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From the Editor

It is with great honor that I take the baton from my predecessor Kristine H. Burns, who has done a fantastic job serving as Editor of Journal SEAMUS from 2005 to 2009. Her shoes will be, at best, very hard to fill, and I feel privileged to have the opportunity to serve as editor of the Journal. We are also excited to report two new Journal SEAMUS team members: Iroro Orife and Brent Reidy, who serve as Managing Editor and Assistant Editor for Publications respectively. Orife is a graduate from Carnegie Mellon University, has an advanced degree in electro-acoustic music from Dartmouth College, is currently a senior research engineer at Apple, and owns an independent record label in San Francisco. Brent Reidy comes to us from Indiana University where he is working towards his doctorate in musicology. He is also an arts consultant at AEA Consulting, a firm that focuses on facilities, operational, and strategic planning for public and private cultural organizations and their funders.

In this issue we have three articles, four reviews of events, three music reviews, and one publication review. Additionally, starting with this issue, we have included a new section called *Tips and Tricks*. This section features essays spotlighting the latest tips and tricks of the trade – tips/tricks for getting the most from software and hardware systems, exposing "secrets" in digital signal processing, presenting practical tutorials on miking techniques and mastering approaches, unique workarounds for problematic situations in Max/MSP and other software, and any topic that may help our readers learn a few things about the practice and theory of electro-acoustic music. Our inaugural *Tips and Tricks* article has been contributed by Tom Erbe.

Future plans will also include adding a section for our readers to voice their opinions and provide feedback on past and recent articles. We hope that you will find this issue of Journal SEAMUS interesting and valuable. As always, please feel free to contact our team for any questions, comments, and concerns. Enjoy!

Tae Hong Park, Editor

The Sound of Forgetting

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In *American Triptych* (1999), Trevor Wishart uses culturally charged sonic artifacts as compositional material. *Triptych* is part of Wishart's *Voiceprints* series in which he manipulates iconic vocal samples, enabling the listener to connect the modulated sounds to a network of meanings and relations, expanding the musical experience. For *Triptych*, Wishart uses three vocal samples that he considers emblematic of the United States' status as a global superpower in the 20th century: Martin Luther King's *I Have a Dream* speech, Elvis Presley's rhythmic vocalization (presumably from the 1968 *Comeback Special*), and the Apollo 11 moon landing transmission. These samples bring an initial layer of affective resonance to the piece simply through their recognizability as human voices; this resonance is further amplified by the culturally iconic nature of the three samples. The voices are manipulated in a clear yet destructive manner such that we can trace their movement from signal to noise, still able to recognize the traces of the original materials even after they have been reduced to synthesized tones.

In order to develop a better understanding of the many layers of *Triptych*, I will first analyze the musical structure without reference to the content of the samples before contending with the cultural and historical meaning invoked by Wishart's selections. This attempt at analytic dissection is admittedly somewhat dubious, given the composer's thorough integration of sound and meaning, form, and content. However, I believe that by first examining the structure and abstracted sonic content of *Triptych* we can develop a better understanding of how the cultural and semantic content of the original samples and their subsequent manipulations is woven into the music. In order to draw these two analytic approaches together, I will consider the overall conceptual structure of the piece as a dialog between signal and noise. This dialog takes several forms throughout the piece: as the relation between speech and vocal music, pattern and chaos, content and medium, distance and presence. The last two relations, being more conceptual in their connection to the signal/noise spectrum, will be further elucidated throughout the course of the analysis.

Musical Structure

This section will describe the piece in purely sonorous terms, establishing the pitch usage and time structure as a stable ground before expanding the overall analysis as the discussion moves into the more slippery realm of interpretation. I will specifically treat the issues of signal and noise as they relate to the treatment of the voice within the overall tonal and musical structure of the piece.

Triptych is fifteen minutes in duration and made from three processed vocal samples. While each initial sample is recognizable as a unique voice, Wishart establishes a distinct musical identity for each vocal recording by assigning characteristic transformations to each voice. These musical characteristics are

derived from the samples, playing with both the sonic peculiarities of the recordings and the content of the samples. The Martin Luther King sample is treated as a noisy attack followed by a long held tone, which is often detuned to create beating patterns. The held tone is sometimes broken up into a fast steady pulse as it decays. The Martin Luther King sample is based on a movement from F to E that is sometimes inverted to C# to D. The Elvis Presley sample provides a bridge between the elongated tonal world of the Martin Luther King sample and the noisy qualities of the lunar landing. The Elvis recording seems to be comprised of a passage of nonsense syllables, most distinctly "bao." Wishart treats this sound as a swarm of pitched noise that oscillates between distinct and indistinct rhythmic characteristics. The treatment of the Elvis sample results in a range of sounds from noisy and jumbled, to more clearly pitched with an appropriately dance-like pulse. The pitch of the Elvis sample is generally focused around C, C#, and D, but in its most danceable moments extends to D, E, and F. The Apollo 11 transmission provides a distinct high-pitched beep and a great deal of noise. Wishart's use of the lunar sample is similar to his use of the Martin Luther King recording in that the recognizable voice is used as an attack, but in the case of the Apollo recording the sustained sound is noise-based. This noise is derived from the broadcast artifacts of the transmission. At several moments throughout the piece, the Apollo noise is focused into bands of rising pitches. The beep is generally a high register D# around 2489 Hz, while the prosody of Neil Armstrong's voice joins the Elvis and King samples together spanning from C to F. In addition to the above treatments, Trevor Wishart makes extensive use of tuned filters to further emphasize the above pitches.

The overall pitch structure of the piece is focused on movement between F and C. The piece begins and ends on F, but C is always nearby. However, this movement between F and C only occasionally creates a cadence-based sensation. Most of the time the C and the F seem to function as limits for focusing the activity of the piece in a concentrated frequency band. This limited band provides a framework for connecting the three samples together through their pitch relations.

The temporal structure of the piece clearly divides into four sections. I have always admired Wishart's use of silence as punctuation, which he employs readily in this work. Even in the most dense and active moments he gives the listener time to breathe, a chance to digest what has just happened before diving back into an intense barrage of sound. The pauses offer very clear structural markers serving as moments of rest after which the focus is shifted either to different source material or a new treatment of the same material.

Section 1 - 0'00" to 4' 10"

This section introduces the Martin Luther King and Elvis materials, establishing the F and C pitch limits as well as the play between rapid swarms of attacks and sustained tones. In terms of the signal/noise continuum, section 1 establishes the tonal and rhythmic material of the piece, both pushing towards chaos. The first minute of section 1 establishes the characteristics of the Martin Luther King sample. The opening "let free" ends in a prolonged F with a slight trace of audible beating patterns. Subsequent iterations introduce a wider pitch range as well and foreshadow the upcoming pitch inversion. Just as the piece begins, we hear recognizable speech that is then electronically transformed into vocalise. This treatment sets up the limits of the signal-to-noise relationship in terms of

speech and music. Clearly-understandable speech exists on the signal end of the spectrum, while on the noise end the linguistic content is effaced, leaving digitally manipulated vocal tones. The Martin Luther King exposition ends with the sample prolonged into rhythmic chopping foreshadowing the rhythmic characteristics of the Elvis material.

At about 1'16" we are confronted with our first Elvis "explosion." The Elvis material at this point sounds as if it consists of just one short sample layered and pitch shifted into various densities from clear rhythms to sonic clouds. The Elvis sample is based on C# and D and the King sample is inverted to match the C# and D. The Elvis source material, already comprised of nonsense vocalization, creates a bridge between the recognizable speech and the digitally altered vocalizations of Martin Luther King.

Beginning at 1'40" Wishart introduces multi-octave sustained C attacks, firmly establishing the lower limit of the pitch range. The Martin Luther King samples are layered in the background, somewhat obscured by the activity of the Elvis samples. Every now and then Elvis drops out, reminding us that Martin Luther King is still present, beating away between F and E. The rest of the section continues in this way with continuous Martin Luther King tones obscured by bursts of Elvis noise samples. Both parts fade at 4'10" when the Martin Luther King samples resolve to E and Elvis settles on C.

Section 2 - 4'10" to 7'25"

Section 2 is constructed solely from the Apollo sample, introducing noise-based material that counters the more pitched material from section 1. Three characteristic noise types are introduced in section 2: loud bursts, soft static, and filtered noise with a rising cutoff frequency and a narrow bandwidth to create a sonic caricature of a rocket taking off. We also begin to hear detuned echoes and reverberations of the Apollo 11 broadcast that will play a significant role at the end of the piece. The Apollo 11 material contains a very distinctive high D# beep that Wishart plays with throughout the rest of the piece.

The first minute of this section has a slightly suspended tonality of C#/ F with a low A and G#. These tones create brief moments of tonal suspension, but do not last long before they are blown away by blasts of noise. The section begins with the utterance of "tranquility base here," which leads immediately into swelling noise, gradually tuned to C# and F. This swell is cutoff by a blast of noise, decaying into a layered rhythmic cloud that sounds as if the composer is playing with mapping interval ratios to rhythmic ratios. The high-pitched beep resets the process of transformation, bringing us into a detailed exposition of the broadcast noise.

At 5'15" the sample is completed with "The Eagle has landed," sending us into another burst of noise. The completion of the sample's phrase ends the tonal suspension. At this point, Wishart begins to alter the beeps by detuning the harmonics while adding reverb to make an enharmonic decay. The section concludes with three swells of rising filters excited by noise. This texture is rhythmically cut-up in a manner reminiscent of Elvis's rhythms, only more chaotic. The three rising motions are separated by beeps. With each iteration the rising tones become more focused on F. The section ends with a big F hit, like the C hit in section 1, but containing the whole harmonic series.

Section 3 - 7'25" to 10'42"

Section 3 begins with an explosion of all three sources. The transition from section 2 to 3 is the one sectional division I have

made that does not involve a silence. However, the combination of all three sources and the change of treatment seem to justify this division. Martin Luther King and Elvis return with similar treatment to section 1, as the Apollo phrase finishes "the Eagle has landed" landing on C reiterating the F to C limit. Section 3 features dense polyphony and rapid intercutting between the three sound sources. In this section, the sources begin to sound increasingly processed and distant. However, they still maintain their distinct characteristics when layered and fragmented. This is the noisiest and most active section. The fragmentation and cutting of the samples becomes very rapid such that the voices begin to finish each other's sounds or phrases. The process of squeezing the samples together continues into the next section, during which they start occurring in unison. At the end of section 3, the noise of Apollo begins to cast an aural shadow over the whole soundscape. Martin Luther King and Elvis start to sound completely synthesized, with Elvis's dance-like high pitched D, E, F figure and Martin Luther King repeatedly saying "let" over a sustained tone that is clearly synthesized from the extended "ring" that we have heard throughout the piece. This section takes the signal-to-noise relationship from the first two sections and broadens it by adding more recognizable speech from the original samples and more abstract synthesized vocalization, as well as a dense layering of sounds from steady pitches to noise.

Section 4 - 10'42" to the end

Section 4 is the quietest and most fragmented section of the piece. The voices seem to stutter and mumble, while the transmission noise of the Apollo broadcast takes over the sound mass. In this section, all three voices melt together in contrast to the intercutting and layering of section 3. The Apollo recording and Martin Luther King "let" begin occurring simultaneously. The sounds also seem to cross modulate each other creating a noisy and nearly homogenized sound world. The sense of discrete layers of sound begins to disappear in favor of a blurry mass except for the tuned filters, which seem to exist on top of the source sound. The piece ends with all three voices fading to a stuttering quiet noise exciting a filter tuned to an F harmonic series. This ending is made of noise and tone co-existing.

Electro-voice

In *On Sonic Art* Wishart states:

> "Certain sounds retain their intrinsic recognisability under the most extreme forms of distortion. The most important sound of this type is the human voice, and particularly human language as the formant structure of the human voice has a high intrinsic recognisability for human beings. This is partly due to the obvious immediate significance of the human voice to the human listener, but also the unique complexity of articulation of the source." (*On Sonic Art*, 150)

Trevor Wishart is pointing out that not only are our listening skills highly tuned to perceiving the human voice, but also that human speech is so peculiar and complex it is hard to mistake it for any other sound even when highly-manipulated.

In the *Voiceprints* series, Wishart plays with our electronic information literacy and our ability to identify specific voices with great accuracy. To anyone immersed in electronic media culture, these samples are almost instantly identifiable. For those farther from the source, one can imagine that they at least trigger associations with 1960's America; to those who have grown up in

America, these snippets are media icons indicative of a certain historical, cultural, and social network.

Each of the three recordings originated from television broadcasts. By isolating the voice in each sample, the composer recasts the recordings as radio broadcasts. Radio collapses geographic distance, creating the illusion of intimacy between listener and speaker. Electronic broadcast mediums have the ability to create networks of memory and experience in the listening public that can be activated to influence large groups of individuals or to playfully manipulate the listener's ideas of history and nostalgia, as in the case of *Triptych*.

The acousmatic human voice is a sound that never ceases to fascinate. With radio broadcast and recording technologies, the acousmatic voice triggers an impulse to imagine a body as the source of the voice. This imaginative aspect of the acousmatic radio voice is what radio artist Gregory Whitehead calls the *Theater of Operations*, in which the listener plays the role of Dr. Frankenstein trying to assemble a body that will unify the voices coming from the speaker (Whitehead 1993, 1-2). The Slovenian philosopher Mladen Dolar adds a twist to the idea of the disembodied voice, arguing that the human voice can never be "dis-acousmatized" due to the interiority and hidden nature of its origin – the vocal chords. In much the same way that media theorists such as Marshall McLuhan and Jonathan Sterne discuss the illusion of presence and collapsing of distance in electronic media, Dolar speaks to the more basic problem of the unmediated human voice as creating the illusion of collapsing distance between subject and other. There exists the feeling that direct, physical contact with the other is established by the fact that the voice emanates from the interior of the speaking subject (i.e. the vocal chords) and penetrates into the interior of the listener through holes in the head (i.e. the ears). This leads one to imagine a breakdown of interior and exterior between speaker and listener, and creates an unusual power dynamic. Dolar states, "One is too exposed to the voice and the voice exposes too much." (Dolar 2006, 81) Thus, he contends that the voice always exposes the interior of the speaker, making the one who speaks vulnerable to the listener, while at the same time penetrating the listener, and placing her under the control of the speaker. Part of Dolar's philosophical project is to complicate the voice's ability to imply presence by revealing ways in which the illusion of presence breaks down. I believe that Wishart follows a similar strategy in *Triptych*, albeit through very different means.

Vocal Sources

Wishart writes in the program notes to *Triptych*: "The twentieth century was dominated by the American Dream - liberty, technological progress and the pursuit of pleasure, represented here by the voices of Martin Luther King, the astronaut and moon-walker Neil Armstrong, and Elvis Presley." (Wishart 2000) It seems by this comment that there is some sort of vague narrative, a narrative of concepts rather than a definite story. I believe that Wishart is purposefully vague on the narrative dimensions of his tape pieces in order to allow listeners to create their own Frankensteinian monsters, along the lines of Whitehead's Theater of Operations.

In approaching Wishart's conceptual narrative, I will now return to the idea of a dialog between signal and noise. On the level of the sample, this conversation takes place between music and speech. In the musical structure, this dialog is staged between randomness on the one hand and clear pitch as well as regular rhythm on the other. To extend this to a conceptual level,

Wishart uses the lens of the broadcasting medium to bring the voices together. On this level, the signal vs. noise relation exists between the broadcasting medium and the content of the broadcast. On a more poetic level, the noise becomes distance and the signal turns into an illusion of presence. The distance/presence duality can also be further extended to a relationship between memory and forgetting.

Wishart uses minimal material to achieve a highly complex affect. By selecting specific samples, he is able to comment on American culture in a very clear way. Yet by engaging such minimal source material, he avoids being heavy-handed, thus allowing the listener to access their knowledge of the complex network of historical and cultural relations in which these recordings function as resonant nodes. Filling in the details of the relations of these samples, I find it hard not to imagine a cynical commentary on the United States. Yet at the same time, there is a certain playfulness in the composer's treatment of the material that would suggest that his opinion is more nuanced than a simple condemnation. For example, he allows Martin Luther King's utterance "rings" to ring-out in a truly sonorous manner; he amplifies the stuttering rhythmic nonsense of Elvis's scat; and plays with the idea of take-off and landing through the rising pitched noise of the Apollo 11 spaceship and the slightly suspended tonality that resolves when "The Eagle has landed."

Before continuing with the analysis, I will briefly sketch some of the historical relations present in the source material. In Martin Luther King's *I Have A Dream* speech of 1963, Wishart focuses on King's closing rhetorical play on the lyrics from *America the Beautiful*. I presume that the Elvis snippet is derived from the *'68 Comeback Special*, as it was Elvis's most significant musical appearance of the 1960s and because it adds a bitter note of pain due to its coincidence with the assassinations of Martin Luther King and Robert F. Kennedy. Besides being an icon of youth and rebellion, Elvis is also indicative of the entertainment industry's manufacturing of white superstars whose music exploited the sounds and styles of African American artists. Within these two samples we see the contrast of an African American philosopher/preacher fighting for civil rights as opposed to the Anglo-American entertainer whose success was dependent on the exploitation of the music from African-American artists. The lunar landing in 1969 serves as a symbol of progress and hope for the future. At the same time it also suggests closure on the presidency of John F. Kennedy, assassinated in 1963, while also carrying a more sinister inflection due to the widely-held belief that space exploration simply distracted from the military and political reality of the Vietnam War – the Tet offensive and the Mai Lai massacre both took place in 1968. With this brief sketch of the cultural and historical context in mind I will revisit the analysis below.

Sections Revisited

Section 1 - terrestrial

As mentioned earlier, section 1 combines the voices of Martin Luther King and Elvis Presley. One cannot help but imagine Wishart making a poignant joke by combining Dr. King with "The King" of rock and roll. Based on the liner notes, it is clear that the voice of Martin Luther King represents for Wishart a struggle in both a social and spiritual sense. One can hear this conflict in the beating patterns on "ring." Wishart plays with the pun of making the word "ring," ring, but the word barely finishes when the tone is soured by slow glissandi. Elvis, in contrast, represents the unadulterated pursuit of pleasure. His sound

is clipped, terse, frenetic, and exciting. The Elvis quote never manages to form into intelligible speech, but rather remains a kind of babbling dance-like nonsense. Yet Wishart smoothly intertwines the two voices by inverting the pitched material in Dr. King's voice, in a way that brings King into Elvis' pitch world, while towards the end Elvis reaches up to King's F. Since the Elvis material is comprised of nonsense syllables and Wishart's treatment of the sample is rhythmically dense, the use of Elvis's vocalizations pushes towards the noise end of the spectrum both linguistically and musically. Martin Luther King, whose speech is recognizable at first, covers both ends of the speech and pure vocalization spectrum. Musically speaking, his sound remains a prolonged signal with added interference. Despite the aforementioned manipulations, both of the voices, when presented in section 1, have the illusion of presence. They occur up front in the audio image, speaking or singing directly to the listener. At this point in the listening experience, we are not necessarily thinking of our separation from these events in time and space or the technological fact that we are only able to experience them due to their magnetic preservation and electronic transmission. However, the fade-out at the end of this section foreshadows the historical distancing and complication of presence that will build over the course of the piece.

Section 2 - celestial

If section 1 is linked to the terrestrial, section 2 can be linked to the celestial since it comes to us from the "heavens" in a "noisy" broadcast quality signal from the moon. The first part of the sample, "Tranquility base here," creates the image of a station of calm in the skies, away from the hectic world below. Though the tones in this section create a feeling of suspension, they resolve when we know the landing was successful. The next words are "The Eagle has landed," which casts the spaceship as bird of prey - a symbol of the country that sent it into space, swooping down on the lunar surface to capture rocks along with the imagination of the world. However, the overwhelming character of the broadcast noise suggests that all is not well. As mentioned above, the lunar landing was seen as both a symbol of human achievement and a distraction from military atrocities. This muddying of the image is communicated by the noise of the section. The noise also begins to distance us from the source material. This section covers both ends of the spectrum from tone and rhythm to full spectrum noise, but more importantly it introduces the signal-to-noise relationship between the broadcast content and the broadcast medium. As the artifacts of the medium become more apparent, the illusion of presence breaks down, and the awareness of the distance (both spatially and historically) of the transmission is heightened. The composer emphasizes this distancing with other effects, such as the aforementioned enharmonic decay of the beep, and strange echoes, giving the impression of a tired old tape recording - as if the memory of the event were being twisted around and distorted before our ears.

Section 3 - dialectics

It is in keeping with the spirit of the 1960s to call section 3 dialectics. In this section, all three voices are set into conversation with each other. However, unlike customary dialectical structures, the combination of the three voices does not lead to a better understanding of the reality of social conditions. Instead, what is revealed is the electronically mediated nature of the three voices. In this way, the voices are reduced to a common denominator, the electronic medium – electronic memory and broadcast.

The voices are cut-up and mixed together and what emerges is a kind of "magnetic memory soup." In this section, we hear a broader investigation of the music/noise spectrum since the three voices cover the whole range of possibilities and they trade off in rapid succession. The extremes of the linguistic noise spectrum are further developed by allowing both larger segments of un-manipulated samples such as Martin Luther King's "From every mountainside," and by increasing fragmentation through rapid intercutting of different voices in mid-word. The main thrust of this section is to further the use of broadcast noise and the jumble of channel surfing, thus increasing the feeling of forgetting and distancing.

Section 4 - forgetting

Section 4 places all three voices firmly in the past by combining them in a kind of virtual memory space. All of the voices have become co-present in the electronic memory landscape. As jumbled memories, they begin to interfere with each other, creating an increasingly noisy soundscape for the listener to parse. The sensation of the past is achieved by having all of the sounds modulated by noise of the Apollo transmission. The sound of radio communication creates a feeling of distance in our experience of the sound. This is the sound of the radio technology breaking down, making us aware of the illusion of presence. The medium is making itself heard over the message. Our attention is drawn to the fact that the sounds we are hearing are coming from a small electronic box and not a person. We have known all along that radio transmission implies distance, but it is not until the noise subsumes the signal that we are forced to give up the illusion of presence. At this point we are overwhelmed by our awareness of an unbridgeable gap in time and space. To reinforce this feeling, the sounds are also rendered quieter with more added reverb and echo. By modeling the acoustic properties of a sound heard from a great distance, the reverb and echo psycho-acoustically suggest physical distance between the listener and the source. As the noise thickens we hear Martin Luther King's voice fragment into sonic grains spread all over the frequency axis. Is this a gesture of dissolving memory, or perhaps a spreading of influence?

The piece closes with one last quiet swash of noise made from all three sources exciting an F harmonic series as it gradually fades. The over-arching dialogue throughout the piece can be characterized by the movement between signal and noise. In the closing gesture, the interdependence of the two is made explicit: the signal needs the noise as a background from which to stand out and the noise requires the signal to exist. Trevor Wishart brings us to this realization by creating a structure bound by the signals C and F, with noise culled from iconic vocal broadcasts of the 1960's. He uses media history and cultural resonance as compositional material in order to create a conceptual drama of mediated memories. This drama, with its ultimate movement from signal to noise, presence to distance, acts as a sonification of forgetting – a mediated awareness of the process of loss.

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Mid-Autumn Harvest Moon Festival: Anatomy of Producing EA Concerts

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The Mid-autumn Harvest Moon Festival in Autumn 2008 featured concerts and presentations at Concordia University in Montreal, Canada. While this was HM V, the history and experience of producing electro-acoustic music concerts at Concordia goes back more than 30 years. The regular concert series, ÉuCuE (Électroacoustique université Concordia university Electroacoustics) concerts will be series XXVIII in 2009-2010.

Much has changed in 30 years. EuCuE (and its predecessor CECG/GEC: Concordia Electroacoustic Composers' Group / Groupe électroacoustique de Concordia) produces 10 to 14 concerts annually at the Oscar Peterson Concert Hall. Most of the work is for fixed media (tape of old, then DAT and ADAT, and now computer files). There are on occasion some video works, and less often, mixed or live components, the reasons for which are given below.

As EuCuE spreads its activities over many ways of sound projection (diffusion) and multi-channel works, Harvest Moon is dedicated to and focused on one aspect of multi-channel sound: multi-channel sources. The first Calls for Works were for pieces from 4/4.1 to 10.1/10.2 or possibly 12.2 formats. Since then, two "vanity calls" have been added, that of the Phil Spector Special – Back to Mono (1 or 1.1), and Git Down (.1).

For myself, after about 40 years of working with two channels and more than 20 years of being involved in the area of "diffusion" (my preferred term being sound projection), I work now almost exclusively in the 7.1 format. The decision to solely concentrate on the 7.1 format has come about through my experience of presenting more than 1,000 stereo-source/multi-speaker pieces and coming to a conclusion that anything other than 7.1 just didn't "work" for me.

A principal problem has been that composers produce a "white box" version of their piece, one that is supposed to work in the dry and controlled studio, with hyper-wide headphones, in the often noisy home, and compatible with (limiting) web-streaming. On the occasion of a premiere in 2003, after the dress rehearsal in the hall, I went home and re-mastered the electro-acoustic parts. It was a problem of transportability (see also "The Practice of Mastering in Electroacoustics" at http://cec.concordia.ca/pdf/The_Practice_of_Mastering.pdf).

Harvest Moon was going to run for three years, fix the problem of transportability, and disappear. Life should be so simple.

The idea was: present high-quality multi-channel pieces in a high-quality multi-speaker environment, and draw necessary conclusions on the most appropriate format for sound projection. A Call for Works was made and 50 or 60 pieces were submitted. Over a period of a week or so, people went into a room that had been set up with a small eight-channel playback system (Dynaudio BM5) and a small Sony subwoofer (.1), listening to the submissions and made comments – the program could start to be built. During this time, late pieces continued to arrive which we also reviewed (we were easy going so the real deadline was the start of the concert).

By chance, we were required to move from the original medium-size room into a much smaller studio where the same system was set up. Listening continued.

Surprisingly (or perhaps not), some pieces that sounded great in the medium-size room were not so good in the studio and vice versa. Discussions concluded that in the Concert Hall, it would be a new ballgame for all the pieces. Aiming at inclusion and flexibility, we increased the number and length of the concerts so that everything that was technically "correct" would be presented.

This led to another discovery, which is less true today, and that was finding that on the purely technical level of putting audio files to disc, as far as quality of audio was concerned, everything from professional to "impossible to use" was discovered. My mistake in the Call for Works related to the naming of speakers and sound files, and sample/bit rate specifications.

Being accustomed to stereo files, Logic (our presentation software of choice) fixes these things easily, as it only takes a few minutes to normalize the audio tracks and convert them to 24 bits/ 48 kHz. With eight independent sound files, though, this became much more complex and took hours of work. We learned to require speaker location and sample/bit information in the file name itself to alleviate this problem. The description is specific: name the files as channel (L, C, R, RF, RS, RB, CB, LB, LS, LF), title (composer); bit depth / sample rate. For example:

L Studies II-Austin 24/48
C Studies II-Austin 24/48

We gave up trying to normalize files; this is viewed as a technical flaw, and a couple of pieces didn't get played because they would have been so difficult to fix. Sometimes there would be a single half-wave on one channel that was 3 to 8dB (!) above the next highest peak, meaning that the piece played back 3 to 8 dB (or more) lower than other pieces on the program. Resources are limited and timelines are short; this is the composer's problem. Subsequent Calls have been therefore very specific on this matter.

There are two basic ways of conceptualizing the use of loudspeakers to articulate space. The most common one used today is the stereo matrix method (amplitude difference), in which every virtual point in the plane is described in terms of the amplitude of two or more loudspeakers. An example is the traditional method for panning. The other method for articulating space is via the "point source" method, where, effectively, a collection of mono files do not necessarily share phase or amplitude information with other speakers. This could be compared to a rock band, for which each player typically has their own amplifier. The model is also that of the orchestra where the performer in the middle is in the "middle"; in this case, there needs to be a dedicated loudspeaker in that position.

Over the years, Harvest Moon has encouraged the creation of point source pieces, but most composers we meet think in terms of Max/MSP matrix patches for spatialization. There are on the ÉuCuE site (see link at the end) a number of examples (in stereo!) of point source pieces which can be found when searching for the Quodlibet series.

In different years of the Harvest Moon Festival, there have been presentations, discussions, and talks related to many areas of electro-acoustics from the highly technical (mastering, amplitude manipulation), to composers' views of composition and multi-channel work, to philosophical and educational. Having limited resources (the series is organized on a budget of under $800 in actual money), many corners are simply missing from what would be needed to expand from a festival to conference format. However, the festival has provided a venue and opportunity for about two dozen composers to find funding

to come to Montreal, meet people, and hear their work presented in the acoustically superior Oscar Peterson Concert Hall.

As far as webcasting/archiving is concerned, there are now some three dozen concerts available in MP3 format at feed://music.concordia.ca/EuCuE/EuCuE.xml, and most come complete with spoken introductions (sometimes quite extended), and a description of the current weather.

Harvest Moon has many facets, the focus being the presentation of (and learning from) a multitude of practices and concepts related to spatial presentation (matrix/point source) in a context designed for both the novice and the expert. The lectures/presentations provide another layer of interest for the participants, and the use of the library atrium for installations also adds breadth to the festival.

On a personal note, the three primary reasons for continuing to produce the Harvest Moon Festivals are: (1) the materials presented remain available on the Internet for years after the event; (2) composers, students, and the general public are able to meet and listen together; (3) … I'm sure there is a third reason, probably related to the great energy created by the entire production team which usually numbers between 10 and 15, making work much easier and fully rewarding.

[Editor's Note: Kevin Austin's original article uses electroacoustic to address electro-acoustic music. We have used the latter in this article for clarity].

In the Zone: Temporal Structures in Negativland's *Escape from Noise*

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Introduction

The obvious theme unifying the seventeen tracks that make up Negativland's fourth album, *Escape from Noise* (1987), is the effect of noise on society. Another theme, one of time and temporality, is just as active in the album's design. *Escape from Noise* is built upon a convoluted temporal map that grows from Stockhausen's early philosophies of formal procedures in electronic music. Given the constant tweaks to the time flow in the preceding tracks, Negativland builds intensity through temporal dissonance until the fifteenth track, *Time Zones*, resolves the temporal tension and returns a more linear flow of time to the album.

Negativland

In 1987, Negativland released their fourth album, *Escape from Noise*, on the SST label. After their acrimonious split with SST, Negativland reissued the album on CD in 1999 on the resurrected Seeland label. *Escape from Noise* was seen as "a milestone in the evolution of the word 'accessible.'" (Negativland 1987). Negativland's intense sound collage techniques on *Escape from Noise* are centered around an overt message against noise in society and this message is wrapped in a complex temporal package. The events in their sound collages become more and more abstract and abstracted until their aptly named fifteenth track of the album, *Time Zones*, creates a climax of the "temporal dissonance" and restores some sense of linear time to the album.

The Study of Time

While the study of temporal mechanics is traditionally limited to physicists and science-fiction authors, many philosophers and music theorists have approached the subject of time in music. J. T. Fraser's writings help bridge the gap between raw philosophy and artistic meaning. Fraser's definitions of the atemporal, eotemporal, and nootemporal Umwelts provide a necessary vocabulary for describing possible perceptions of time in not describing time itself (Fraser 1975). Jonathan Kramer's epic tome *The Time of Music* draws upon similar philosophies of temporal perception and then links those perceptions to musical theoretical models (Kramer 1988). Kramer makes some references to the function of time in atonal and electronic music but, for the most part, seems to keep his focus of discussion within tonal boundaries. Thomas Reiner's more recent work blends a study of musical time with the tools of semiotics (Reiner 2000). Reiner's writings go further than Kramer's in that he includes many analyses of pre-tonal and post-tonal music. Electronic or electro-acoustic music is sadly lacking from his monograph. Time is usually a fascination of composers as well as philosophers and theorists. Kramer, Reiner, and other composers like Carter, Xenakis, and Ferneyhough have written various books and essays that deal with issues of time, but the catalog of material that deals with electro-acoustic music is rather small.

Temporal Dissonance

The notion of dissonance in music is understood at many levels. Simple harmonic and contrapuntal dissonance resolution is the most obvious form of dissonance in music. Dissonance of rhythm and meter are usually where a discussion of time and music concludes. While rhythm, in the broadest

sense of the word, is an important parameter of electronic/electro-acoustic music, periodic beat-grouped patterns are not usually considered a main focus for electro-acoustic exploration. Dissonance of timbre in electroa-coustic music is a fascinating topic but one which will have to wait for another analytical study. Since all music happens temporally and within a discrete, albeit variable, time frame, a general study of time and dissonance seems to be a useful tool for analyzing events within electro-acoustic music.

Approaching time and dissonance divorced from a metrical or rhythmic context requires an understanding of Fraser's *Umwelts* (German for "surrounding world"). The atemporal Umwelt has little bearing on listeners of music since the atemporal Umwelt describes a state of temporal perception in which one cannot tell when specific events are occurring. The eotemporal and nootemporal Umwelts are where temporal dissonance occurs. Eotemporal perception is non-linear but events are still understood as being before and after other events in a cyclic manner. For example, the seasons change in a cyclic matter that can be divorced from a linear understanding of time (Fraser 1975). The nootemporal Umwelt describes the normal human perception of time as a linear progression of events (Figure 1).

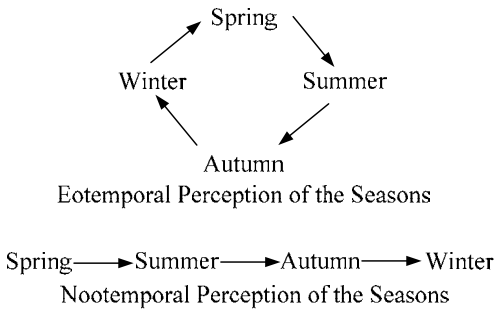

Figure 1. Eotemporal vs. Nootemporal

The sound collage pieces created by Negativland are, at the most basic level, built from a fluid understanding of time. Sound collage, as with any other electro-acoustic composition, begins with recorded sound. That sound is then manipulated for expressive musical reasons. Recording technology itself flies in the face of a nootemporal Umwelt. Listeners are hearing events after they have happened, outside the linear flow of time, but the listener is experiencing this event within their own perceived linear time flow. Music that then uses a recorded signal as a recurring musical event continually bombards the listener with messages from an eotemporal Umwelt while the listener remains forever nootemporal.

Another interesting idea is Kramer's term "multiply-directed linear time." This term describes a sense of time in which the single linear flow of a work is broken and disrupted by non-linear events (Kramer, 1988). Events that are "multiply-directed" seem to have an arbitrary placement in the flow of time and thwart the listener's attempts to find a single, through-composed narrative as the events happen. Listeners experiencing multiply-directed events must detangle the web of sounds in order to weave together a traditional temporal narrative. It is the existence of this overarching narrative that separates multiply-directed events from Stockhausen's "moment form." Moment form puts the listener into the perspective of Leonard Shelby from Christopher Nolan's film *Memento.* The listener can understand and appreciate the events as they happen but cannot put those events into a meaningful linear order (Leonard cannot make new memories and therefore forgets everything that happened while, in the case of Stockhausen, no external narrative order exists). Multiply-directed linear time puts the listener into the perspective of the audience watching the movie *Memento*. Moviegoers see the actions of Leonard Shelby and have the ability to re-

contextualize the importance of those events when given new information.

While Stockhausen influenced Negativland's work (Gross 2000; Negativland's MySpace page), moment form is not a focal technique used on *Escape from Noise.* Instead, multiply-directed linear time clarifies the construction of the sound collages found on the album. Negativland is too keen on articulating narratives which requires a single temporal flow, albeit a fractured one. Listeners experience the events on the album in a single, linear flow but human perception allows them to recall, dismantle, and reassemble the sounds in order to uncover the story binding the sounds together. Unlike Leonard Shelby, the typical listener can recall not only the immediate events that took place but also continually reevaluate the relationship between events as new information is gathered. Negativland's music grows out of multiply-directed linear time all the while relying upon the listeners' own nootemporality.

Sampling and Temporal Dissonance

Does simple use of sampling in music really create temporal dissonance? The short answer is: No. While sampling can relate to an external sound object and the users of the sampled material may want that connection to be understood, sampling is not de facto temporal dissonance. Sampling can be seen as referential or non-referential musical use of prerecorded materials. The samples are set into their own musical context and do not necessarily relate to the signified object which spawned the sound clip. In the case of Negativland, source materials are typically referential, but it should not be assumed that all samples are referential.

Temporal dissonance is created when narrative time streams are disrupted and affect the listeners' linear understanding of that narrative. Negativland constantly presents listeners with a narrative stream and will then interrupt that stream with either spurious auditory stimuli or, in more advanced cases, a second contrasting narrative stream. Temporal dissonance need not be an auditory exclusive phenomenon. A flashback in movies or television programming creates a sense of temporal dissonance. The poetry of E. E. Cummings provides temporal dissonance on a single sheet of paper.

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Figure 2. "l(a" by E. E. Cummings

Auditory examples of temporal dissonance are abundant outside of the works of Negativland. Stockhausen's *Gesang der Jünglinge* (1955-56) is a serially-arranged masterpiece of temporal dissonance (Decroupet and Ungeheuer 2002). Like Stockhausen, Negativland cuts and splices various recorded speech to create a landscape of temporal uncertainty. While the musical language of Negativland is different than the serial procedures of Stockhausen, elements of their techniques are quite similar.

The importance of text and spoken words is paramount to temporal dissonance in Stockhausen's piece as well as the music on *Escape from Noise*. Language, especially when used as a narrative, is intensely linear.

Spoken text has a specific temporal trajectory, and when that trajectory is disrupted, the listener has almost no way of knowing the correct order of the phrases. As a rather humorous example, consider the postcards sent by Michael in 1984's fluffy *Blame It on Rio*:

> "I invited my girl to visit me. I sent her a postcard every day, with a single word on each card. I wrote: 'Found a virgin paradise, it's yours, Matthew.' Naturally, they were delivered in the wrong order. The message she got was: 'Found a virgin, it's paradise, yours Matthew.'" (Peters and Gelbart 1984).

Many of Stockhausen's electronic works before *Gesang* rely upon serial procedures of formal organization but none of those pieces provides a sense of temporal dissonance. The text element of *Gesang* is the most obvious clue that we are experiencing an alternative flow of time.

Escape from Noise and Temporal Dissonance

The normal flow of time is disrupted from the very beginning of *Escape from Noise.* The first track, *Announcement* begins with a voice telling radio executives about how the next piece, *Quiet, Please!*, was specifically designed for air play success. It is clear from the beginning that track one is "not for broadcast" (Negativland 1987).

The listener is hearing material before they are "supposed" to hear it. Technically, this situation is not possible since one assumes that Negativland's intent was that listeners should hear everything on the album. *Announcement* merely gives listeners the impression they are hearing something forbidden. For the CD release, the bulk of *Announcement* takes place not in track one, but as a countdown from -1:39 of track two. Track one consists of an outtake of this announcement, meaning that listeners have heard something they were not supposed to hear before hearing the actual announcement they weren't supposed to hear before the album actually begins.

The temporal dissonance used on side one of *Escape from Noise* is rather straightforward. A narrative stream is either fragmented with spurious sounds or interwoven with a second narrative thread. *Michael Jackson*, *The Playboy Channel*, *Stress in Marriage*, and *Sycamore* all operate in this manner. The dissonance comes from not immediately understanding the verbal narrative. Negativland leads the listener along by telling a story a few compelling words at a time. This dissonance is resolved when the full narrative is complete or when enough narrative has passed for the listener to comprehend the intention of the original source materials as well as the socio-political statement made by the juxtaposition of seemingly disparate recordings.

Sycamore is a prime example of temporal dissonance with a socio-political subtext. Two main narratives are present: one is a smooth voice talking about the benefits of living in a newly developed California neighborhood called Sycamore, the other narrative is a political message broadcast to protest a gun control law on the ballots in California. The listener alternates between the advertising of a serene lakeside resort neighborhood and the idea that Californians need guns in order to feel safe.

On first hearing, the listener is simply taking in the words and sorting them into their own compartmental meanings. The key to compartmentalizing these streams lies in the vocal timbres of the participants. The voices in the political message have effects and are panned differently while the advertiser's rich baritone voice is left plain. After the piece has run its course, many will attempt to synthesize the two broken

narratives and come to terms with why these two streams belong in the same track. In the case of *Sycamore*, the temporal dissonance is resolved after the piece is finished and not during the work.

Escape from Noise features an excessive amount of self-sampling. Several tracks are sampled later on the album and a few key moments are sampled before the generative material is presented. The title track of the record is used in *Quiet, Please!*, two tracks before *Escape from Noise* is played. Side two makes use of several samples from side one, but this gives the record a sense of eotemporality. The disc is cyclic and therefore not wholly linear.

Side two uses a lot of the same patterns found on side one to implement temporal dissonance. Narrative streams are broken and layered with conflicting sound events. The track *Yellow Black and Rectangular* is a special case, unique on this album. A woman is talking to a doctor and their conversation is not interwoven with another narrative nor is it disrupted by samples. Instead, Negativland uses eotemporal constructs to disrupt the conversation with itself. Fragments are repeated and alternated while slowly evolving to reveal a more complete aural picture of the whole conversation. By the end of *Yellow Black and Rectangular*, listeners know the whole conversation (with the exception of the woman's name, which is most likely not *Mrs. Rectangular*) without having heard the whole conversation from beginning to end.

The temporal dissonance created by the slow unfolding of the conversation is resolved when the doctor finally is able to describe the yellow, black, and rectangular shapes the woman has been seeing. The rapid panning delay on the doctor's voice provides a timbral indicator that helps emphasize this moment's importance.

Time Zones

The temporal dissonance prevalent throughout *Escape from Noise* reaches the breaking point during *Time Zones*, the fifteenth track on the album. Not only does this work directly face the notion of time as its source material but also it heightens all of the eotemporal techniques present in the rest of *Escape from Noise*. *Time Zones* is not only twice as long as the other pieces on the album but also contains the greatest diversity of material.

On the surface, *Time Zones* is more of a commentary on power and the Cold War than a statement about noise or time. Immediately preceding *Time Zones* is the notorious *Christianity is Stupid* which uses samples taken from the 1971 Christian propaganda movie *If Footmen Tire You, What Will Horses Do?* (Negativland 1987). The speaker in *Christianity is Stupid* repeats the title of the song and gradually adds the phrase “Communism is Good.” A smooth radio advertiser voice ends the piece by saying, “Shop as usual, and avoid panic buying.”

While the poetic connection between the subject matter of *Christianity is Stupid* and *Time Zones* should not be ignored, the connection is not pertinent to the notion of temporal dissonance. *Time Zones* unfolds in the same pattern as do most of the tracks on side one. A narrator is lightly modulated and various sounds are layered on top of this narrator or interrupt the speaker's description of Soviet territories. Some of the phrases spoken by this narrator may have been altered due to their creative uses of grammar (“A boy lying on skins behind our backs”) although no proof of this alteration has been found.

After 1:43 in *Time Zones*, the texture of the work changes drastically. Two voices interrupt each other: one clear deep male voice and one male voice sounding as if it was recorded through a telephone. The deep

voice repeats the question “Do you know how many time zones there are in the Soviet Union?” while the caller voice speaks about how much power “we” have. The assumption is that these two voices are speaking to each other due to the short amounts of time between alternations. The timbral difference between these voices, however, would indicate that they are not speaking to each other. The listener is most likely to identify with the unfiltered voice due to its more natural timbre.

The quick pace of verbal overlaps is overshadowing the same timbral clue that hinted at separate narrative streams in *Sycamore*. At 2:35, the caller voice says “How many time zones?” with the same panning delay effect found at the end of *Yellow Black and Rectangular*. The mention of time zones in both voices is the first concrete indicator to the listener that the two voices are, in fact, speaking to each other. The conversation unfolds in an exclusively eotemporal Umwelt and additional strata of sounds are added. Finally as the conversation flirts with nootemporality, the other layers of sound back away, and the rants of the caller voice, who we now know is named Glen, are left hanging in the ether.

Time Zones also features temporal manipulation of source material. While Negativland uses some reversed sounds in *Quiet, Please!* and *The Way of It*, temporal manipulation of source material is used to its greatest extent in *Time Zones*. A loop is initiated when the low voice says the word “eleven.” This loop is made of the low voice speaking the word “eleven” and consists of this word being sped up and slowed down over the course of a few seconds. The volume of the loop is pulled back to make it background material. When the loop reaches the same pitch level as the original utterance, the volume is brought back to foreground levels. This loop creates the one and only case of periodic rhythm in the whole track.

After the low voice ends the conversation with the tepid “thanks for the good thoughts” sign-off, the underlying sound is that of text slowed down past the point of recognition. This is the only time on the album when obviously slowed vocal material is present, and it comes at a time when the temporal momentum is evaporating rapidly for this track as well as the entire album.

So what is your point?

Unlike *Yellow Black and Rectangular*, the listener never gets a clear picture of the actual conversation between these two voices. What was first presented as various narrative streams becomes a single unified stream after the caller repeats the question of “How many time zones?” The single unified stream then becomes the foundation for the layering and interjection techniques Negativland used in earlier parts of the album.

Negativland has used every technique found in *Time Zones* in earlier tracks on this album. Several pieces on *Escape from Noise* use some of these previously discussed techniques, but *Time Zones* is the only one to include all of them. The eotemporality of the nonlinear conversation is never fully resolved within the listener's nootemporal experience. Clues of timbre and timbral effects that were previously used to clarify eotemporal events are used to obfuscate the whole of *Time Zone's* narrative.

Time Zones functions as a culmination of techniques and temporal dissonance strategies. After *Time Zones*, the remaining tracks fall back into the simpler techniques found on side one. *You Don't Even Live Here* uses a single narrative voice but seems to present that narrative in chronological order with minor interjections of spurious

material. *The Way of It* contains a large number of eotemporally important self-sampled material, but all the internal references lead to a sense that material in *The Way of I* is cyclic in nature and not a cause of temporal dissonance. There is a small broken narrative in *The Way of It* but the chunks of that narrative function equally well as sampled material as opposed to a continuous narrative stream. *Endscape*, the final brief cut on the album, provides a little symmetry to Announcement. After a brief (0:37 long) event, a simple acoustic "hidden song" appears one minute later. Just as *Announcement* used materials before the music we are intended to hear, *Endscape* fulfills the almost obligatory need for music after the album is functionally complete.

Thanks for the, uh, well, just thanks for the good thoughts.

The narrative flow of time is a commonly used primary organizational feature of electro-acoustic music. Instead of periodic beat-grouped rhythm, much electro-acoustic music uses longer gestures that defy traditional rhythmic analyses. Philosophies of time applied to understanding tonal music provide a rich framework for our own analyses and generation of electro-acoustic music. Electro-acoustic music which relies upon texted materials or on recognizable sound events with clear narrative potential has a greater chance of communicating temporal dissonance than works with more abstract source materials.

Negativland's *Escape from Noise* turned twenty in 2007. The album not only makes powerful statements of noise in a pre-iPod and cell phone society but also paves the way for sophisticated temporal manipulations using simple materials.

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Events

About and Within the 2008 Seoul International Computer Music Festival

Reviewed by Jeremy C. Baguyos
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Recent articles in the British journal *Organised Sound* have focused on globalization as it pertains to the intersection of contemporary music and technology. Despite what one might conclude is yet another naively well-intentioned objectification of "the other" musical traditions, the fascinating set of articles documents an emerging global consciousness about very active, but relatively undocumented musical traditions. Running in parallel to these somewhat unfamiliar musical practices is a consciousness emerging from within local creative communities that define said musical traditions. This conflation of cultural and musical hybridization, cross-fertilization, and synthesis is often the subtext of international contemporary music conferences. One such conference was the annual 2008 Seoul International Computer Music Conference (SICMF), held from November 9 through November 12 at the Jayu Theater on the the Seoul Performing Arts Center compound. SICMF has a relatively long history, at least when considering the somewhat short history of Korean electro-acoustic music, and was established in 1994, supported throughout the years by the Korea Electro-Acoustic Music Society (KEAMS). Reflecting the growing discourse and implications that surround any study of culture and music, this festival review is a summary of events with the thematic organizing principle of Korean Electro-acoustic Identity as viscerally observed from "within and without." In addition, participating SICMF 2009 composers and presenters from the SEAMUS membership are also highlighted.

One of the most intriguing seminars of the festival was the panel discussion about EMSAN (Electro-acoustic Music Studies Asian Network). Co-chaired by Marc Battier and SEAMUS member Tae Hong Park, with panelists Doojin Ahn, Sungah Shin, Unjung Nam, and Woon Seung Yeo, the invited scholars explored various topics surrounding electro-acoustic music history and identity pertinent to Korea as well as the Far East. Highlights of the discussions included the following: 1) databases, knowledge bases, and repository/archives to document electro-acoustic music activity in East Asia; 2) facilitating exchange between East and West in terms of academic training and careers; 3) insular electro-acoustic societies separated not just by country, but by city (For example, it was noted that even Seoul and Pusan have their own separate electro-acoustic/computer music societies that do not seem to communicate or collaborate much with each other.); 4) brief introductions to Korean electro-acoustic music history featuring important Korean composers and points of departure for further research; and 5) summaries of current electro-acoustic music activities in Korea, China, and Taiwan.

Iroro Orife, Apple Computer Audio Engineer and Managing Editor of *Journal SEAMUS*, hosted another intriguing seminar entitled "Current Directions in Audio Signal

Processing." This was a particularly interesting seminar because Orife addressed the use of audio with video from the vantage point of an Apple Computer software engineer. A seminar participant inquired about various algorithmic details of Apple audio software and the possibility of iPhone use in South Korea. As expected from an employee of Apple Computer, he was coy about disclosing software details and upcoming Apple products and services.

The concerts were another forum where the themes discussed in the EMSAN panel were explored through sound rather than words. The most compelling compositions included two works that effectively combined non-Western instruments with a live electronic performance system. *Shift* No. 1, by the Matrix Duo, was performed by the core members Byong-Oh Ko and Sangbong Nam, along with the members of Su:m, a quartet of traditional Korean instruments. According to the SICMF 2008 program notes, the "Matrix Duo strives to shift from previous art to new art through electronic music. *Shift* No. 1 is the first piece created for the project. In this piece, Matrix Duo experiments with new possibilities for Korean traditional music." Mi-Jung Kim 's *My Heart's Sound* for electronic sounds and geomungo (a Korean traditional stringed instrument) is a programmatic work about a 2007 oil contamination accident in Korea. The work utilized a sparse, pointillist texture that invited careful attention and awareness to the electronic sounds as well as the carefully plucked and bowed articulations effortlessly performed by Sunny Lee.

Another view of globalization as it pertains to the intersection of contemporary music and technology is the somewhat culture-independent platform of technology. Some would argue that the ubiquitous and uniform nature of the technology tool totally erases cultural distinctions. Depending on one's research agenda, this can be a utopian ideal or hegemonic colonialism. Some would furthermore argue that the whole premise of globalization via technology is flawed and/or moot. In any case, several works by Korean composers were performed at SICMF 2008 that seemed not to be dependent on a cultural identity. Instead, their gestures and aesthetic stances were more dependent on abstract, well-developed compositional structures. These works included Jongwoo Yim's aggressively meticulous *Rupture* for string quartet and electronics, Eunhwa Lee's Common Lisp/Csound work *Kinetic Sound*, Jaeho Chang's highly algorithmic *v efil laicifitra*, and Seong-Joon Moon's *In the great green room…*, a disturbing electronic re-contextualization of a classic children's story. These works are significant in the globalization discussion. They may perhaps not give a European ethnomusicologist a reason to write an article, but instead, demonstrate a more egalitarian view of global diversity with technology as the common implementation platform and the aesthetics of electro-acoustic music as shared values.

Yet another view of globalization as it pertains to the intersection of contemporary music and technology is globalization through a seemingly complete obfuscation of cultural identity. Raised in numerous parts of the world by Korean diplomats, the well-traveled Tae Hong Park was trained in and worked professionally in both Korea and the West. His work, *ViPer* for violin, percussion, and multi-channel tape evokes the American vernacular as a gestural departure, but quickly evolves and extends its vocabulary and mode of expression without losing the high-impact nature of the genre he invokes. With this work, cultural identity is not easily identified, and raises the issue that for some musical compositions, maybe it is no longer practical to hunt for cultural identifiers. As the world

gets ever smaller through high-bandwidth digital networks, online communities, and travel, the rhetorical questions will be asked – Will composers lose their unique cultural identifiers, as the world marches towards becoming a heterogeneous global village? Does it matter? Are we even making the right inquiries?

There were other SEAMUS members at SICMF 2009 in addition to Tae Hong Park Iroro Orife, and Jeremy Baguyos. Mara Helmuth presented *Butterfly Within*, a highly personal and introspective work for flute and electronics that effectively communicated its universal themes of renewal. Ed Martin presented *Flurry* for saxophone and electronics. Although it is an advanced and mature work demonstrating craft and complexity, the work is a mere nostalgic recollection of winters during the composer's childhood. One of the highlights of the festival was David Bithell's riveting work *The President Has His Photograph Taken*, a multimedia composition of timely programming on the part of SICMF organizers as the United States transitions to a new president. The work involved live theater and video along with digital audio. All three elements were appropriately sparse and static in nature, but allowed for highly synchronized and meaningful coordination between the elements of theater, film, and digital audio.

An interesting component of the festival was that it allowed generous opportunities for informal levity as well as formal gravity. Informal conferences over Korean barbecue, beer, and beondegi were just as important as the formal exchanges during the festival's seminars and concerts. As interaction ensued among the many delegates, scholars, performers, composers, engineers, programmers, and innovators from Seoul and around the world, it was apparent that any attempt to frame the creative forces behind electro-acoustic music in Korea would not easily lend itself to intellectual convenience and expeditious global awareness. However, if one dispenses with the baggage of discourse analysis, SICMF 2008 was not only an international computer music festival of distinctive artistic and technical caliber, but also an enjoyable, satisfying, and sometimes exhilarating experience for both the participants and the audiences, set in a welcoming, cosmopolitan city.

Mountain Computer Music Festival

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The Mountain Computer Music Festival is an annual event at the University of Montana showcasing the best student computer music from the Composition and Music Technology program, alongside works by visiting guest composers. Past guests have included Matthew Burtner, Elainie Lillios, Michael Theodore, and Brian Belet. This year's festival featured Cheryl Leonard (http://www.allwaysnorth.com), a composer and sound sculpture performance artist from San Francisco, and William Basinski (http://www.mmlxii.com), a composer and recording artist from Los Angeles.

Leonard started the festival with a morning lecture about her work, detailing her transition from violist to sound sculpture artist, her construction and performance setup of instruments assembled from found

natural objects, the graphic notation for the two pieces she composed for the Mountain Computer Music Festival, and her upcoming sonic research trip to Antarctica. The photos and audio and video recordings of the sound sculptures that accompanied her lecture generated a palpable excitement in the audience, many of whom were unfamiliar with this kind of art.

The evening concert was preceded by a listening of Basinski's *Watermusic* (2001), an ambient wash of tonal harmonies spread throughout the frequency range, undulating and percolating through synthesizer pads, as the audience assembled in the lobby of the Music Recital Hall. A panel discussion immediately followed, moderated by Brett Allen, from SnowGhost Music (http://snowghostmusic.com), during which Leonard and Basinski outlined their development as composers, described their compositional process, and explained their aesthetic choices. Both were trained early as classical musicians, but soon began to consider other genres. For her part, Leonard explored improvised music comprised of "very quiet phenomena and the intricacies of sounds not generally considered musical," performed on amplified found objects and materials. Basinski created real-time soundscapes with multiple tape loops and video, exploring "the temporal nature of life resounding with the reverberations of memory and the mystery of time." For both composers, their aesthetic stances extended from the environment of their formative years, Leonard studying at Hampshire and Mills Colleges, and Basinski living in New York City, during the psychedelic '70s.

Clint McBride, a junior composition major, started the concert with his performance of *It's Just the Train* (2008), for electronic drum kit and interactive computer processing, in which his progressively layered drumbeat is delayed, pitch-shifted, amplitude-modulated, and echoed across the quadraphonic sound system. The effect is an immersion of the listener into an electrifying, pulsating rhythmic mass.

McBride's piece was followed by Leonard's *Nächt* (2008), for two performers and field recordings, which she composed for the festival. Performed by Leonard and myself, the three movements explore the sounds of a round stone rubbed, a pine cone rolled, and sticks swirled, in a bowl of sand; bowls of water bowed with a wooden stick, a string of beads, and cello and bass bows; shells rattled and a stone shard scraped, over stone slabs; and rhythmically dripped water and poured sand. These acoustic sounds were amplified with close miking techniques and hydrophones, and accompanied by sounds of insects, bats, and a rainstorm, which were recorded during Leonard's summer artist retreat in Bavaria. The individual timbres and combined textures, produced by the meticulously notated and tightly choreographed performance of these sound sources, are remarkably diverse and powerfully evocative. To aid the audience's understanding of the relationship between what was performed and what was heard, live up-close video of the performance was projected on a screen at the back of the stage.

Next on the program was senior composition major Robert Braun and graduate guitarist Tommy Pertis' *No Rock Left Unturned* (2008), for electric guitar and interactive computer processing. This piece begins with a droning melodic fragment repeated by Pertis' overdriven electric guitar, which is recorded in performance and played back at different speeds and pitches, both forward and backward. While the recorded motive loops in the front speakers, Pertis makes clicking and picking noises, plays a plaintive melody, and eventually shouts into the pickups of the guitar. These sounds are also recorded, layered, and

looped in other speakers. Braun, at the computer, gradually builds and processes these layers into a cacophonous din, which Pertis joins with a rhythmically punctuated series of descending chords. The conglomeration eventually subsides, becoming a distant accompaniment to a reprise of the melodic fragment, again played by the guitar.

The center of the program was a performance of Basinski's *Vivian and Ondine* (2008), for live tape loops and video. In this piece, the composer periodically changes randomly chosen tape loops, played on two reel-to-reel machines, and mixes their output with a constant base sound file that plays throughout the thirty-minute piece. The timbres of the loops are enhanced by the degraded quality of the tapes, a collection that he has accumulated over his 25 years of working with the medium, which Basinski stores in colorful metal boxes and canisters of various shapes and sizes. As a backdrop to the ambient soundscape, a video, by James Elaine, of dusk reflected in a bucolic pond, was projected behind Basinski's hypnotic performance.

Sophomore composition major, Owen Ross' *High Tide* (2008), for computer-generated sound, followed, with its quartal harmonies, inspired by jazz pianists Herbie Hancock and McCoy Tyner, and its ambient texture, reminiscent of Brian Eno. The piece shimmers and shakes, stuttering through two false starts, before committing to a full development of its open harmonies, buzzing timbres, and rhythmic clicks, broadening in octaves throughout the register.

For Leonard's second piece on the program, also written for the festival, Braun, McBride, and Ross performed with the composer. In *Uzumaki* (2007), for amplified stones and water, the performers stir, swirl, grind, and rub rocks in and on amplified glass bowls, filled with water. This piece also employs contact microphones, affixed to flat stones, amplifying the spectrally rich and subtly evolving timbres produced by rubbing other stones against them. Again, to help the audience recognize the expressive potential of these found instruments and appreciate the meticulously crafted graphic notation for the piece, live video of the performance was projected behind the performers.

Ending the concert was my piece, *Current Threat Level* (2008), for computer-processed sound, which was composed to accompany choreography, by Amy Ragsdale. The piece was presented in its quadraphonic version, along with a video of the dance. The source materials for the piece, recordings of high and low female and male voices reading passages from governmental disaster and emergency services web pages that provide instruction on how to respond in the case of a terrorist attack, were filtered to isolate the steady-state portion of the sound. While the dancers pantomime abstractions of strategies for avoiding or defending against terrorist attacks, melodies produced by the filtered speech are introduced independently, developed motivically, and combined in imitation and counterpoint. Throughout the piece, granularized transient jittery phrases, of just recognizable text, periodically stream across the texture, reinforcing or complementing the meaning of the melodic text. The process of the melodic text becoming more intelligible over the duration of the piece barely culminates in the end, as the dancers roll off of the lip of the stage.

Conversations at EMM 2008

Review by Evan X. Merz
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Inside the Philip Lynch Theater, a student sat at a small wooden table arrayed with CDs and stacks of programs. He held a clipboard and blinked up at me with a look that I recognized as "I haven't had my coffee yet." Other than him and myself, and a Macintosh computer, the room was empty.

From the far corner of the room, a faint rumbling noise was barely audible. Through the walls, it sounded like a herd of rhinos stomping through a dance club in Manhattan. Then it was gone. At 9A.M. on day two of Electronic Music Midwest 2008, the two of us were the only people who experienced the sound check going on in the theater next door. It was an unusual way to start the morning, but the sound signified a day filled with an array of music that can rarely be experienced in such quantities.

During that weekend, I had the opportunity to talk to nearly every composer on the schedule. From October 16th to October 18th, 2008, in the lobby of the Philip Lynch Theater, on the campus of Lewis University in Romeoville, Illinois, an exciting ensemble of composers passed through. I was determined to corner as many as possible, and ask each to explain their work.

The previous night, before the first concert of EMM 2008, I met Jay Batzner and David McIntire. Batzner and McIntire helped organize the three-day event. Each presented a multimedia work that combined audio and video. Batzner's piece was based on paintings and animation by Carla Poindexter. Batzner also programmed the music for each concert - a gargantuan undertaking considering that EMM 2008 consisted of nine one-hour concerts. McIntire's piece was based on footage of the slowly changing environment of Antarctica. He explained that the piece was motivated by concern for the changing world environment, but that he and his collaborator didn't "make that message overt in any way." The pieces by Batzner and McIntire share a venue, but little else.

Beyond the media of presentation, the music at EMM 2008 was tied together only by the spirit of the composers. Each composer presented their own unique vision of electronic music. To some, this meant using esoteric sound material or writing new software to generate music that can never be repeated. It meant something different to each composer, and that's what I tried to capture in my interviews.

That Friday morning, before the 10am concert, I spoke with Nathan Kroms Davis. Davis is a securities trader by day and in his free time he writes music software in the Java programming language. At EMM 2008, he presented *Ecology No. 4*, a piece based on sine wave synthesis and evolutionary algorithms. Davis explained:

> "There is a single initial structure that lasts under 5 seconds. Each one of them has a probability of reproducing a structure similar to itself at a frequency near to itself. Each one of them also has a probability of sending out what I think of as a seed or spore that moves the frequency very high or very low. If the structure reproduces, then the process begins again. Each generation of these organisms has a decreased probability of reproduction, and that creates a limit to the duration of the piece."

Davis wasn't the only composer present who was interested in small structures. Rob Voisey and David Morneau represented two different approaches to 60-second compositions. Voisey is the coordinator of 60x60, a yearly collection of works that last around sixty seconds in duration. For the festival, he put together a mix called *60x60 Midwest Minute Madness*. This mix was made up of sixty-second compositions from

composers in the Midwest. It ran continuously as an installation in the lobby of Philip Lynch Theater. Voisey was eager to talk about 60x60, and the interdisciplinary productions with which 60x60 has been involved.

> "Since 2003 we've put on over one-hundred performances. These performances range from simple tape performances in synchronization with an analog clock to video collaborations and this year, in 2009, we're going to be collaborating with a dance organization. ... Some of the dancers are improvisers, but part of the essence of 60x60 is to have every single genre or aesthetic represented. We're collaborating with Jeremy Zimmerman of Cat Scratch Theater. ... When she heard this idea she embraced it ... and she's actually coordinating sixty choreographers for the event."

David Morneau's work with sixty-second forms was less an aesthetic melting pot and more of a test of sheer compositional endurance. For an entire year, Morneau composed and recorded a sixty-second piece every day. At EMM he presented a mix of ten of these compositions. Morneau explained how he found inspiration for a new piece every day:

> "It was a chance to explore every different thing that I was interested in. There's a lot of sample-based things. There's a lot of synthesis. There are [others where I] just find a quirky little program online, but I was interested in just doing a piece with it. ... Sometimes it related to something in my daily life. So all my families birthdays I did a piece for them, and holidays were generally acknowledged."

Another composer inspired by his daily schedule was Jeremy Baguyos. On day three of EMM, Baguyos presented a piece for double bass and electronics called *Balancoire #16 (Suburbian Rat).*

> "It's supposed to represent a Washington DC commute. It was my first autobiographical piece. ... A piece where I literally write about a musical gesture representing an autobiographical idea or thematic idea. The entire piece really does represent a commute from the outer suburbs - farther out than Woodbridge all the way into Washington DC, a commute I did for seven years. ... The opening is very sparse. ... All you hear is the sound of nature, whatever that is, and it's just a low rumble in this case. As the piece progresses, you'll hear the double bass again with a very sparse electronic texture but eventually the texture builds. At the end the double bass is overpowered. Not to sound like a socialist, but the idea is that the double bass player is the commuter, the worker, a cog in some kind of corporate machine. ... All of your work just becomes material for the corporation, the computer, to exploit."

One of the few unforeseen events of the weekend occurred when Baguyos' performer fell ill before the performance, prompting the composer to step in and perform the piece himself (Baguyos teaches bass).

Madelyn Byrne presented a piece called *Arrival* that uses a symbolic approach similar to the one used by Baguyos in *Balancoire #16 (Suburbian Rat).*

> "This piece uses travel as a metaphor for self-discovery and living with integrity. It has different sections that

> go with it. The first deals with solitude and being with oneself. It has some rain sounds and footsteps. ... Then there's some TSA announcements and airport announcements and airplane sounds. I'm kind of using the TSA announcements and homeland security announcements as a metaphor for manufactured fear. ... That all comes to a culmination and then we move on to a more peaceful section that is reminiscent of the time I spent in New York City. There's subway trains in there and lots of different piano lines and voices. The piano lines are kind of representative of the different voices and the diversity in New York, which I found really liberating and freeing, actually. That's in the latter half of the piece and then I tie things together in the end and bring it full circle."

Hye Kyung Lee presented a piece for piano and electronics called *Marimbella*. Although she rarely composes for electronics, she was inspired to write *Marimbella* by an electronic piece that she submitted to 60x60. Lee spoke about the process for composing *Marimbella*, and how it stretched her skills as a composer for traditional instruments.

> "I wrote a 60x60 that used just a marimba and bell sound, and it was just one minute. Later when I heard the playback, I felt like 'Oh I can add piano.' So I did. So now it's a five-minute extended version. It's totally based on the pitch material from the tape piece ... [and now] I'm trying to get more into electronic music but because of my background in acoustic music, I don't see tape music just on its own."

At the last concert of the second day of the festival, I caught up with composer and guitarist Mike Frengel. Frengel had just finished performing his composition *And Then, Romina*....

> "I'm interested in using live electronics to extend the instrument. It's an issue of how do you work with traditional instruments in a non-traditional way. And my approach to that tends to be to mess up the instrument quite a bit. So detune it. Stick things in the strings. Play with nontraditional devices. That just immediately gets you in another world sonically. ... I did a PhD in London, and within days of arriving in London I met a group of Italian people. I'm Italian by heritage. So we hit it off and started hanging out together and they just loved songs and loved music and they would drink a little bit and sing these songs. And one of these songs, *O surdato nammurato*, was a traditional Italian song. ... So I guess, often times with my music, it's not that it's necessarily about something, but things that are happening in my life around me ... the influence enters into the music."

Composer Richard Zarou displayed a similarly multi-cultural background in the piece he presented at EMM.

> "This piece was really influenced by growing up in a Greek Melichite Church. ... It invokes the sound of the church and the bells to the way that the room is set up in a circular setting and the use of chant and the idea of multiple people moving at different tempos. It has kind of a choir sound to it. ... I created my own sort of chant that mimics the sound of that chant. It's not exactly a chant, but it is meant to invoke that feeling."

Zarou was also among a small contingent of younger student composers represented at EMM. Adam Scott Neal, an M.A. student from Queen's University Belfast, Ireland, is part of this group. Neal's piece is called *Obedience School* due to the origin of the materials used in the composition - it is based on a fifteen-second sample of a dog. Although the source material may on some levels inform the piece, it is not evidently noticeable in the final production. Neal explained how the original recording dictated the form of the final piece.

> "The onsets of different sounds, such as a pant, a bark, or a footstep determined the beginnings of formal divisions. ... The other idea I'm going for is that of a palimpsest, which is a scroll that has been erased and written on and erased and written on. So you get traces of something else. I have several different processes going on throughout the piece. Each section focuses on one [process] but others pop in and out. So you kind of get a mish-mash of different processes."

After the last concert of EMM 2008 had wrapped up, when the attendees had mostly filed out of the theater, it was clear that the eighth incarnation of what started as the Kansas City Electronic Music Festival in 2000 had been a success. As usual, the festival was well organized and efficiently programmed. Each concert was programmed to run just long enough so that the audience could fully enjoy each piece. Each day, the casual atmosphere allowed a rare opportunity to candidly speak to composers about their work.

The University of Iowa, Electronic Music Studios Concert Series

Reviewed by Israel Neuman
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The second concert of the 2008-2009 Electronic Music Studios (EMS) concerts series was held in the auditorium at the Becker Communication Studies Building on November 1, 2008. The EMS at the University of Iowa School of Music produces four concerts during the academic year, aiming towards the performance of works by students, faculty, and alumni. The program included five compositions. The opening piece, *Life-Drawing* (2001) by UI School of Music faculty member Lawrence Fritts, and the closing piece, *Respiration* (2008) by Chris Shortway, a current UI Ph.D. student, were both written for flute and computer. The second composition in the program was *Left to His Own Device* (1996) by guest composer Eric Chasalow. Two additional selections on the concert were composed by UI alumni: *In the Very Eye of the Night* (2004) by John Ritz and *Situational Resonance* (2008) by Rachel Foote.

In 2008, the EMS has faced one of its greatest challenges since it was founded in 1963. The June 2008 flood severely hit the entire university and the arts campus in particular. The Voxman Music Building was closed to the public indefinitely, forcing the relocation of EMS. Fortunately the floodwaters did not damage the equipment of the studios, including items of historical value such as the Moog and Arp synthesizers. In spite of these difficulties, EMS was able to find a new home in a TV production studio at the Becker Communication Studies Building. Due to the incredible efforts of faculty, staff, and

students, the studios were reopened in their new location for the beginning of the 2008 fall semester and currently offer students an improved and upgraded environment for study and work. The concert series produced by EMS during the 2008-2009 academic year testifies to the strength and the fast recovery of the studios.

Lawrence Fritts has been the director of the EMS since 1994. Under his supervision, the studios have seen many advances and upgrades of software and hardware. In 1996, Fritts created the Iowa Musical Instruments Samples Project, consisting of a collection of samples that was recorded in the anechoic chamber at the UI department of Communication Sciences and Disorders. This collection, frequently used by composers and researchers nationwide, can be found on the EMS website at http://theremin.music.uiowa.edu/MIS.html.
His composition *Life Drawing* (2001) for flute and electronics performed at the EMS concert (dedicated to Tadeu Coelho) is a meticulous reconfiguration of the physicality of sound. In this piece, the flute is chosen as the primary sound source. The compositional process analyzes, extracts, and manipulates the timbral identity of the flute sound. The solo flute sections that open and close the piece define a motivic and gestural substance, which is transformed throughout the work via interaction with the computer.

Composer Eric Chasalow visited the University of Iowa in the fall 2008, as the UI Center for New Music performed his multimedia chamber opera, *The Puzzle Master* (2007). Chasalow has been the curator of *The Video Archive of Electroacoustic Music* since 1996 along with sociologist Barbara Cassidy. It is an oral history project, which currently includes 50 hours of digitally recorded interviews with many pioneers of electronic music including Mario Davidovsky, Max Matthews, and Bebe Barron. The project not only seems to be focusing on the actual archiving of interviews but also provides compositional opportunities for Chasalow (http://www.ericchasalow.com/pdfs/composing-from-memory.pdf), as seen in his work *Left to His Own Devices* (1996). The composition, which he defines as "musical commentary" and "parody (in its oldest musical meaning)" (http://www.ericchasalow.com/pdfs/composing-from-memory.pdf), is based on documented interviews with composer Milton Babbitt and takes its title from an unfinished composition by Babbitt. In this work, Chasalow utilizes word-painting techniques to selectively process Babbitt's speech recordings via tape speed modulation, pitch-shifting techniques, filtering, delays, and reverberation juxtaposed on digitally reproduced nostalgic RCA synthesizer timbres.

John Ritz, who was an undergraduate student at the University of Iowa, presented his composition *In the Very Eye of the Night* (2004), making a reference to the macro-micro dichotomy on various compositional levels – gradual transformations between a sine wave and white noise, monophonic voices and polyphony, high- and low-end register materials, and between the proximate and the distant, suggesting a principle similarity between those two universes.

The fourth composer at the concert was alumnus of UI Rachel Foote, who received master degrees in composition and oboe performance in 2006 and 2007. Foote, who has used often the Moog synthesizer in collaboration with Paul Alan Brenner, took a step away from the Moog synthesizer in her piece presented at the concert. The selection of sound sources for her composition *Situational Resonance* (2008), an exploration of the soundscape genre, includes samples of birdcalls, water, and

trains. The piece begins with fast transitions between those different sound entities framed by silence. The identity of the sound source is maintained throughout the piece, as is often expected in a soundscape composition. The drama, however, evolves around the transformations of the relationships between the sound entities – from discrete to overlapping to almost what seems like a fusion of different sound worlds.

The last piece on the concert was by Chris Shortway, currently a Ph.D. student in composition, studying with Lawrence Fritts. His composition *Respiration* (2008) for flute and computer was created using Max/MSP and Pro Tools. The piece displays a high level of layered complexity and attention to details, highlighted by an asymmetrical and at times disjunctive perpetual motion as the foundation for delivering intricate interaction between the computer and the live flute sounds. Shortway exhibits controlled compositional intentions through the contrast between the fast-paced multiplicity of short, computer-generated sounds, which convey a sense of randomness, and the presence of the live flute, which is tightly aligned with the computer.

It goes without saying that electronic music concerts are preceded by hours of preparation, equipment setup, wiring, trouble-shooting, and sound-checks (along with taking everything down after the audience leaves). The success of any such event depends by large on the professional work done by the technical team. In the case of the EMS concert, which ran smoothly without a glitch, the gratitude goes to the EMS studio assistants, the 2008 fall semester electronic composition class, and to volunteers, who all contributed to the success of this concert.

[re] – everglade, 2006 / Third Practice Electroacoustic Music Festival

Audio and video DVD, everglade records, 2008.

Reviewed by Mark Zaki
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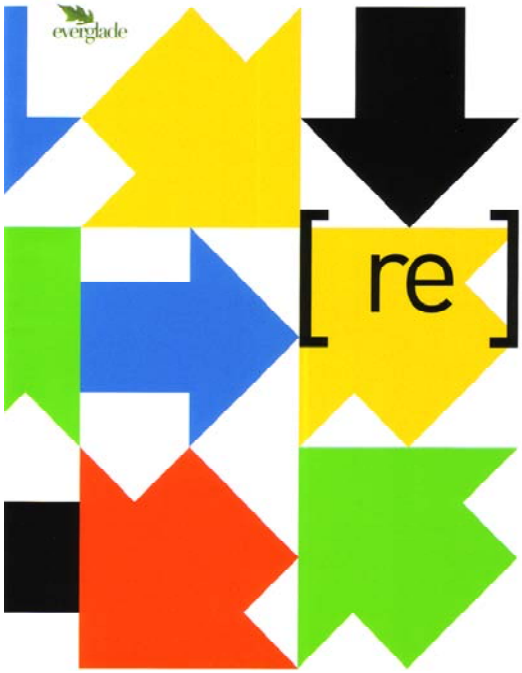
Intent on exploring relationships between contemporary electroacoustic music and the musical past, the University of Richmond's Third Practice Electroacoustic Music Festival commissioned thirteen composers to create short multi-channel works that "reflect on, reinterpret, comment on, recompose, or reconsider past music compositional techniques, practices, specific works, genres, styles, forms and practices." Composers were encouraged to articulate their own perspective to reconnecting with the past. At the same time they were specifically asked to rethink and reframe past musical concerns in light of the current state of technology in contemporary electroacoustic music. What naturally emerges in *[re]*, is a collection of works that ultimately offer divergent and subjective answers to a deceptively simple question: How might one define a connection for a contemporary electroacoustic sensibility by using musical practices of the past as a compositional touchpoint?

Two things readily jump out listening to the disc as a whole. Given the premise, it is obvious that on a high level, all the pieces revolve around an inevitable point of intersection between past and present. This might have resulted in a more academic exercise had the commission specified one particular piece or idea for the composers to approach. However, since the composers were free to choose their own interface with the past, those choices become significant in

their own right and reveal much about each composer's musical priorities. Things tend to get interesting when the listener identifies the "point of entry" and how each composer deals with the combination of new and old ideas. The other striking feature is that since most of the pieces contain "genetic" material from external references and/or representation of past techniques, there is an underlying physicality that belies and transcends the electro-acoustic medium. Despite the ability to reduce the perceived origin of sound generation to an abstraction, empathy for the "human performance" is always present.



Appropriately enough, the disc begins with Stephen Vitiello's *One Violin.* Mr. Vitiello doesn't point to a specific historical work as his source; instead he creates a moving, evocative tapestry out of raw materials provided by violinist Matt Albert of the new music ensemble eighth blackbird. These materials consist of recordings of a series of tasks that Mr. Albert was asked to perform ("play the lowest note on your instrument, use the violin as a percussion instrument, etc."). The piece begins with recordings of these performances - undulating A major sonorities that ultimately disappear into a texture enhanced by field recordings of city streets and state parks. The violin eventually re-establishes itself, unadorned on a layer of processed sound.

Benjamin Broening's *Lamentation Alphabet [after Tallis]* reaches back to the distant end of the historical spectrum. Mr. Broening focuses on two distinct attributes of the original music: the physical space in which it was performed (with its attendant reverberant characteristics), and the registral contour of the original passage on which the piece is based. The result is a beautiful reinvention of the original texture, which continually expands in a kind of "static busyness" to fill what Mr. Broening describes as an imaginary and malleable physical space.

Perhaps one of the more remarkable works on the disc is Mark Applebaum's *Variations on Variations on a Theme by Mozart.* Based on Wolfgang Amadeus Mozart's piano variations on *Ah! Vous dirai-je, maman*, Mr. Applebaum manages to subvert Mozart's music under a barrage of eighteen prepared pianos (without sound synthesis or sound processing), while completely preserving Mozart's pitches, rhythms and formal attributes "from the global sequence of variations down to the note level." Focusing on the deliberate collision of source material and contemporary instrumentation, the listener is pulled forward into new terrain while continually reminded of its historical space. Almost a palimpsest in nature, the effect is a revealing and entertaining journey through the back alleyways and side streets of a familiar and well-recognized location.

John Gibson's *Slumber* looks to music from Schumann's *Kinderszenen, "Kind in Einschlummern".* Almost all the sounds in the piece originate from Ms. Mary Rose Jordan's recorded performance of the Schumann. The work begins in a noisy

fashion, a surface made up of several layers of shimmering, asynchronous repetitive patterns revealed through processing of the piano performance. The overall impression is that one is looking at the Schumann work "sideways," and observing a cross-section of the work in slow motion. Eventually the layers are slowly peeled back through the course of the work, finally turning and settling into a quotation from the end of the Schumann.

With *Epitaph [Four Voice Canon #21] [tmfg],* Larry Polansky starts with five of his own guitar improvisations as subject matter. Each improvisation is based on a limited set of materials, and uses a different guitar tuning for each part. Mr. Polansky subjects the improvisations to various sort routines that partition each one according to four predetermined criteria (pitch, chroma, segment-length, and a combination of spectral centroid and spectral stability). The twenty resulting "sorts" are then subjected to further routines that determine internal formal characteristics of the work, including sequencing and channel distribution. Given the limited scope of the initial improvisations, the net effect is one of a continually shifting and contained texture that resembles a kind of musical "Brownian motion."

Gagaku by Mark Wingate, is the only piece on the disc that takes a non-Western idea as its impetus. Despite the title, Mr. Wingate stresses in his program notes that the "piece makes no attempt to imitate or adhere to any formal Gagaku design, but rather to suggest the essence of such music refracted through the lens of 21st century occidental musical thought." What comes through most eloquently is a carefully proscribed cultural conversation, spiraling around and between the concurrence of Eastern and Western musical gestures.

Based on the medieval Christmas Carol *In hoc anni circulo,* Colby Leider describes *Circulo* as a transfiguration of the original solo vocal melody into "one broad stroke of texture." Largely harmonically static, Mr. Leider deftly manages to keep the ear engaged by subtly shifting timbres, rhythms, and pulses while the vocal "presence" maintains a corporeal line through an otherworldly space.

Scanner's *Sung Back* appears almost as if it were a musical scrim. Using the technology to "interrogate" Bach's Cantata BMV 199 *Mein Herze schwimmt im Blut,* the resulting transformations create a pulsing layer through which one can peer through to assess the original. Underneath this, Scanner adds a repeating motive from the Bach as counterpoint. These two elements quietly gyrate around each other while competing for foreground attention. This jockeying of musical parts helps to reinforce a framework that guides our observation of the work.

In *Mozart's Reqiuem,* Kristine Burns steps back to reconsider the work and the composer in the context of contemporary opinion. Rather than drilling down too deeply into musical issues, Ms. Burns offers a choreographed, journalistic romp through a fragmented and often humorous treatment of the Reqiuem and the narrative attitudes that accompany it. In the end, *Mozart's Reqiuem* reveals itself as a wry commentary not only on the Mozart but also as a self-reflective look at subjective musical criticism itself.

Showing a deep interest in American Roots music, Matthew McCabe's *Prison Songs* is a historically and environmentally descriptive journey through the songs of prison inmates and convicts. *Prison Songs* centers its attention on the extreme living and working conditions that were forced upon the convicts. Starting from the point of view that historical recordings tend to strip away this harshness, *Prison Songs* strives towards another space, effectively creating a realistic look into the austerity of the inmates' world. Beginning with an unprocessed and unvarnished recording of the inmates' singing, the piece moves through recognizable samples of engines, chain gangs and slamming doors. The

sounds progress through processing and manipulation to a point where they become "imprisoned" within the musical texture. Eventually the music returns to the unprocessed song, "releasing the singers, if only for a moment, from the reality of their lives".

The most allegorical work on *[re]* is Ricard Climent's *1666: Annus Horribilus.* Mr. Climent points to the year 1666 as a watershed year in western history. The year saw the conclusion of one of the darkest periods of English history coinciding with a fertile and creative period beginning to bloom on the European continent. Taking this dualism as its main inspiration, *1666: Annus Horribilus* is cast in an unfolding AB form. This design reinforces the contrast implicit in the metaphor and highlights two different sonic environments that are both based on and derived from the same sound world. On a basic level, the piece is a sustained discourse on the dichotomy between good and evil. The piece begins with a percussive texture that eventually gives way to a static and disembodied vocal sound. Playing on this contrast, the percussive elements return as a microtonal counterpoint to the sustained sounds as they recede into the background.

Mason Bates' *Good People*, takes the original commission's premise one step further by combining electronic trip-hop beats with acoustic jazz. The piece focuses on the juxtaposition of these two sound-worlds, each of which is defined by location and frequency. Mr. Bates describes re-mixing the work for 5.1 as a chance to "put some of the acoustic instruments behind the listener, while the clicks of the beats dance around the space."

[re] closes with Allesandro Cipriani's *Aqua Sapientiae/Angelus Domini.* The work is based on the two Gregorian Chants of the title and centers on the importance of reverberant space to the original conception of performing and experiencing chant. Mr. Cipriani subtly utilizes reverb to create shifting and continually morphing spaces to enhance the contour and signature of the vocal line. The original line is fragmented and re-contextualized, uncovering new relationships between timbre and revealed polyphony. There is also an exploration of "its relation with profane and ancient popular music." A fitting close to a collection of pieces that began with "one violin," *Aqua Sapientiae/Angelus Domini* ends with a voice that is almost untouched. Mr. Cipriani hopes that we now hear the voice with "different ears" because of the electro-acoustic exploration that preceded it. The same could be said for the entire disc, which is a marvelous opportunity to inspect and (re)hear music from the past with a new and unique perspective.

Signals: Instrumental and Electroacoustic Music of Jeffrey Hass
by Jeffrey Haas

Audio CD, Indiana University, 2004.

Reviewed by Brent Reidy
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A lesser composer might be intimidated by his environs. Jeffrey Hass teaches at Indiana University, a music college-cum-conservatory stuffed with stars like Joshua Bell and Menahem Pressler. Worse yet, Hass's post was once occupied by Iannis Xenakis. Hass's recent recording, *Signals: Instrumental and Electroacoustic Music of Jeffrey Hass* (2003), is a testament to the strength of the school and the best of electro-acoustic music. The electronic works on this recording, *Keyed Up For Two Amplified Pianos* and *Lost in the Funhouse for Symphonic Band with Electronic Tape* are technically adept efforts full of life and personality.

As a former student of his, I'm familiar with Hass's penchant for laughs. His classes are often punctuated by heartfelt guffaws. His music sparkles in the same way, combining the most serious of electro-acoustic music with a distinct taste for fun. *Gadget*, the first movement of *Keyed Up* (for two amplified pianos and electronic tape), builds towards conclusion with a frantic pace. The tension is broken by the sound of shattered glass, a misplaced sound not heard earlier in the movement. The gesture is effective and humorous, breaking the stress of climbing towards climax with wit and charm. I once read a review in the Charlotte Observer of Kurt Vonnegut that stuck in my mind. The author claimed Vonnegut "strips flesh from the bone and makes you laugh while he does it." Hass does the same. (And, if you are afraid that my being his former student might influence this review, worry not – he no longer holds power over my GPA.)

Gadget begins *Keyed Up* with industrial sounds, the pianos transformed into steam engines and dynamos. The electric noise gives way to a passage unmodified by electronics. The most interesting part of this movement and the entire work is the rapid shifting between passages so heavily modified that it is hard to hear how they derived from a piano, next to the naked sound of the piano alone. The changes are often punctuated by sharp slides of the fingers along a piano's interior strings, a bone-chilling sound that harshly transports the listener from one world to another.

Gadget concentrates on repetitive rhythmic clusters of chromatic sounds and clicking noises. The following movement, *Early Reflections*, is a welcome relief from *Gadget*. The stacked consonances at the movement's opening are graceful and haunting. They later give way to more frantic and less harmonious riffs from the pianos. The entire movement is without electronic modification, which serves as a contrast, somewhat typical of slower second movements, to the electronic noise in the movement before.

Loose Canons, which follows, is the antonym to *Early Reflections*. The movement is heavily electronic, loud and brash – everything a third movement ought to be. It is a fitting conclusion to a work that is impressive and downright enjoyable.

Lost in Funhouse shares many characteristics with *Keyed Up*. Both are three-movement works and both employ tension and humor with care. The first movement, *Cheap Thrills*, begins with gravitas that seems out of place given the title of the work and movement. Of course, that is the point of the movement; it is full of emotional pulls that are constructed to be just that – cheap thrills. The movement that follows, *Upon Reflection*, is more sobering, a five minute repose. Its affect is anything but cheap; the long-breathed movement is resplendent. *Lost in the Funhouse*, the movement that concludes the work, is less successful, not because it isn't well constructed, but because it's difficult to stand up anything against the movement which it follows.

The electronic works on the recording reward first and multiple listenings, a feat rare in modern electro-acoustic music. Some electronic composers are lauded for their technical abilities; Hass deserves praise for his emotional palette. Compared to his peers, Hass's highs are higher, his lows are lower, and his laughs are louder. The works aren't worse for the wear when heard many times because emotions do not lose their shine like technical effects often do. A happy listener could remain lost in Hass's funhouse for quite some time.

Wounded Breath
By Erdem Helvacioglu

Audio CD, Aucourante Records 0899, 2008.

Reviewed by Brent Reidy
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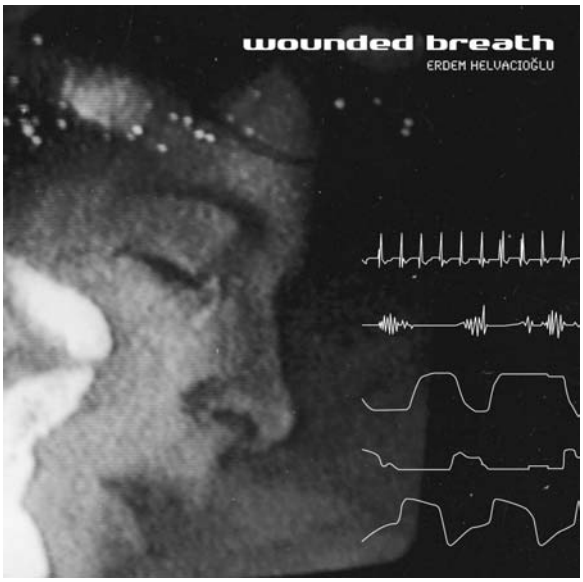
Wounded Breath is the latest from Erdem Helvacioglu, an exciting young Turkish composer, following his 2006 CD, *Altered Realities* [New Albion NA 131]. Helvacioglu has in recent years earned deserved recognition for his efforts, with awards from the Luigi Russolo and Insulae Electronicae Electroacoustic Music Competitions and presentations of his music at the San Francisco Tape Musical Festival and the Sonoroties Festival of Contemporary Music, among others.

Helvacioglu's electronic music on this CD is borne out of his work with guitar improvisation. While in high-school, he cut his teeth in Istanbul's underground music scene as a guitarist in the rock band Too Much. While the composer's electronic compositions do not directly borrow any brashness from rock, his guitar playing seems to strongly influence and perhaps even define his aesthetic. All the works on *Wounded Breath* are based on guitar improvisation and manipulation.



Wounded Breath features five "long" compositions following a vaguely programmatic structure: "Below the Cold Ocean," "Dance of Fire," "Lead Crystal Marbles," "Blank Mirror" and "Wounded Breath." The first two and last work are just under twelve minutes, while "Mirror" is less than ten minutes and "Marbles" clocks in at just over seventeen. Helvacioglu's liner notes give a journalistic, staccato description of each work:

> *Beneath the Cold Ocean:* A diving crew. The Arctic Ocean. The rhythmic push and glide of steel blades on frozen water. The click and clack of the ice. The blowing wind and the bitter cold. The moment of diving. The feel of freezing cold water. The atmosphere. The water all around us. We are also there. (Helvacioglu)

The notes do not structure a narrative but rather guide reaction. They stimulate abstract imagery in the mind of the listener. They are not necessary for a listening of the work but are rather "helpful" and imaginative.

The works are gorgeous and austere while the interplay of guitar and electronics is never gimmicky. Often it is difficult to tell how sounds relate back to Helvacioglu's instrument of choice but perhaps his relationship with his guitar and electronics could be best described as organic. Helvacioglu's works and his descriptions of them are at once lavish and threadbare, immersive, and distanced. The works are long-breathed but do not overstay their welcome. There are moments on the record of true epiphany. Lengthy passages lead to resolutions satisfying but not overwrought. He is sensible, pithy.

"Below the Cold Ocean" begins the recording with scratchy, high-pitched chatter. The strength of the track is its nervous energy; its weakness is that the energy never feels properly released. One form of twittering sound flows to the next without pause. Even when the piece quiets, a high-pitched granular sound hovers above the din. Hairs on the back of the neck are made to stand up, but are never properly let down. Twelve minutes is a long time to be on the edge of one's seat.

"Dance of Fire" is full of crisp, angular sounds, stark silences, and moments of repose. The harshest sounds give way to ethereal release. It is the most balanced track on the recording, especially in its coda, which ends with a satisfying gesture that sounds, feels, and tastes like tonic. "Lead Crystal Marbles," which follows, seems unwieldy by comparison. It feels oddly out of proportion. The piece lacks unity; twelve minutes in it departs to an unexpected world of soft noise. The segment does not fit, though is it exceptionally crafted.

The last two tracks, "Blank Mirror" and "Wounded Breath", offer more of the same in terms of the musical texture and compositional approach. If one listens to the recording straight through, one might notice that the tracks tend to blend together. This might be because the sounds are all produced from Helvacioglu's guitar or because he favors certain processes over others. Regardless, while the individual tracks are in many ways exceptional, each loses distinctness when considered along with all the others. That said, the introduction "Blank Mirror" winks mysteriously in and out of existence. The liner notes describe the work as "A man. A blurred image in the mirror. A closer and deeper look. Is it he? Who is this stranger?" Here the programmatic music is its most successful, if not downright chilling. The piece ends the same way. The man backs away from the mirror, the image fades, the question "is it he?" never answered.

The panoramic works on *Wounded Breath* could easily be attached to film. Hence, it is not surprising that Erdem Helvacioglu is also an accomplished film music composer. He won "Best Original Soundtrack" at the 2007 Mostramundo Film Festival for his work on "Poyraz," a film featured at the 2006 Cannes Film Festival. The music on this recording is music that deserves an attentive ear but can also be left in the background and enjoyed much like music for film.

Introduction to Digital Signal Processing: Computer Musically Speaking
by Tae Hong Park

429 pages, World Scientific Publishing Company, 2010, US$85.

Reviewed by Ted Coffey
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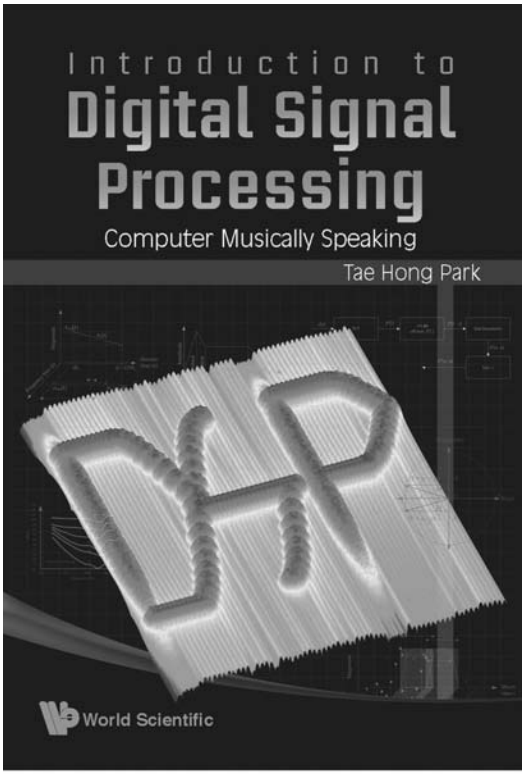

Introduction to Digital Signal Processing, Computer Musically Speaking (World Scientific, 2009, 429 pages, nine chapters, and an appendix), by Tae Hong Park of Tulane University, offers a thorough and welcoming introduction to an array of DSP topics. The text is designed to reach a wide readership: musicians who want to get under the hood with signal processing, engineers interested in the application of DSP to musical ends, and lots of folks in between. Audio signals and music in general are made central figures throughout the discussion, planting abstract concepts of DSP firmly on familiar ground. Park states that "most concepts will be manageable having knowledge of algebra," and though calculus occasionally finds its way into the mix, this is true – though some readers may find it necessary to review a bit of math to follow the exposition [this reader did]. Park aims to remedy omissions in two types of existing texts: music-centric ones that tend to gloss over the mathematical and theoretical basis of their subject, unveiling equations that conclude processes not presented to the reader; and engineering-centric DSP texts that don't provide demonstrative, real-world, and especially musical applications of the concepts developed. One of the many strengths of Park's book is the careful oscillation of mathematical derivation and proof, and a rather conversational supporting textual argument. It is clear that he wants the reader to understand these concepts in her bones. To this end, the text is filled with figures, tables and illustrations, as well as a wealth of downloadable code for the MATLAB® environment implementing all the important concepts, allowing the reader to play with DSP right away.

In general, the materials are sequenced in a straightforward and deliberate manner, grokking later concepts is made possible through grokking present ones, and understanding is accreted. There is some repetition of fundamental figures, for example the sine wave is periodically revisited, recast, and rendered more profound by material absorbed since the last visit. The chapters lengthen as the book unfolds, from ca. 20 to ca. 80 pages; and there are in general more equations per page as a function of page number, too. However, the reader is never left alone to suffer an

assault of equations, as the congenial tenor is constant.

The book is broken into nine chapters and an appendix: 1. Acoustics, Hearing Limitations, and Sampling, 2. Time-Domain Signal Processing I, 3. Time-Domain Processes II, 4. Sine Waves, 5. Linear-Time Invariant Systems, 6. Frequency Response, 7. Filters, 8., Frequency-Domain and the Fourier Transform, 9. Spectral Analysis, Vocoders, and other Goodies, and an Appendix, containing a brief primer on pitch scales and pointers to the MATLAB® programs supporting the text. (There are 80 code examples total.) Each chapter concludes with a "Musical Examples" section pointing to paradigmatic musical appearances related to that chapter's DSP topics. The first chapter describes the relevant audio environment, presenting the physiology and psychoacoustic situation of the listener, as well as the basics of digital audio. Chapters 2 through 4, roughly speaking, build on the latter, getting into time-domain descriptions and techniques around amplitude and pitch, and fundamental synthesis and processing topics. Chapters 5, 6, and 7 present orthodox DSP topics such as difference equations, impulse and frequency response, convolution, z-transforms, and filter design. Chapter 8 moves fully into the frequency domain with an in-depth discussion of the Fourier transform, and revisits previously discussed topics in light of frequency-domain paradigms. Chapter 9 continues to trace various uses of Fourier, set up by discussion of the channel vocoder and LPC, and concludes with current topics in computer music research.

Chapter 1 begins with the sine wave and unit circle, and after just three pages we are given our first code example. From there we move to hearing, psychoacoustics and scales of pitch and loudness, the sampling theorem, aliasing, quantization, DC offsets, distortion [clipping], and dithering. The presentation of these materials is brisk and rather typical. The explanation of aliasing is characteristically clear and newly imagined. Again, as is always the case, the chapter ends with a "Musical Examples" section, references and further reading. Chapter 2 moves from amplitude envelopes to wavetable synthesis, windowing, RMS, time-domain fundamental frequency computation, sample rate conversion, and OLA (Overlap And Add) processes. Again, code is integrated into the text. Chapter 3 addresses granular synthesis, amplitude distortion, dynamics processing and waveshaping, panning, and delay effects including chorus and flanging. Chebyshev polynomials are introduced as follows: "One classic approach that is often encountered in designing the transfer function is the *Chebychev polynomials of the 1st kind* which should not be confused with *Close Encounters of the 3rd Kind*." Park proceeds to derive the general form of the Chebyshev polynomial of the first kind from trigonometric identities – and then discusses musical and musico-historic implications. Chapter 4 introduces imaginary and complex numbers, Euler’s formula, and amplitude, ring, and frequency modulation. In an approach typical of the pedagogical method here, the section on AM and RM proceeds from equational definitions to derive identities that make musical features (sidebands, in this case) explicit. Next come discrete versions, terminating in code, and the whole sequence is illustrated with figures.

With Chapter 5, LTI (Linear Time-Invariant) systems are introduced, laying the groundwork for subsequent chapters on frequency response and filters. The chapter begins with difference equations; then LTI systems are defined, introducing FIR, IIR, and convolution. An elegant depiction of the generalized difference equation is the final

step in an "understanding block diagrams" tutorial placed at the end of the chapter. Chapter 6 offers a thorough treatment of frequency response and the z-transform. Relevant section headings here introduce frequency response, phase response and distortion, 'The (Almost) Magical Z-Transform,' region of convergence, the inverse z-transform, and 'Useful Tools in MATLAB®.' This is the longest chapter yet at 55 pages. Again, these concepts are illustrated with 'musical' situations. Linearity of phase response is explained, for example, by imagining a CD player that delays an ensemble per tessitura. Chapter 6 contains this reader's vote for best sentence in the book: "Examples of the z-transform in music are not that common per se . . . " [Runner-up: "Try clapping loudly (once only) in whatever room you are currently in and listen to the characteristics of that room (hopefully you are not in the library or in a crowded public bathroom)."] Chapter 7 introduces basic filter concepts and nomenclature, then building on chapters 5 and 6 introduces low, high and band-pass filters, and band-stop filters. A brief tutorial on using MATLAB® for filter design is inserted. DSP involved in musical applications of filters is next, including sections on subtractive synthesis, the bi-quad filter, the Karplus-Strong algorithm, and phase delay effects including a simple all-pass reverb. This chapter is very effectively supported by illustrations [68] and distinct code examples [15].

Chapter 8 provides a detailed introduction to frequency-domain processing and the various species of the Fourier transform. The reader has by this time been well prepared for the math, and the presentation is particularly clear. Notable are a detailed look at windows and a second, frequency-domain-informed look at such previous topics as aliasing, up- and down-sampling, and convolution. Attention is paid to details of algorithm implementation – for example, an explanation of the "butterfly" scheme of the FFT. The chapter ends with a discussion of Paul Koonce's *Hot House* (1996). Chapter 9 deals with a variety of spectrally-focused methods and applications, and a look at current research topics. Highlights here include the most useful explanation of LPC (Linear Predictive Coding) this reader has seen, a substantive treatment of frequency-domain techniques of frequency detection to complement corresponding time-domain techniques outlined in Chapter 2 (areas in which Park is especially expert), an explanation of how the phase vocoder actually works, and other "spectral goodies." The text concludes with an introduction to "feature modulation synthesis," a synthesis-by-analysis approach to sound synthesis and timbral design developed by the author.

Its discussion of music is modest and occasionally esoteric, and the reader won't find a wide selection of block diagrams to implement ring modulation instruments here. The text lacks a section on randomness and noise – an omission relative to other introductory DSP texts that might have been particularly relevant to computer music. Beyond code examples, no exercises or problem sets are given. But no single text can address all the interests of its imagined communities. In providing a solid account of both the how and the why of audio-focused DSP, this text does just what it sets out to do, deftly and with good cheer. It is clearly the work of an experienced teacher – and indeed was developed teaching seminars in the Music Science and Technology program at Tulane University, led by Park. The experience of the book is more like hanging out in a kitchen than going to a restaurant. The right answer is never dropped onto our laps, but we are guided to an understanding of it, tracing the author's chain of thoughts, to see how *reasonable* it all is. In the Preface, Park wishes aloud that the reader

might pick up initial DSP concepts in a "somewhat subconscious manner." While this might seem a little optimistic, the book's design does work to effect a deep understanding of its subject, to make it a native tongue. Phrases such as "now what does all this mean?" are more than mere rhetoric. The careful reader leaves *Introduction to Digital Signal Processing, Computer Musically Speaking* ready to use all of the concepts and means proper to audio DSP, and will have perceived the *rightness* of them through following their emergence. As a reference book and a comprehensive textbook for teaching audio-related DSP to undergraduate or graduate students in any number of disciplines, this one will be hard to beat.

SoundHack Spectral Shapers

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Spectral Shapers are a group of 4 plugins that have been developed for Windows and Macintosh platforms, VST, RTAS, and AudioUnit formats. All of the plugins are based on amplitude manipulation techniques of spectral data. +binaural and +morphfilter are both FIR filters with adjustable frequency responses, +spectralcompand and +spectralgate use the time-tested dynamics functions of compression, expansion, gating, and ducking to process spectral data. In the winter of 2010, I plan to release free versions of these plugins as externals for Pd and Max/MSP. All of the software is available at http://www.soundhack.com

While most dedicated musicians have found using Spectral Shapers straightforward and intuitive, finding ways to make the most of these plugins can take somewhat more time to master. Below, I have outlined some of the techniques that I have used over the years in dealing with Spetral Shapers. These tips will help the user achieve optimum results not just more quickly, but also allow to find the "sweet spots."

+spectralcompand

The most popular of these 4 plugins seems to be +spectralcompand. The compression/expansion algorithm provides very smooth volume adjustments, and allows for large changes in dynamics before the effect becomes obvious. When in compression mode, +spectralcompand will attenuate harmonics which are higher than a set magnitude threshold. Conversely, when in expansion mode, it will attenuate harmonics that are lower than the set threshold. There are also attack and release parameters to control how quickly one wants to turn the effect on or off. Further control for tweaking the release and attack times is available via tilt, providing custom threshold levels for high and low frequencies.

Noise Reduction

The +spectralcompand is most powerful when used to reduce background hiss or hum from a recording. To get best results, the user must first locate a section which contains a noise profile of the sound and then start playing it in a loop through the plugin. This is achieved by clicking the "learnpeak" button - this will set the threshold envelope to be the same as the spectrum of noise. Next, set the dynamics ratio to 1:1.5 and raise the threshold level using the threshold knob. At a certain point, we will notice the hiss disappearing. Setting the attack to 0.0 and the release to 0.5 often results in natural attack and release characteristics. At this stage, the user can also finely adjust the threshold levels, dynamics ratio, and tilt to fine-tune the noise reduction plugin. It is also possible to monitor what portions of the sound are being removed by clicking the "invert" button.

Inverse Noise Reduction

One interesting application of the noise reduction plugin results from using the "inverse" of noise reduction – bringing the background to the foreground. The effect can be produced by first clicking "reset" to clear the threshold curve. This is followed by clicking the "invert" button and setting the dynamics ratio to 1:5.0 (maximum allowed ratio). Now, while playing sound through the plugin, raise and lower the threshold values. At this point, we should be

able to isolate the background sounds present in the signal. To get good results, it may help to have the gain turned up. Changing the attack and release parameters can also be used to expose the beginnings and endings of notes and other sound objects.

Spectral Compression

Spectral compression is somewhat similar to inverse noise reduction and is accomplished by again first flattening the threshold curve via the reset button and setting the dynamic ratio to 3.0:1. While playing the sound, start dropping the threshold level from 0.0 dB. At small threshold settings, subtle reduction of the loudest harmonics will occur, while at higher settings, it is possible to completely remove the identity of the sound itself. When using spectral compression, the attack, release, and tilt controls can be used to get a wide range of interesting results.

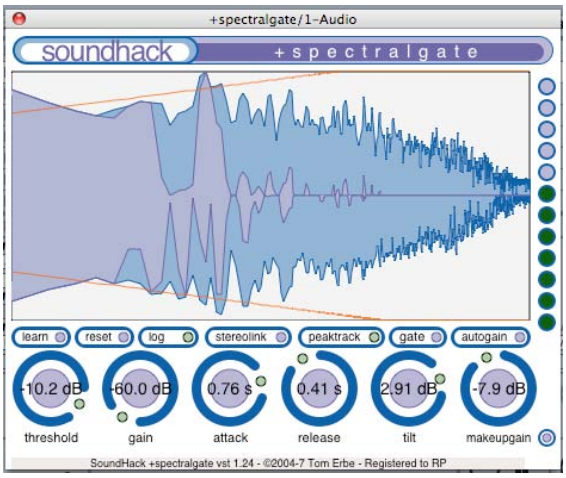
+spectralgate

This plugin has a lot of similarities to +spectralcompand: gating is similar to expansion while ducking is akin to compression. The difference is that while compression and expansion give you progressive gain changes, gating and ducking result in more abrupt changes. +spectralgate is not very subtle and often produces more "synthetic" results. The most interesting outputs are obtained when the input signal crosses the dynamic threshold levels and the plugin is set with a large gain setting.

Spectral Gating

Spectral gating is very similar in concept to dynamic gating and can be used to isolate strong spectral peaks (such as harmonics and modes). A good starting point entails setting the gain to -60 dB (make sure the gate/duck button reads gate) and positioning the attack and release controls to 0.0 seconds. Next, moving the threshold towards 0.0 dB will gradually allow the strongest harmonics to appear. Slowing down the attack will render gentle swells rather than abrupt "burbles," while the tilt control can be further used to expose either high or low frequency components.

Figure 1. spectralgate screenshot



An interesting function is the so-called "peaktrack." This can be used to draw out the loudest harmonics, regardless of the overall amplitude. When in this mode, the threshold will follow the amplitude levels dynamically, thus raising and lowering itself with the input amplitude.

Spectral Dynamics Inversion

Applying a positive gain along with spectral gating is useful in amplifying quiet parts of sounds. This is achieved by starting with the settings from the Spectral Gating section, initially reducing the makeup gain to -40 dB, increasing the gain to 40 dB, and lowering the threshold down from 0.0 dB. The tilt, attack, and release controls can again be used to modify the sound significantly.

+binaural

The +binaural plugin is one of the simplest Spectral Shapers modules to use. It simply utilizes HRTF filters to place mono sounds in various virtual locations around your head. A couple of things should be pointed out, however. The two sets of binaural filters in the plugin have distinctly different characteristics. Filter 1 attempts to preserve the overall spectrum profile of the source, whereas filter 2 is particularly well suited for rendering improved spatialization results. The +binaural plugin is particularly valuable for processing rhythmic or looped musical materials. Using the LFO sync control, one can lock the speed of the LFO to the MIDI clock speed, and use the envelope to make specific beats appear at repeatable locations. With the LFO speed set to 1.0Hz, the +binaural plugin can also be used as "faux" Leslie (organ) effect.

+morphfilter

The +morphfilter is a linear phase FIR filter which can take two frequency curves for morphing control. It is possible to morph between these two curves using the filter number knob. The filter's frequency response can be intensified, diminished, and inverted using the depth control knob. One of the more interesting features of this filter is that it can also automatically learn the frequency response from the incoming sound.

Resonance Removal

+morphfilter is also helpful in situations where a recording has undesirable, yet prominent room/instrument resonance. Such resonance can be removed by exploiting long portions of the source sound. Sampling just a short section may lead to removal of harmonics of a single note. After locating a long section, click "learn" and then play the sound. A subsequent click on the "learn" button will result in piping the overall spectral curve of the sound to the filter's curve. Now, changing the depth parameter from +1.0 toward -1.0 will invert the filter and remove the resonances from the original sound. Conversely, it is also possible to use this method to capture, rather than remove, stereo room or instrument resonances. Because +morphfilter can capture two separate filter responses, it can be conveniently used to smoothly cross-fade between two resonance spaces such as a room to a guitar body, for example.

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