: Public or Private?*, my piece *Porous Notion: Index Fragments and Interpretations* (2012) was presented as an installation and micro-radio broadcast in Chicago. This approach to self-portraiture incorporated a collection of tapes that I had been referring to as *The Imperfect Index*. Over several years, in several homes where I lived, I captured the sounds of my environment, letting the device record and play back loops as I watched the news, listened to music, read, etc. I collected the reels from these modified dual-cassettes into single shells to catalog each experience. The resulting work is a thirty-minute composition arranged as a picture of domestic life permeated by sonic and electromagnetic intrusion. Its primary features are the sounds of home, repeated and superimposed with electronic noise and acoustic feedback that lightly whistles and warbles as it interacts with itself, the space, mechanisms and circuitry. It is noisy and repetitive; the content recedes in the repetitions, emphasizing the surfaces of the sound and the timescale of the cycles. Focus shifts from the activity in the space to the effects of the recording itself, erasing the sounds of home and leaving the sonic surface to convey its ambivalent nostalgia.

*Epoxy* (2013) is a work that I created with Noé Cuéllar, my artistic partner in the duo Coppice. It is an arrangement of hard cuts transferred from tapes that had been in heavy use for rehearsals and performances. These tapes contained many layers of performances, interrupted and punctuated by transport clicks. *Epoxy* is the direct experience of those layers in time. While some material was omitted, what remains is the most explicit arrangement of indexical marks that we have attempted so far. It is the residue of moments, effectively uncomposed, to provide for enhanced reading of the logic of the mark. Another Coppice work, *Sop* (2013), a work that embodies a certain sinister nostalgia, employs a more integrated use of indexical meaning-making to render effects with ambivalent intention.

This indexical meaning-making, along with factors such as cassette tapes' widespread use for both the creation and consumption of audio recordings, the common perception of a sort of indefinable integrity of analog recordings, and the relative ease of making and manipulating tape loops has resulted in tapes possessing the potential to suggest a physical, nonsymbolic layer of meaning. Artists can access this potential to heighten the sense of the past, for better or for worse, through meaning-making that can be independent of the encoding and decoding processes of other formal musical elements.

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**JOSEPH KRAMER** is a sound artist who creates physical objects, devices, software, recordings and performances both solo and in collaboration, most notably as part of the duo Coppice. He currently teaches at the School of the Art Institute of Chicago in the department of Art and Technology Studies.

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**A WORK FOR THE JEWISH SOUL OF WARSAW, OLD AND NEW**

Lukas Ligeti

**ABSTRACT** In 2015, Lukas Ligeti created a site-specific, audience-interactive performance work while in residence at the Museum of the History of Polish Jews in Warsaw. Based on interviews with residents of Warsaw, the piece examined aural memories of Jewish life in the city, tracing the extermination and re-emergence of the Jewish community through speech and songs as well as creative musicians’ reimagining of these memories, with computer technology as a mediator.

In late 2014, I responded to a call for proposals for an artist residency at the Museum of the History of Polish Jews (POLIN) in Warsaw. Opened in 2013, POLIN is situated in the center of what was once the Warsaw Ghetto. I had never been to Poland, and never before addressed my own (Hungarian) Jewish heritage in my work. I proposed to create a piece, *That Which Has Remained . . . That Which Will Emerge . . .*, about aural memory and freely associative ideas inspired by these memories, and the way culture defies destruction in the face of oppression and genocide. My proposal was selected, and I spent four weeks in Warsaw in November 2015. The piece was premiered at POLIN; thereafter, though different in the studio environment without its audience-participatory aspect, it was recorded for future CD release.

The first step of my process was to interview people connected to Jewish life in Warsaw. The oldest, Holocaust survivor Henryk Prajs, is now one hundred years old and the oldest living Jew in Poland; the youngest was in her mid-twenties and, like many younger Poles, wasn’t certain whether she had any Jewish ancestry. In addition to talking and sharing thoughts, I asked my interviewees to sing...
from memory songs they related to the Jewish experience. I recorded the interviews with a handheld recorder. I then identified sections of the recordings that seemed musically interesting to me—melodies, vocal inflections, freely flowing speech. I invited five local creative musicians to help me realize and perform the piece: singer Barbara Majewska, clarinetist Pawel Szamburski, violinist Patryk Zakrocki, cellist Mikołaj Pałosz and drummer/synthesist Wojtek Kurek.

My composition employed a performance practice I have been developing since 1992, whereby musicians listen to information relayed to them via headphones. My first such piece, Groove Magic, premiered in 1993 by the London Sinfonietta, used the metronome-sequencing programPolyrhythm by Frank Baldé of STEIM in Amsterdam and featured eleven musicians listening to individual click tracks at different, strongly diverging speeds. The metronome sounds came from an Akai S-1000 sampler; each musician was connected to a different output of the sampler and an individual headphone amplifier, allowing for individual control of timbre and volume. Over the years, the equipment has obviously changed, but my overall approach has remained the same; however, I have investigated manifold compositional and improvisational possibilities of such scenarios with musicians ranging from free-improvisers to traditional West African instrumentalists. In Warsaw, I used Ableton Live software running on a MacBook Pro, an RME Fireface audio interface with individual outputs, and wireless headphones.

In performance, each musician listened to excerpts from the recorded interviews. I created a score (Fig. 1) to let musicians know approximately when they would hear what kind of sound, and what to do in response. Sometimes, I asked them to imitate the sung melodies they heard; at other times, to improvise based on the sounds or harmonies, or to replicate the rhythms of spoken language. Composers such as Steve Reich use recordings of speech flowing in rhythms that are easily notated, but my interest is in the irregularity and rhythmic jaggedness of spoken word. A musician who hears a spoken passage several times will have no problem duplicating its rhythm. At certain points, different musicians might listen to the same melodies or speech, but slightly staggered or at different pitches. This results in heterophonic structures, with similar melodies or rhythms occurring in different instruments at nearly, but not exactly, the same time.

I performed as well, using a Marimba Lumina, a MIDI controller designed by Donald Buchla. However, my contribution was often not directly audible to the audience. Rather, I fulfilled the role of a conductor, varying slightly what the musicians heard in their headphones (while remaining in accordance with the score) and pacing the progress of the piece, which contained ample space for improvisation. At times, I made some of the musicians’ headphone tracks audible to the audience via a PA system and mixed these sounds in various ways.

The performance took place in a large hall in the museum, with the musicians slightly dispersed. Those whose instruments did not anchor them to a specific location sometimes moved about the building while playing, entering spaces with different acoustical properties. Next to each musician’s “home base” was an extra pair of headphones playing the same sounds the corresponding musician was hearing; the audience was invited to pick up these headphones and sing along. Interviewees were especially encouraged to sing along to their recordings.

The result was an audience-interactive performance at the intersection between concert piece and sound installation. As the musicians familiarized themselves with the interviewees’ distant memories, new melodies were created, reminding faintly of the original but reappearing in a new form: a kind of musical meta-memory. The musicians played with each other, with the sounds in their headphones, with the audience and with the museum’s architecture. With the audience enthusiastically participating via the extra headphones, the atmosphere during the performance was intense, heavy and ecstatic at the same time, and provided multiple generations of Warsovians with a common vocabulary of memory and play.

**Lukas Ligeti** is a composer, drummer/percussionist and electronic musician whose music ranges from the fully scored to the free-improvised; intercultural collaboration is a special focus in his work. A recipient of the Alpert Award in Music, he serves on the faculty of the University of California, Irvine.

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Fig. 1. Page from the score for That Which Has Remained . . . That Which Will Emerge . . . (© Lukas Ligeti)
While writing this article, I found myself trying to remember a certain piece of experimental music. In this piece, the audience members—who became performers—were situated in a giant church. They all began singing their individual favorite songs simultaneously, creating a casual cacophony of choral sound. Asking close friends and colleagues to identify this piece based on my vague description yielded other half-rememberings (“Was it the piece when he/she sang pop songs near a statue?” “Was it John White’s Twin Reflections Machine?”). This experience exemplifies some of the complexity of locating the concept and action of memory in experimental music [1]. For example, memory can bind together experiences, descriptions, communities and sounds, and as a scored action it can tie together social recollection, inscription and forgetting. In my compositional practice I aim to embrace these tangled relationships and use memory as a productive and transformative process.

In 2013, I began an experiment called Memory Piece. In this work—more a framework—I asked five colleagues to mentally record the descriptions of speculative pieces we discussed in ongoing casual conversations, or transmissions. These pieces were usually short conceptual trifles, such as “an aria where the singer imagines tasting a six-course meal while he/she sings,” although they eventually grew more complex in form and content. As the number of pieces grew and questions about transmission arose, it became clear that without significant social infrastructure and monetary compensation the project could not continue.

Gradually I focused on creating one Memory Piece rather than an entire delivery system. In late 2013 I worked in collaboration with violinist Mira Benjamin to create a new piece called [factory] (2013–2014). [factory] began as a collection of 22 verbal (text) scores describing the auditory and conceptual workings of an imaginary factory. Benjamin and I decided that she would read the scores once and then discard them. Musicians would then “access” the scores through unrecorded conversations or temporary streaming audio files. The groups then convened to transmit information to each other, “participating in an oral and folkloric tradition without any sense of irony or flippancy” [3].

In these recent pieces, I explore memory in three interlinked ways:

1. **Memory at the point of access or transmission of the score.** In utilizing ephemeral transmissions, I have explored ways to render scores themselves living—alive in the essentialized participation of multiple collaborators. This has opened up many routes for investigation, including the density and frequency of transmission, the types of information delivered and the medium in which this information is transmitted. I have found that even when I promote more accurate memorization of instructions—spacing transmissions with silence, allowing ensemble members to engage with each other close to rehearsals and repeating information—there is still a higher degree of transience than a physical score allows. This transience results in a collective sense of ownership of instructions as well as a particular “live” quality in the ensuing performances of the work that I find highly desirable.

2. **The use of old or borrowed music as source material.** In using existing music as source material, I evoke memory by creating a dialogue between different musical eras. Lisa Colton and Martin Iddon detail multiple reasons why contemporary composers might borrow. Two of these resonate with my practice: The first is the use of borrowed material as a starting point for experimentation, and the second is to demonstrate or explore a relationship between the composer and the borrowed subject matter [4]. In engaging with the latter, I sonify a dialogue between current practice and historical material.

3. **Memory represented by transformations enacted on the musical material itself.** Finally, I enlist the help of multiple simple unfolding processes to evoke the transience of memory. For example, a melody might be repeated many times, each time slowing down, getting quieter, and/or with notes being replaced with silence. Layering these processes creates a piece that slowly unspools, the original melodies and harmonies only a fragment of (now collective) memory.

Eschewing written scores for ephemeral transmissions has completely changed my music. I no longer focus on the spatiotemporal position of specifically pitched gestures, as this is generally difficult to remember to a high degree of accuracy. Instead I have become more finely attuned to a piece’s...
social and collaborative dimensions, broader timbral mood and core musical identity. Memory—and ultimately forgetting—have become indispensable processes that permeate every level of my compositional practice.

References and Notes
1 Six months after writing the original text, I have identified this to be the piece Our Greatest Hits by Norwegian composer Stine Sarle.

ABSTRACT The author discusses her piece The Chinwag as sound art that has recorded memory and history, its impermanence and its relationship to digital memory and traditional music.

The Chinwag (2015) [1] is a piece for traditional Irish harp and electronics, based around a conversation between three elderly women in a house in rural Donegal, Ireland, in 2012. Over tea and currant bread, they discuss funerals, the rosebushes, emigration, picking blackcurrants and the secret to a long life.

The piece features harp improvisation and uses Max/MSP and motion sensor to control the sounding of short audio files edited from a recording of the conversation. Contact microphones filter the voices, tuning them to the notes of the harp and allowing them only to sound when the harp is played (Fig. 1). I aimed to create a relationship between the voices and the instrument, so that it would appear to draw them forth, molding their pitch and character. The voices are gradually heard unprocessed, accompanied by other layers of live electronics. The resultant sound is a merging of melodies and life stories—an impression of the chinwag rather than the privilege of the whole conversation.

Audio Memories, Audience Memories, Digital Memory
The voices of the women, their subject material, turns of phrase and, arguably, the way in which they chose to spend their afternoon, evokes a past. I tried to use their personal memories to prompt collective memories from the audience. Although the audience members are not privy to the full encounter, I noticed an advantage in the new context. A conversation can curtail the meandering of thoughts, by requiring continued attention to the person speaking. In the performance, solo listeners are free to follow where their thoughts want to go in the moment, along the lanes of their own memories. I wanted to allow the conversation to be heard through a veil in which private information is removed, but the listeners are provided with a rich planting ground for their own imaginations and connections.

The manipulation of memories, spoken and created, is a direct result of the technology and computer memory used: in recording, editing, buffering, recalling and processing. In a similar way to memories in our minds, the recordings wait, formed and dormant, in a buffer until called forward by a trigger, when they become vivid, real and unique to each person. Each time they are recalled, I imagine memories to be strengthened and distilled, and their existence thus prolonged. The computer prompts a different narrative than human minds may plot, and so I find it to be a useful tool for introducing unexpected directions for audience thought.

Memory and Technologized Aural Traditions
My background is in traditional Irish music, an aural tradition in which music is learned by ear, by imitation and by doing. Like many folk music traditions, it owes much to previous generations; it can be apprehensive of new influences [2]; and there have been efforts to preserve its repertoire and customs, often motivated by fears that they might be lost [3]. I can see the influence of this tradition on my compositions. For example, my repertoire is similarly memory dependent and potentially unstable. In time, this piece may prove more difficult to recall, in the sense of “summon up,” for performance. While the audio files can be stored permanently and will be recalled verbatim, the working of the software patch is not clearly annotated and is only stored in my memory. The method of interfacing with the computer, and the way in which I interact with it, are a result of decisions taken in composition, some of which have been forgotten. Changes in hardware and software along with an ambiguous patch and a lack of score means I could forget how to, or be unable to, perform the piece if enough time passes between performances. Like memories, the piece has uncertain permanency and is, like an improvisation, intangible. Nevertheless, I feel a little bit of resistance to the notation and documentation that might preserve the piece, which I believe stems from my loyalty to an aural tradition. It exists in memory.
To me, this is a piece of folk music. I am grateful to the people who have shared their stories and voices with me to enable me to make music. They are contributors to the work, and their input is responsible in part for any empathetic audience response. Despite the adoption of digital technology and experimental techniques, this work has much in common with Irish traditional music in its reliance on people, on history and on memory.

One performance of the piece can be watched at <https://vimeo.com/147473420>.

References and Notes

1. “Chinwag” is a colloquial term in Ireland and elsewhere, meaning an informal chat.


3. For example, the Belfast Harpers Assembly of 1792; the Irish Folklore Commission, established in 1935.

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