Reviews

[Editor’s note: Selected reviews are posted on the Web at http://computermusicjournal.org/reviews. In some cases, they are either unpublished in the journal itself or published in an abbreviated form in the journal.]

Events

The Third International Conference on Mathematics and Computation in Music

Centre Georges Pompidou, Paris, France, 15–17 June 2011

Reviewed by Jordan Smith and Isaac Schankler
Los Angeles, California, USA

The Third International Conference on Mathematics and Computation in Music [MCM] took place 15–17 June 2011 in Paris, France. [The conference Web site is located at mcm2011.ircam.fr.] Hosted by the Institut de Recherche et Coordination Acoustique/Musique [IRCAM], many of the sessions took place next door at the Centre Georges Pompidou. The packed program included nine paper sessions on topics ranging from scale theory to cognitive musicology, as well as two poster sessions, two panel and discussion sessions, and concerts each night after the conference programming. The conference as a whole was deftly organized, with a tight schedule that nonetheless gave enough breathing room to attend IRCAM’s evening Agora Festival concerts, which showcased a parallel track of artistic and technological innovation.

There were also three keynote addresses. For the first, Pierre Boulez and mathematician and Fields medalist Alain Connes held a discussion, moderated by Gérard Assayag, that touched on many parallels between mathematical and musical work and creation. The wide-ranging conversation was well attended and appreciated by all. The second keynote address was delivered by philosopher Alain Badiou. Mathematician Stephen Wolfram closed the conference with the third keynote address, a talk titled “Music from the Computational Universe,” which was delivered via videoconferencing in a session chaired by Thomas Noll.

MCM conferences, which take place biennially and alternate between Europe and North America, enable mathematicians, computer scientists, and music scholars to come together and share their perspectives within an interdisciplinary environment. However, during the conference under review, many conference-goers and presenters called attention to the divisions that can persistently accompany this exchange of ideas. Many of these divisions were discussed at “Around a Geometry of Music,” an open panel discussion centered on Dmitri Tymoczko’s recent book. The panel discussion featured the author and was chaired by mathematician Emmanuel Amiot and music theorist Julian Hook (whose preamble provided an excellent overview of mathematical approaches to music theory, from Milton Babbitt up to the present day). The participants spoke about the separation between pure and applied mathematical approaches, between experimental and theoretical approaches, and repeatedly between American and continental European approaches. One of Tymoczko’s stated goals is to help bridge this divide, and although Amiot seemed to view this as a step in the right direction, he was troubled at times by the lack of explicit formulae or proofs in parts of Tymoczko’s book.

Parallel concerns arose at the lively panel discussion the day before, “Bridging the Gap: Computational and Mathematical Approaches in Music Research,” featuring Guerino Mazzola, Geraint Wiggins, and Alan Marsden, who respectively represented mathematical, computational, and traditional approaches to music research. The moderators Anja Volk and Aline Honingh (incidentally, the only two female presenters to be scheduled) recalled the historic lack of communication between traditional and computational musicology, but Marsden put forth the possibility that these two branches of musicology perhaps ought to be appreciated as separate approaches, both of which are valid and insightful, but which are not intended to be intermingled. He told the audience not to expect or look for a “Grand Unified Theory” of music, because there would always be multiple ways of understanding, for example, cadences. Wiggins argued for a cognitive approach to music theory that incorporates an understanding of human perceptual abilities and limitations. Mazzola alone held out hope that the proliferation of musical theories might one day coalesce into a single, coherent set of musical laws, and drew an analogy between the instability of our nascent cultural moment and the instability of physical laws at the beginning of the universe.

All the panelists seemed to agree that bolstering education between disciplines is crucial. Marsden called for less emphasis on scale theory, which dominated the first day of the conference, and for broadening the scope of the conference program. The final day of the conference offered a glimpse of what this interdisciplinary broadening might look like. For example, Edward Large’s paper presentation offered a novel cognitive model of tonality that combined the theoretical lineage of Hemholtz, Fourier, and Pythagoras with more recent research on neural resonance and enculturation.
Despite the copious attention devoted to intellectual divisions at the conference, at no point did they seem insurmountable. Instead, they served to highlight the vibrancy and diversity of the musical, mathematical, and computational communities. The impassioned and reasoned arguments that peppered the enjoyable panels, keynotes, and coffee breaks of this year’s conference were evidence of the urgency and profundity of the issues being addressed. The fourth edition of MCM, in 2013, will no doubt be richer for this exchange of ideas.

**Publications**

**Dan Hosken: An Introduction to Music Technology**


Reviewed by Douglas Geers
New York, New York, USA

Dan Hosken’s *An Introduction to Music Technology* is a well-written book that would be an excellent choice of textbook for university courses on music technology. Hosken covers topics including acoustics and psychoacoustics, digital audio, audio equipment, software for composing, notation, mixing, pedagogical applications, sampling, synthesis, and how computers function. He explains these subjects in a clear, accessible style and includes numerous figures and photos. The text is aimed at a wide range of college-level students with no background in music technology, and seems appropriate for conservatory performers, composers, and beginning audio production students.

The text is divided into five main sections: Sound, Audio, MIDI, Synthesis and Sampling, and Computer Notation and Computer-Assisted Instruction. Each of these sections contains two to four chapters that focus on aspects of the main topic. Following the main sections there is an appendix titled The Music Computer, containing two additional chapters that explain fundamentals of computer hardware and software. Each chapter ends with a list of important terms introduced in it; each section ends with suggested readings and activities to further explore the ideas discussed. A Web site related to the book contains links to additional materials and some audiovisual examples made specifically for the text.

In his preface to instructors, Hosken suggests that the text may be used for a one- or two-semester course, perhaps with some chapters omitted in the former case.

The first major section of the book, Sound, encompasses Chapters 1–3. Here Hosken presents the essentials of acoustics, human sound perception, and sound measurement, accompanied by illustrations that help clarify these concepts. There are explanations of the relationships between frequency and pitch and between amplitude and decibels (SPL), as well as a discussion of timbre, with a focus on the overtone series. One example of the text’s targeting of beginners is that through these chapters (and the entire book), the mathematics rarely moves beyond arithmetic.

The second major section, Audio, includes the chapters Audio Hardware, Digital Audio Data, Digital Audio Software: The DAW, and Audio—What Do I Need? Among these, the first is especially useful for conservatory-type musicians attempting to work with music technology, as it explains the types and uses of microphones and preamps, microphone-, line-, and instrument levels, the types of audio connectors, the anatomy of mixers, digital audio interfaces, amplifiers, and loudspeakers. Obviously, the materials covered in this one chapter could warrant at least an entire book for more advanced students, but this chapter, generously illustrated, serves as a clear and simple starting point for students and could be expanded upon by further explanation and demonstration during class. For example, the explanations of cables and connectors, with photos of each, will likely be valuable to, and bookmarked by, newcomers.

The Digital Audio Workstation (DAW) chapter is a mostly successful attempt to explain DAW functions without referring to a specific application. Fortunately, software has evolved to the degree that most major commercial DAWs share many functions and even methods for enacting them through the graphical user interface. Hosken includes illustrations...
from Pro Tools, Logic, Digital Performer, Cubase, and Reason.

Chapter 7, Audio–What Do I Need?, is another nice addition for those just entering the music technology field. In it, Hosken proposes four audio systems to help students know what hardware and software they might want to acquire to meet their artistic goals. Interestingly, the first, “Audio System 0,” is merely one’s existing computer along with additional information about freeware. Later in the text, Hosken follows up on this discussion with MIDI–What Do I Need? [Chapter 11].

The third section of the book, MIDI, includes Chapters 8 through 11: MIDI Hardware, MIDI Messages, MIDI Sequencing, and the aforementioned MIDI–What Do I Need? Interestingly, in the preface to the text Hosken admits that it was difficult for him to decide where in his text to place a discussion of MIDI and how much detail to include, since in recent years many previously important MIDI details now are handled “behind the scenes” by DAW and notation software. His choice was to give a general history and overview [Chapter 8], a relatively detailed explanation of how MIDI functions [Chapter 9], and a chapter on using sequencers [Chapter 10] that is essentially a parallel of his earlier chapter on digital audio in DAWs. The convenience of this organization is that instructors may choose to skip Chapter 9 if time does not allow for coverage of such details. Also noteworthy is that two pages near the end of Chapter 10 mention alternative approaches to MIDI composition and performance using Max/MSP, PD, Ableton Live, and MainStage. Though this discussion is quite brief, it is worthwhile that the text points beyond the dominant commercial paradigm.

Section 4 of the text is Synthesis and Sampling, including the chapters Electronic Sound Production, Synthesis Methods, and Sampling Methods. Like the chapter on MIDI messages, these chapters explore topics a bit more deeply than the title Introduction to Music Technology might imply. However, for composers and performers who wish to understand synthesis and sampling, the materials covered are wholly appropriate. As with the MIDI discussion, the first chapter lays out the truly introductory information, in this case the basics of synthesis: oscillators, filters, amplifiers, modulation, and the relationship between hardware and software synthesizers. The following two chapters delve into the details, with the synthesis chapter giving thumbnail explanations of a wide variety of synthesis techniques, and the sampling chapter providing a general overview of how samplers function.

The final section of the main text is Computer Notation and Computer-Assisted Instruction, explored with one chapter for each of these topics. As with the earlier discussion of DAWs, Hosken attempts to explain common features of several popular notation programs [Finale, Sibelius, NoteAbility Pro, Overture, and NOTION3] with reasonable success. In contrast, the chapter on computer-assisted instruction (CAI) serves more as an overview of what kinds of programs are available, with screenshots and examples from many of them, rather than an attempt to explain how one uses them. The topics include the areas of theory/ear-training, musical analysis, history and terminology, performance skills, and creative skills. For instructors who want to spend much of the semester on CAI, this chapter will certainly not suffice. However, because most music technology instructors are more oriented towards music production and composition, the overview here will likely serve adequately for most.

Finally, Hosken ends his text with two appendices that explain the function and configuration of computer hardware and software. In his preface he states that many of today’s students already have significant understanding of computers when they enter the music technology classroom, and thus these chapters were not considered appropriate as part of the main text. As with his chapter on audio hardware, the computer hardware chapter introduces fundamental equipment as well as connectors and similar nuts-and-bolts issues, such as types of storage, storage capacities, and Internet connection speeds. The software chapter defines operating systems, application software, and malware; licenses and copy protection; and the relationships of networked computers. Once again, materials are presented briefly and with clarity.

My assessment of this text included use of it as the primary text for a one-semester course entitled, not coincidentally, “Introduction to Music Technology,” offered in the fall of 2010 at the City University of New York, Brooklyn College. With that in mind, I will end with some more personal reactions to the book based on this experience.

I first encountered An Introduction to Music Technology when seeking a new text for my course. I had used another text previously [Experiencing Music Technology, by David Brian Williams and Peter Richard Webster]. Although I originally chose the Williams and Webster text because of the breadth of its content, in practice I found it extremely dissatisfying in its organization, writing style, dated sensibility, and expensive price. I reviewed several other texts seeking a replacement, and when I read Dan Hosken’s book, its choice of topics and writing style made it my clear choice, with its lower price as an
added benefit. Moreover, its 2011 copyright ensured that it was among the most up-to-date texts available.

My course is aimed primarily at non-composers: performers, music education students, and musicologists. Thus, I spent much more time on some chapters of this book (such as Chapters 1–5) than others (such as Chapters 9 and 12–14). I also began my course with the appendices, explaining computer hardware and software. In my experience, students have a wide range of understanding of how these actually function. A surprising number of students seem ignorant of fundamentals such as directory hierarchies, the distinction between operating system and applications, etc.

As an author of this sort of book must, Hosken makes choices through his text regarding how much detail and complexity to impart to his readers. Thus, every instructor will find some parts of the text disappointing. For instance, he briefly introduces resonance when explaining audio in Chapter 1 but only quickly mentions formants later in the text when describing physical models of the human voice. In another case, the chapters on acoustics and psychoacoustics are followed by one on audio hardware, whereas I probably would have immediately moved on to how digital audio functions.

Another challenge for texts such as this is how to ensure that they don’t quickly become obsolete as technologies evolve. As noted earlier, Hosken minimizes the possibility of obsolescence by focusing on general organization and operation of software rather than use of specific applications. To me, this choice is wiser than choosing to provide detailed explanations of specific versions of a small number of programs.

Finally, although this is a minor aspect in comparison to what has been discussed already, I find the cover of this book engaging. Unlike other books on music technology, which often promote an aura of magic by combining vaguely electronic-looking swirls of color with photography of beautiful performers and brightly colored software, the cover of An Introduction to Music Technology features a seemingly ramshackle arrangement of road cases and a stack of rack gear with what appear to be LPs, pushed into the corner of a nondescript room. Cables hang at random, crumpled paper is scattered on the floor, and paint is peeling on the walls. Although there is a whiff of an art director’s simplification in the photo, this is much more likely to be how students will experience music technology outside of the classroom, rather than in some pristine environment. That appeals to me.

I do not imagine using this text to teach an upper-level or graduate computer music course, unless richly supplemented. However, when judged by its own stated goals, An Introduction to Music Technology is a solid success. When I reflect on the music technology knowledge I believe every musician should know, my list closely matches the contents of this text.

**Recordings**

Priscilla McLean: Cries and Echoes

DVD-Video, 2011, MLC Publications, ISBN 978-0-9824753-3-1; MLC Publications, 55 Coon Brook Road, Petersburg, New York 12138, USA; telephone (+1) 518-658-3595; electronic mail mclmix@cisbec.net; Web www.fairpoint.net/~rainfor1/mcleanmix/McLean_DVDs.html/.

Reviewed by Elizabeth Hinkle-Turner

Denton, Texas, USA

The four pieces on Priscilla McLean’s Cries and Echoes DVD are a welcome addition to the previous three DVDs released last year by The McLean Mix, and reviewed in Volume 34, No. 3 (Fall 2010) of Computer Music Journal. For decades, the McLean Mix, longtime creative and lifetime partners Barton and Priscilla McLean, have toured internationally, performed, taught, and experimented musically. Though primarily known as “The Mix,” both artists maintain active and busy independent careers as well. Priscilla, often the principal performer in the McLean Mix duo, demonstrates here her technical proficiency and interests, with a series of works involving audio and video creation, processing, and mixing, as well as instrumental composition and improvisation.

The pieces featured on Cries and Echoes consist of two works that illustrate sounds, images, concepts, and correlations from the natural world, and two other works that continue the theme of nature but from a more universal point of view, with distinctions drawn...
from improvisational, instrumental performance. The works were completed between the years 2002 and 2009 as projects commissioned by performers and arts organizations. All four pieces effectively illustrate McLean’s aesthetic and artistic focus and interests, with the two “instrumental works” representing what appears to be a new creative approach for the composer that has much potential and future promise.

Of the two “nature pieces,” Xakaalawe and Desert Voices, the former work is the strongest. Xakaalawe (a Crow Native American word meaning “flowing”) was begun under the Artist-in-Residence Program at Rocky Mountain National Park in Colorado in 2002, and completed in the composer’s electronic music studios in upstate New York in 2004. This studio piece features Massachusetts performer Charlie Tokarz on flute, a variety of saxophones, and bass clarinet, and McLean herself providing vocal, percussion, violin, and synthesizer sounds. Additional sounds include the calls of elk found in the national park.

McLean takes her inspiration here from the park and the people who live in its environs, including the Crow and Arapaho native peoples. Spoken words heard throughout the work are from the native languages and include the title text as well as other utterances meaning waterfall, rocks, river, and similar designations. Video footage, which comes exclusively from the park, features landscapes and mountain images and the elk that roam in the area. The result is a contemplative 17-min exploration of the park’s beauty and natural phenomena, which are reinterpreted and imitated using traditional and electronic instruments. Particularly effective for me was the extended section towards the end of the piece featuring a call and response between the elk and a violin.

Desert Voices features photographic slides and a soundtrack that McLean calls a “song of many tongues” that the listener will experience as one would the western American desert: as a “vast flat windy dry plain spreading to the horizon. . . . [T]he calling voices of the canyon wrens . . . mingle with the pulsating Australian didgeridoo, and the soft ghostly chants of the resident Navajos” (liner notes). Once again, she features the native inhabitants, with various Navajo speakers reciting their own poetry and thoughts. As an overlay and commentary to these texts and sounds, violinst Jonathan Aceto performs related musical gestures on his five-stringed MIDI violin. Composed by McLean, these gestures are free-flowing and improvisatory in nature. Desert Voices was created as a large-scale installation and premiered by the McLean Mix at the University of Arizona, Flagstaff. All images for the piece were photographed by McLean at the Organ Pipe National Monument, Arches National Park, and other remarkable scenic resources in Arizona.

Desert Voices is probably most impressive in its original state as an installation. Though I have seen much of the work of The McLean Mix live, I have not witnessed this piece. I imagine, however, that the vastness of the slide images on installation walls is considerably more effective than the images are in DVD format on my flat-screen television. I actually found the soundtrack quite compelling by itself and had my best audience experience when I closed my eyes and simply listened to the rich musical events on their own. This is primarily because I perceive nature as being always in motion even when seemingly still (probably because my biologist husband has shown me its constant movement under many a microscope!). As a result, the slides unsettled me due to their flatness and stationary aspects. I think that the visuals would be more effective if they had been filmed rather than photographed. I recommend that listeners experiment with shutting their eyes for a while as well, in order to receive a different perspective on the work.

Most exciting for me was being able to see what may be a new compositional direction for McLean: she incorporates her considerable understanding of performers and traditional instruments with her interests in natural phenomena and the outside world. Both Caverns of Darkness, Rings of Light and Cries and Echoes are recent pieces that reflect this direction. Caverns of Darkness, Rings of Light (2006–2008) features tubist James Gourlay, who commissioned this work. All of the sounds used in the piece are from the tuba, and the composer shares that the work’s title was inspired by her video images of the instrument, which follow the entrance into the tuba bell and its cavernous interior. Interspersed with these images are videorecorded studies of parts of the instrument and of the performer. The result is a piece about the entirety of the tuba, including its seen physical presence and its unseen, but aurally perceived, musical self [which is a natural phenomenon not unlike rivers and deserts]. This correlation kept me intrigued and engaged through several viewings of the work.

Most successful in this regard [and unquestionably the strongest work on the DVD] is Cries and Echoes, created in 2009 for cellist Ronald Feldman. McLean describes the piece as a “tone poem” with a “general expression of poignant longing” on many levels, for escape from the modern world and its technology to the forest, and for the music and musical traditions of the past which threaten to become
extinct. The composer first draws attention to the inherent nature of the cello, both through her video images (the wood of a tree morphs into the wood of the completed instrument) and sonically (with an exploration of string vibrations and other effects). These abstract sounds gradually become more melodic, and the composer uses brief excerpts from Johann Sebastian Bach’s Suite No. 5 in C Minor interspersed with her own melodies. At around ten minutes into the piece this organic, melodic process results in a lovely aural and visual portion of the 16-min work. A filmed exploration of the performer and his instrument then recedes back into the tree wood, and more-abstract sounds create an overall arched form in both the images and music. The entire work is fascinating and enchanting, and I look forward to more of this from McLean in the future.

Like the three previous DVDs released by Barton and Priscilla McLean through MLC Productions, Cries and Echoes is an important part of their collaborative work, and it continues this duo’s unique and critical contribution to the legacy of American electroacoustic music. Priscilla McLean has also published a book, Hanging Off the Edge, chronicling her life and musical experiences as well as providing advice to composers wishing to pursue an independent career. Both are available from the publisher’s Web site given here.

Space/Sound: Multichannel Electroacoustic Music by Thomas DeLio, Thomas Licata, Agostino Di Scipio, Kristian Twombly, Kees Tazelaar, and Linda Dusman

DVD, 2008, Capstone Records, CPS-8811; Capstone Records, 252 DeKalb Avenue, Brooklyn, New York 11205-3612, USA; telephone 718-852-2919; fax 718-852-2925; Web capstonerecords.org.

Reviewed by Michael Boyd
Pittsburgh, Pennsylvania, USA

Roger Reynolds’s DVD Watershed IV, released by Mode Records in 1998, was the first contemporary music DVD to feature spatialized sound specifically designed for home 5.1-channel diffusion. Since that time, DVDs featuring 5.1 surround-sound have become an increasingly popular way for composers to release multi-channel music. Space/Sound is a striking 2008 release from Capstone Records that continues this practice. This DVD features music by six composers, Thomas DeLio, Thomas Licata, Agostino Di Scipio, Kristian Twombly, Kees Tazelaar, and Linda Dusman, whose works were created between 2004 and 2008 and represent a broad range of technical and aesthetic approaches. This diversity and the overall quality of each piece make the disc delightful to hear.

The DVD begins with songs Foxrock, near Dublin . . . (2005) and . . . zwischen den Worten (2006), two works by DeLio whose music is surely familiar to many readers. These pieces, like several of this composer’s recent compositions, are electroacoustic settings of poetry, specifically poems by P. Inman and Paul Celan, respectively. The sounds of each composition are derived from readings of the poems, and notably, in the case of Foxrock, near Dublin . . . , that reading is by the poet. In the DVD liner notes, the composer articulates his larger approach to text-setting by quoting German musicologist Jürg Stenzl, who writes, “setting a poem means translating it into a completely different medium. In doing so, the text can be broken up, can disappear, or can even be impossible to hear.” Indeed, these works are far from linear presentations of each poem. In the setting of Inman’s poem, one hears fragments of the poem intertwined with continuously fluctuating, inharmonic textures that seem to reflect the sonic structure of the text while thoroughly blurring the words themselves. At times when Inman’s voice is clearly audible, DeLio superimposes multiple readings of the same line of text, thus presenting multiple perspectives on those lines while slightly obscuring the words themselves. Many of these same techniques are observable in . . . zwischen den Worten. In this work the composer incorporates whispered readings of the poem, which sonically reflect the noisy nature of the initial two words of the first Celan poem: schwimmbäute and zwischen. These whispered lines seem to be placed in opposition to semi-pitched, almost bell-like, inharmonic gestures at the work’s outset. As the piece progresses, clearly spoken lines of text emerge that eventually seem to merge with the inharmonic sounds, integrating the initially oppositional elements. Notably, both works incorporate periods of silence that allow the pieces to breathe, though not to the same degree found in much of DeLio’s earlier work.

Thomas Licata’s brief, charming work thinning, and away (2008) comprises a succession of short, noisy sounds that are relatively uniform. Most of these sounds emphasize upper frequencies, though a few occupy lower frequency regions and, because they occur less often, have a punctuating effect. The initial texture is quite active and relatively dense, though this characteristic changes over time. Regarding this dynamic, the composer writes that the work is comprised of a series of sparsely-layered sound patterns and textures that, over time,
are not only separated with increasing amounts of space but, significantly, are treated with diminishing levels of ‘presence’ in their sonic makeup. Through the juxtaposition of the pairings of connection/presence with that of separation/deterioration, these patterns (but not all) are transformed in a variety of contexts as they progress through the different stages of these pairings over the course of the work.

Most of the sounds are distributed throughout the front and surround speakers, enveloping the listener, though the lower, punctuating sounds are generally concentrated in the front, drawing one’s attention forward.

Agostino Di Scipio’s untitled work is “the outcome of an improvisation that took place one night in October 2004, in the composer’s home studio.” Through a feedback line between a miniature microphone and four loudspeakers, the composer explored the acoustical nature of the room and his mouth, which he notes was “a smaller acoustical niche in the larger space.” In this work, one often hears a recurring pulsation, over which noisy vocal gestures and semi-pitched glissandi are superimposed. During the performance of this work, the composer’s mouth functioned both as a sound source, producing a diverse array of timbres and gestures, and a dynamic filter that regulated the feedback system, changing “the spectral structure of feedback events [changes in pitches, in resonance peaks, in amplitude, etc.].” Overall, Di Scipio’s piece is characterized by striking timbral/textural transformations and a delightful sense of spontaneity. Commenting on the work from a broader perspective, the composer writes,

It is probably best to think of the present recording not as a thing itself . . . but as a documentation of what happened that night. The result of another performance could be quite different, yet the system dynamics would be constant. Different times and different spaces lead to different sonic manifestations. Composition is the unifying thread.

Kristian Twombly’s _Play I[-III] (2004)_ is a setting of a Gertrude Stein play of the same title. Commenting on the play, the composer writes,

the text most often consists of wordplay based on alliteration and repetition, though it occasionally veers toward intelligibility. The occasional suggestion of intelligibility encountered throughout the text reminded me strongly of the behavior of chaotic strange attractors in mathematics, such as the Lorenz and Hénon attractors.

Twombly derived data from these attractors and used it to determine both the formal aspects of the piece as well as the small details. Regarding this process, he writes that

each recorded line of text was broken into collections of sentences, groups of words, individual words and phonemes. The Lorenz attractor was then utilized to choose what type of sound was heard, in what order, at what time, in which channel, by which speaker and, even, what nature of transformation was to be applied to each sound.

Formal divisions in the composition are demarcated by the narrator’s lines, which are unprocessed and spatially isolated in the right-hand satellite speaker. Aside from this single portion of the piece, the composer uses space in a dynamic manner that feels integral to the work. For example, at one point a series of repeated words are continuously heard in new locations, while at another point a larger sonic gesture moves through all channels, surrounding the listener. Intelligibility indeed is an important factor in this work, which at times presents full lines from Stein’s play, though it often focuses on single words and even phonemes, the latter of which draws attention to Stein’s use of alliteration and repetition. Sonic transformations also support this dynamic while adding timbral diversity to the piece. Twombly’s work is a rich interpretation of Stein’s play, truly highlighting some of its core structural characteristics.

_Phalanxes_ (2005), a composition by Kees Tazelaar, was created at the Institute of Sonology in the Netherlands. The work, consisting of synthetic sounds created at the institute’s voltage-controlled studio, begins with a series of noisy, repetitive gestures that grow in volume over a few seconds. This piece makes full use of all five speakers, initially drawing one’s attention to different locations and, as the density of sound increases, eventually surrounding the listener. (The composer notes that the piece was originally created for seven channels, and that it was mixed down to five for this recording.) The sound material gradually changes over the course of the work, incorporating more continuous sounds and, about halfway through, employing inharmonic pitched material, which gradually degrades and eventually returns to the percussive sounds of the work’s opening.

The disc ends with Linda Dusman’s _magnificat 3: lament_ (2004), the only piece on this DVD that incorporates video. This work was created collaboratively with animator Alan Price, and commissioned and
performed by violinist Airi Yoshioka. Commenting on her composition, the composer notes the importance of “parabolic scales, scales which embody parabolic ratios . . . are heard in the computer generated score, along with recordings of cicadas.” The work begins with an angular, ascending violin gesture that is mirrored visually by an upward-growing animated plant. This basic visual premise of growth continues along with a series of shorter violin gestures that begin to incorporate multiple, electronically processed violin sounds, achieving an accumulative, denser texture. About three minutes into the piece, the music takes on a more static, sustained character (still primarily violin sounds), while the plant animations intertwine to form more abstract braided structures that move in response to sound fluctuations. Over time, the animation becomes increasingly abstract, as accumulative, reiterative sound gestures are brought into the foreground in both the live violin and the electronics parts. A layer of noise, the recorded cicadas mentioned by the composer, gradually emerges, nicely matching the static animation of this section. The final section of *magnificat 3: lament* returns to the material of its opening: angular, melodic violin gestures and animated plants. This return is not exact, as the violin phrases are more far-reaching, and the plant growth seems to reach completion and then transitions to the image of a red curtain-lined stone hallway. The final image is of Yoshioka playing the violin; she performs throughout with great sensitivity. Overall, *Space/Sound* is characterized by significant aesthetic and technical diversity. The ability to experience the works of these six composers in four or five channels, rather than two, makes hearing these works a much richer experience that is, importantly, closer to each composer's creative intentions. Listening to these pieces is simultaneously challenging and rewarding. I highly recommend this recording!