Reviews

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Events

Boston Cyberarts Festival: Visual Music Marathon/The Puppet Master by Eric Chasalow

Northeastern University, Boston, Massachusetts, USA, 28 April 2007; Brandeis University, Waltham, Massachusetts, USA, 5–6 May 2007.

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Every other year for the past eight years, the Boston Cyberarts Festival has set itself the task of organizing and promoting a large-scale “collaboration of artists working in new technologies in all media in North America” [Web www.bostoncyberarts.org]. The festival, which ran from 20 April to 6 May 2007, takes place at numerous venues throughout Boston, this year including both usual-suspects locations like university campuses and art museums, as well as smaller locales like neighborhood gymnasiums, churches, and even a biotechnology company’s office space. The festival consistently presents high-quality music and sound art, as well as a wide array of visual artwork. Two events at this year’s Festival brought these sometimes disparate artistic worlds—audio and visual media—together in particularly compelling ways: the first-ever Visual Music Marathon at Northeastern University, and the premiere of Eric Chasalow’s new opera, The Puppet Master.

Although the concept of a “marathon” concert did not originate with the Visual Music Marathon, held at the Raytheon Amphitheater at Northeastern University on 28 April from 10 a.m. to 10 p.m., it certainly found meaningful expression in that event. (Other notable music “marathons” include several regular, high-profile events in New York City—the Wall to Wall concerts at Symphony Space, and the Bang on a Can marathons—and even a regular event at the Boston Cyberarts Festival produced by the Brandeis Electro-Acoustic Music Studio, directed by Eric Chasalow.) Organized by composer/graphic artist Dennis Miller, the Marathon consisted of two basic types of works, each taking up roughly half of the program: one group was made up of submissions to the Marathon, totaling 64 works (out of over 300 entries); the other featured several one-hour blocks of materials with some connection, such as historical works, live performance pieces, and a pair of curated sets by Larry Cuba (iotaCenter, Los Angeles) and Bruce Wands (Digital Salon/School of Visual Arts, New York).

Despite some technical difficulties in projecting 16-mm film, the Marathon’s inclusion of historic works offered a useful counterbalance and perspective to the heft of new(er) works on the program. These historic works spanned back to Dada pioneer Hans Richter’s work in the early 1920s, beginning with Rhythm 21 [1921] and Rhythm 23 [1923], both of which emphasized the filmic aspects of visual music. Richter’s work, which strongly evokes musical rhythms despite predating films with sound-synchronization, served as a compelling reminder not of how far the medium has “progressed”—though that progress was readily apparent—but rather of how much a visual artist can express even with relatively constrained technological means.

Richter’s Rhythm compositions also suggest a very rudimentary form of three-dimensional imagery, one of the major elements in contemporary visual music. Richter succeeds in creating a surprising sense of depth—and even an illusion of front–back motion along a z-axis—with his use of different sizings of images. For example, even in the earlier of the two pieces, Rhythm 21, white blocks appear to spring from the black background toward the viewer and vice-versa, as a central gesture to the piece. Jumping ahead nearly a century, this same basic ethos prevailed in a number of works that use 3-D images. Some, like Scott Pagano’s 1.618 (2006), even echo the idiosyncratic use of line segments in Richter’s work to realize a much larger visual schema; others, like Nebula (2006) by Hilary Harp and Suzie Silver, saturate their visual spaces more densely with constant 3-D animation; others create virtual images (even of musical instruments, no less), as in animusic’s Pipe Dream (2001); and still others, like painter/animator Jean Detheux in Daydream Mechanics V, Sketch 3 (2006; a setting of a Michael Oesterle composition), manage to evoke a three-dimensional world through visual artifice, manipulating “flat” images in ways that create moments of depth-inflected motion.

One contributing artist and attendee, Emile Tobenfeld, known by the moniker Dr. T (the namesake for his MIDI software), suggested that the use of 3-D was a frequent point of faltering for visual music. He explained that he “rarely finds” 3D animation.
evocative in a musical sense, and [only a few] of the works that I saw that used 3D made a positive impression” [electronic correspondence, 22 May 2007]. Mr. Dethieux echoed those sentiments, at least implicitly, in warmly praising Dennis Miller's piece, White Noise: “Dennis Miller's film demonstrates that 3D can be used for poetic work, very, very unusual in my experience of animation” [electronic mail correspondence, 22 May 2007]. In a sense, such critiques might apply equally well to any number of techniques, especially in an artistic medium so naturally interdisciplinary, and therefore by extension, difficult to master in its entirety. On some level, the ever-expanding reach of technology certainly plays a role. In the world of non-visual electronic music [taken broadly], loops, samples, and sequences have become mainstream techniques possible on any home computer; similarly, the growing availability of visual-editing and 3D-animation programs has lowered the barriers-to-entry in video-based media, which somewhat mitigates the need for high-level specialization, at least in beginning to use those techniques.

Mr. Tobenfeld's remarks also beg the question of artistic identity. Many of the artists involved in the Marathon have written on the topic and proffered definitions of “visual music.” But ultimately, the medium seems to accommodate a variety of styles and artistic worldviews, with diverse perspectives on the comparative roles of sound and visual material. Several of the programmed works—especially some of the older ones—used preexisting musical materials as a sort of soundtrack, in a very loose sense. In addition to Mr. Dethieux's use of Mr. Oesterle's work, others featured music by Oscar Peterson [Norman McLaren], Thelonious Monk [Hy Hirsh], Erik Satie [Bum Lee], and Laurie Spiegel [David Ehrlich], to name a few, whereas several others used traditional/folk music in a similar fashion, played continuously with simultaneous visuals. Some works succeeded better than others in navigating that space between MTV and total audiovisual disconnect—the works by McLaren and Hirsh are classics for doing just that—while others, even those without a fixed sound-composition, sometimes drifted more toward predictable interactions between the visual and musical elements of their work.

Another key aesthetic issue raised by the programmed works is that of source material and abstraction. Once again, the historic-works segment framed this issue nicely. Of course, abstraction can exist with real-world materials, especially when those materials are other art media themselves. Thus a work like Oskar Fischinger's Motion Painting I (1947), which as its name suggests makes use of stop-motion techniques to capture the kinetic aspects of painted works, has a strongly abstract feel to it, even though the process of painting is, by itself, a very familiar real-world experience. Other works like Mary Ellen Bute's Rhythm in Light (1934) use light sources—in this case, manipulated in various ways with prisms, cardboard tubings, and lens materials—and then abstract and recontextualize those images. The development of computer graphics and other digitally created images can be traced back to yet another “historic” inclusion, John Whitney’s Arabesque (1975). In this piece, vertical and horizontal graphics are presented at first in isolation, and then joined together, yielding a sort of abstracted, visual rendition of a sonata-form composition in music. It should be noted that Larry Cuba acted as the software programmer for this piece, and Manoochehr Sadeghi, a virtuoso on the Persian santour [an instrument similar to the hammer dulcimer], created the sounds. It is worth pointing out that Whitney’s contributions to the field extend back to the 1950s, as he developed optical and analog technologies to facilitate his own visual-music artworks.

In the subsequent three decades since Arabesque, computer-generated graphics have of course developed such that non-abstracted animations are now the standard [albeit highly varied] fare in visual music, but Whitney's work again sets a certain high-water mark for later works, whether abstract or not. On the other hand, many artists’ work draws on real-world images, often quite visibly, including roses [Brigid Burke], metal hinges [Justin Rubin], an oil refinery [Nick Cope, Tim Howie], and even images from the current Iraq War [Jonathan Kirk].

Other works, such as Stephan Larson's Discord: Metal and Meat, used the visual music medium to pose some of the recurring “big picture” questions about the human relationship with technology, depicting a stunning (if suggestively grotesque) eruption evoking volcanic flow. But if images of technology in Mr. Larson’s work suggested intense conflict between “man” and “machine,” other artists found a certain warmth in that same relationship, as in Whirlitzer, a 2006 collaborative composition by Margaret Schedel [sound] and Nick Fox-Gleg [visual]. The piece was an express homage to early music machines, like player pianos and music boxes, with both sounds and visuals derived from and depicting these machines. Ms. Schedel’s sound composition, derived from just three seconds of a recording of a music box, succeeded as a dynamic but succinct statement (the whole piece lasted only 60 seconds) while avoiding the traps of nostalgic sentimentality.
Larry Cuba, who acted as a host curator for the hour-long segment on works from The iotaCenter in Los Angeles, contributed more obliquely to this theme with his destined-to-be-classic Calculated Images (1985), which explores the visual representation of hierarchy as expressed through raster graphics. Each successive graphic pattern develops, growing out of previous elements combined over time, almost as though enacting a Schenkerian-styled hierarchy of complexity and detail, with the end result producing a final “score” that describes the composition from beginning to end (taken from the program notes for the event). Although visual music generally eschews narrativity, pieces like Calculated Images suggest that even abstract works can ably convey narrative-like meanings. Indeed, if Ludwig van Beethoven’s symphonies can depict “fate knocking at the door” or “the heroic conflict” through their rhythms and tonal areas, it seems appropriate to acknowledge a similar subtext of humanity and its relationship to power structures and hierarchical organization as mediated (and perhaps facilitated) by technology.

Just a week after the Visual Music Marathon, composer Eric Chasalow premiered his one-act multimedia opera, The Puzzle Master, 5–6 May 2007, in the Laurie Theater at Brandeis University. For the libretto, Mr. Chasalow turned to poet F. D. Reeve, an emeritus professor at Wesleyan University, currently living in England. Mr. Reeve adapted the ancient Greek myth of Daedalus and Icarus. Video artist Denise Marika, known for her “video sculpture,” designed the set and, of particular interest here, also created a continuous video component to be projected against the back of the stage throughout the opera. [Ms. Marika also presented work as part of the Cyberarts Festival in a group exhibition at the Howard Yezerski Gallery.] David Moulton, a composer and audio engineer, provided a set of four BeoLab 5 loudspeakers. The 2,500-watt conical speakers, which Mr. Moulton helped design and refine over a period of several years, make use of two aluminum disks at the top of the speaker to distribute high- and medium-frequency sounds evenly around a performance space. These sizable speakers, besides providing formidable acoustics, also added prominently to the contours of the staging, as they flanked the singers.

Although initially conceived as a much larger project, the opera ultimately consisted of pre-recorded electroacoustic materials, a live electronic keyboard part, and five singers: “Delling, a world-famous engineer”—Daedalus, sung by baritone Donald Wilkinson; “Ingram, his twelve-year-old son”—Icarus, soprano Jennifer Ashe; and Caribe, a mixed-chorus whose members also doubled as other characters in the story—tenor Matthew Anderson, mezzo-soprano Pamela Dellar, and bass-baritone Paul Guttry.

Mr. Reeve’s libretto transplants the familiar myths to a Caribbean island, where Delling reflects on the life of his son, Ingram. The opera presents flashbacks through several episodes in his career as inventor, reaching its climax as Ingram falls to his death while flying with a set of wings created by his father. The opera closes with Delling’s musings on the existential problems of freedom and the liabilities of information technology—a theme suggested implicitly in several works in the Visual Music Marathon, as well—followed by a funeral scene for the deceased Ingram.

Mr. Chasalow has defined himself as a composer of both instrumental/chamber works and fixed-media electronics, often combined. However, The Puzzle Master leans more heavily toward its non-electronic elements, with powerful vocal writing—performed admirably by the vocal ensemble—but with a relatively muted electronic part. The composer intended to include a small chamber orchestra but for practical reasons was forced to pare down his forces to a single instrumental performer, Yoshiko Hiramatsu-Kline, on keyboard. Although Ms. Hiramatsu-Kline offered an outstanding performance—on the first night, her click-track stopped early in the opera, yet she still managed a very complex part cued only by conductor Eric Hewitt from the back row of the audience—the uniform timbres of the keyboard did not do justice to the nuances of the vocal writing. Similarly, the electroacoustic part seemed a bit overwhelmed at times by the singers, although the opening and closing of the opera had very strong, clear gestures, the “tape” part kept a relatively low profile through much of the actual dramatic narrative.

Overall, the singers performed a very difficult score with impressive fluidity. Especially on the second night, the singers seemed to coalesce into a single-minded musical unit, allowing a much more elaborate interchange between different vocal groupings. For the most part, the vocalists moved quite smoothly between ensemble work, soloistic moments, including several lengthy passages for the two soloists, as well as extended soliloquy-remembrances by members of the chorus. Occasionally, a stronger accompaniment-part in counterpoint (perhaps in the keyboard part, but especially in the electroacoustic part) would have rendered these transitions even more effective. Even so, the singers and conductor moved the work forward convincingly, in spite of the somewhat minimized interaction with
the electronic parts. Most importantly, the score played to the strengths of the vocalists and they responded adeptly.

Mr. Chasalow’s vocal score also employed a surprising use of highly exposed tonal material. On several occasions throughout the opera, Caribe (the chorus) began singing chorale-like music, with slow, synchronized harmonic changes with much more traditional phrasing and cadences. Perhaps the result of post-modern attitudes toward tonality dating back at least to Luciano Berio, or perhaps just an intended respite from what would otherwise be an intensely active harmonic landscape, these chorale sections juxtaposed nicely against the electronic backdrop. Although the precise dramatic function of these chorales was not immediately apparent—it made up a relatively small portion of the chorus’ overall part—it consistently opened up timbral spaces in the vocal writing, allowing the musical textures to “breathe.”

The video projection, which was developed for the most part separately from the music compositional processes, shows a series of semi-abstracted images on a textured screen/“visual sculpture,” made by leaning two-by-four boards vertically against the back wall of the theater, with several inches between successive boards. The result was a ribbed surface that distorted the images of the film to varying degrees in different places in the theater. Perhaps the most striking visual of the opera came at the very end, as “undertakers” removed the boards and laid them on the ground, symbolizing the coffin of Ingram/Icarus, as a looped video segment played, showing (what appeared to be) a corpse tied up in a body-bag, falling down a long set of steps. The combination of this eerie danse macabre with the new-found clarity resulting from the de-textured screen gave a strong visual closure to the opera, and was accompanied by some of the most expansive, but also fine-tuned, sounds of the evening—presumably the kinds of moments necessitating the use of the BeoLab loudspeakers.

Mr. Chasalow’s opera highlights several important issues in multimedia artwork. As a composer, he rightly focused on the musical composition of the piece. After laying out the basic form and length of the opera, he and Ms. Marika worked largely independently of one another in actually fleshing out the details of their respective materials. The two pieces laid together nicely, but with an apparent flexibility in their coordination, finally culminating in tightly corresponding visuals and music in the remarkable closing funerary scene. Nevertheless, the music emerged as the dominant role in the work as a whole. In contrast, the Visual Music Marathon aesthetic, as diverse a program as it was, tended toward more visually dominant works. Although any individual may prefer one aesthetic to the other, the task of striking an artistically meaningful balance between sonic and visual elements requires fine-tuned sensibilities, whatever the aim; to their credit, the participants in these two events showed a number of possible solutions to that challenge.

The two events also demanded very different sensory strategies from their audience. Of course, both required a combination of active listening and viewing. But the types of long-term narratives at stake in such presentations differ considerably. For Mr. Chasalow’s opera, the overall development is relatively clear: like traditional opera, he set out to “tell a story” of Daedalus and Icarus, and he did so in a chronologically comprehensible way, though told largely retrospectively. A format like the Visual Music Marathon is more complex. As a starting point—mentioned previously—visual music is generally a non-narrative art form; however, the challenges of programming 12 hours of visual music requires a certain organization. Dennis Miller and his colleagues chose to balance several possible approaches: a historical approach (including the “historic” works as well as some slightly older works from The iotaCenter); a global-sampling approach (including as diverse a body of works as possible, regardless of their chronology); and an approach focused on presenting new works (which made up a sizeable portion of the program). This too creates a certain meta-narrative (or narratives) within the program as a whole, though the meanings of that narrative vary depending on what portion of the Marathon the audience-member attended.

Finally, these two events suggest the expansive possibilities—and some might argue the inherent limitations—that stem from borrowing artistic concepts from other media. Maura McDonnell’s extensive essay “Visual Music,” printed in the official Visual Music Marathon program (also available online at www.soundingvisual .com/visualmusic/VisualMusicEssay .pdf), offers insights, from the perspective of visual music:

Each visual music artist has an idea and approach to working with his or her chosen visual material. The visual material is pliable and formless; it can be taken from many sources, just as contemporary music takes its sound material from many sources and shapes it in many different ways. What is most striking about visual music works, however, is that in order to put some shape onto this vi-
ual material, the focus has been on using concepts from music, focusing on the structures and language, yet reworking these concepts for a visual production (program booklet, pp. 2–3).

Continuing on, Ms. McDonnell pays considerable attention to the use of motion, in both traditionally composed music and visual music. And indeed, for all the various approaches to visual music seen at the Marathon—whether fully abstracted or hinting at narrativity, whether computer-generated or derived from objets trouvés—a similar mindset to that traditionally ascribed to composers seemed to prevail, with emphasis on the structuring of events in time to produce a coherent artistic statement, though not necessarily a “linear” or “narrative” one.

On the other hand, since Richard Wagner—at least as the Gesamtkunstwerk philosopher, if not as an opera composer—any composer working in opera has faced the perplexities of the visual art world, and specifically the challenges of presenting a literal spectacle in addition to the usual demands of composing music. Mr. Chasalow has opted to have his singers—all in “concert-blacks” except Ingram’s sneakers, which nicely tempered the dress code—stand in place for the bulk of the opera [although, effective use was made of three musical “asides” with soloists repositioning themselves somewhat onstage, as well as offstage singing by Ingram as a posthumous memory in Delling’s mind]. Such a relative lack of staging may be par for the course in post-tonal operas, given the difficulty of the vocal parts. But the visual tradeoff is real: one opera-goer suggested the piece be marketed as an oratorio, rather than an opera, given the lack of traditional staging. Yet the addition of Ms. Marika’s video projection here allows the composer to write concert-level music without giving up on a compelling visual stage-space. Or, to put it somewhat reductively, the presence of video actively transforms Mr. Chasalow’s music from a concert piece to an opera.

Thanks to the Cyberarts Festival and the respective host institutions [Northeastern and Brandeis], these two ambitious events were presented essentially in tandem, allowing for a sort of conversation between visual music and multimedia opera. As in so many instances, the handles used to label these art forms prove slippery at best; but standing side-by-side, a marathon and a one-act opera certainly elucidate one another’s meanings and artistic identity. In fact, these ambiguities in definition seem to nurture the growth of both art forms, allowing each to expand in both musical and visual terms.

This fertile blurring of distinctions is captured in Robert Seidel’s _grau_. The title of the piece, meaning “gray,” is reflected in a brief dialogic epigram at the beginning of the work [this work can be viewed online at www.grau1001.de):

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  mf . . . for me, life consists of
  rs . . . i think there is just the
  in-between . . .
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The piece begins with a brilliant display of colors moving across the screen, right to left, before white flashes overrun the images. Musically, the soundtrack by Heiko Tippelt and Philipp Hirsch combines ambient vocal music with a white-noise pulse that culminates—at least for the moment—along with the white flashes, leaving in its place a mostly black-and-white visual work with tantalizing blocks of color occasionally recurring. The black-and-white sections initially suggest a procession of three-dimensional Rorschach images, eventually giving way to a whole series of explorations of “in-between” visual worlds. Indeed, black-and-white simply falls short of the task of describing it.

Similarly, the generic delineations of “opera” and “visual music”—not to mention “music” and “film” or “visual art”—hardly do justice to the vibrant works artists are creating and presenting today. Jean Detheux perhaps expressed it best: “I have no doubt whatsoever that Visual Music is a major art form with deeply grounded historical roots . . . and that it will eventually be recognized as such. [The Visual Music Marathon] was a magnificent celebration of the vitality of that art form, and it [the festival] will make babies, mark my words” (electronic correspondence, 22 May 2007). Judging by the abundance of sophisticated, challenging works presented at the recent Cyberarts Festival, it seems that Mr. Detheux’s prediction of fertility and growth among such multimedia presentations is well on its way to realization.

**Publications**

Eduardo R. Miranda and Marcelo M. Wanderley: New Digital Musical Instruments: Control and Interaction Beyond the Keyboard

The area of performance and interaction in computer music has been recently of great interest for both musicians and researchers. In that light, this book on new digital musical instruments by Eduardo Miranda and Marcelo Wanderley is a welcome addition to the literature. This is a thoroughly researched and documented work, following on from the authors’ highly rated research in the field, previously mainly available to the academic audience. The book provides a good and plain introduction to the area, which will be invaluable to readers not too familiar with the subject. In addition, it includes pointers to more specialized background literature, a very important consideration for anyone wanting to explore the technologies described in it.

The book can be roughly divided into two sections. Chapters 1–3 discuss the more established gestural acquisition and sensor technologies, whereas the remainder of the book concentrates on the cutting edge areas of biosignal interfaces and the application of Artificial Intelligence (AI) to acquired signals. The two sections are tied together by the common theme of instrument control techniques, taken in the broadest possible sense. This is actually one of the notable aspects of the book, as its content is not restricted to a narrow interpretation of performance and interaction.

In the first chapter, the reader is guided through the definition of what the authors call a Digital Musical Instrument [DMI]. This chapter serves as a background to the discussion of the different technologies of performance and interaction. It introduces the concepts of gesture and mapping, followed by an evaluation of their significance in music performance. The authors’ approach to DMI is based on the conceptual separation of gestural/ control and sound generation aspects of an instrument, which can then be re-combined in different configurations. The authors maintain that this methodology leads to great flexibility in instrument design, as well as allowing for an extrapolation of the conventional concept of an instrument. It is important to note, however, that the book is dedicated to the study of the gestural side of DMI. The sound generation aspect is only touched on lightly, mostly in pointers to specialized literature. For that reason, this chapter sometimes lacks detail in important topics such as parameter mapping. Perhaps there is a case for a follow-up to this book, where sound synthesis can be explored in the light of the ideas introduced here. This would allow for the treatment of the crucial question of mapping in more detail.

Chapter 2 is a rather long discussion of existing work on gestural controllers, which, in places, reads almost as a catalogue summary of New Instruments for Musical Expression (NIME) conference papers. The different types of gestural controllers and the projects from which many of them have originated are listed and described. As an illustration of what the current status of research in the area is, this chapter tries to capture the most interesting projects, but it suffers from the fact that it will probably become dated very quickly. This is perhaps the downside of writing about a technology that is in a constant state of flux. In any case, this chapter certainly does not seem to be as interesting as the others in the book.

The following chapter can, on the other hand, be a very useful resource for students and teachers of interactive systems. Chapter 3 provides a good description of gestural and sensor interface technologies available today, with useful detail. In addition, it considers how these can be used for musical applications. Although most of the discussion is directed to the design of interfaces for control signals, there is also a small section on how to convey control information through audio signals. In general, the chapter is very informative and a good read. However, it is disappointing that a key element in many of the modern interactive systems, Open Sound Control (OSC), is only discussed briefly and with little detail.

In general, the second part of the book is perhaps the most interesting, where the user is guided through the exciting new field of biosignal interfaces and their applications in music. This area, although in its infancy, has demonstrated great potential for interesting and novel uses in many areas of music. Here, the book’s subtitle, “Beyond the Keyboard,” is taken to its ultimate consequences. Chapter 4 guides the reader through the different types of biosignals that can be sensed and how they can be conditioned for use as DMI controls. Such signals include eye movement, skin conductivity, heart pulse, muscular activity (including the micro vibrations measured by a mechanomyogram), and brain activity. Many of these signals are quite complex and require a good deal of conditioning; in addition, it is clear that some might be generated by involuntary activity, which would make them less useful. The book describes the processing of biosignals as an evolving field. It discusses the different stages of conditioning: pre-processing, feature analysis, machine learning, and mapping. It is clear from the book that intelligent inter-
pretation of these signals is generally a key component of the process, something that is well explained in the text. Particularly, the application of machine learning to biosignals seems to be an area of research with great potential for development.

Chapter 6 provides an interesting segue to the topic of intelligent systems, discussing some current trends in AI that could be harnessed in the context of an interactive DMI. It begins with an evaluation of the position of performance in electroacoustic music, pointing out that some early trends in 20th-century music were actually directed to the elimination of the performer role. Nevertheless, the live performance element has emerged as an important aspect of many different types of electroacoustic music, as in for instance, live diffusion of fixed-media works and the so-called “live electronics” works.

The book highlights the key role that computers have had in enabling interactive electronic music performance, discussing what it calls “computer musicianship.” In particular, it is nice to see a section on dynamic programming, which is quite informative and will probably be very useful for readers interested in that technique. In summary, readers should find this a very engaging book, copiously filled out with references and further reading suggestions. It should be an useful addition to the booklists for the evolving area of Music Technology and the many university courses dedicated to it on both sides of the Atlantic.

Gareth Loy: Musimathics: The Mathematical Foundations of Music, Volume One


Reviewed by Mark Ballora
University Park, Pennsylvania, USA

With Musimathics, Gareth Loy solves a problem I have faced for a number of years now. As an instructor of a university Science of Music course, I have never found any single text that explains all necessary topics with equal depth and clarity, and thus have had to rely on course packs of photocopied compilations. In the future, this chore will be unnecessary, thanks to this book. Musimathics doesn’t have absolutely everything, but it comes so very close, and then provides a wealth of bonuses. The book is singularly precise, thorough, and often very funny.

The first chapters are preliminary, providing basic vocabulary for concepts that are treated in greater depth later. Chapter 1, “Music and Sound,” introduces air pressure, waves, and simple harmonic motion. Not a word is wasted anywhere. Students will likely be comforted by the low page count.

Chapter 2, “Representing Music,” gives an overview of how music is translated into pictorial symbols, with explanations of what is being represented at each step. Pitch is explained as both a matter of frequency and of interval ratios, and is supported by time-domain graphs of air pressure changes, the amplitude envelope, staff notation, and how pitch subsets form various scales. Duration and loudness are covered in terms of time, tempo, musical dynamic notation, and time signature. Timbre is discussed in terms of spectral changes and time. Graphs illustrate a string’s vibrational modes, plots of complex waves composed of harmonic partials, dynamic spectra, and sonograms.

Things take off with Chapter 3, “Musical Scales, Tuning, and Intonation.” Here is where everything gets treated down to the fine details. The nature of scales and ratios is discussed as they pertain to equal temperament, just intonation, Pythagorean intonation (and the problems introduced by the syntonic comma), meantone temperament, well temperament, various ethnic and microtonal scales [Hindustani and Partch, to name just two], and fret calculations used by guitar makers. Anything left out of a reader’s tuning background is likely to be covered here.

Chapter 4, “Physical Basis of Sound,” is approximately two-thirds “physical basis” and one-third “sound.” The majority of the chapter provides background in general physics, leading to musical considerations after covering underlying topics such as dimension, mass, density, velocity, Newton’s laws of motion,
work, and conservative versus non-conservative forces. There is a good balance of equations and text, providing both a conceptual and a quantitative context for all topics [I’ve found that most other books emphasize one or the other, but rarely both]. Here the equations get denser, as more symbols are applied to more terms. This is the chapter where novice students will learn to slow down and absorb material, symbol by symbol. Mr. Loy is well aware of the intimidation factor that can present itself in material like this, as he makes clear in his Preface: “I know what it’s like not to comprehend mathematics easily, and I also know what it’s like not to give up” [p. xvi]. This chapter is where the non-mathematically inclined are likely to face a test of will. But, as he describes, the answers will come to those who understand that learning may require some effort on their part. And they will appreciate that this treatment is probably the most unambiguous description they’ll find anywhere.

Chapter 5, “Geometrical Basis of Sound,” tidily covers the relationship of sinusoids to circles and rotating vectors. This material is straightforward, and gives readers what they need to learn concepts like radians and angles by rote, just as musicians learn scales.

Chapter 6, “Psychophysical Basis of Sound,” goes inside of the human head, covering the auditory system and psychoacoustics. Here we get a thorough treatment of the auditory system as well as the differences between what can be objectively measured (Φ variables) and what is interpreted and perceived by the auditory apparatus (Ψ variables). This leads us through a number of peripheral topics including Shepard tones, the MP3 audio compression format, consonance and dissonance, localization, and timbre space.

Chapter 7, “Introduction to Acoustics,” picks up in many ways where Chapter 4 left off in its introduction to physics. This chapter focuses on wave behavior in strings and air, and culminates with reverberation and the musical character of rooms.

Chapter 8, “Vibrating Systems,” discusses the principles of musical instruments. What distinguishes this book from most other musical acoustics books is that the mechanics of the various instruments are not treated. Because the purview of this book is mathematics, math is what is presented. Instrument types are mentioned insofar as mathematics may describe the vibratory nature of strings, air columns, and membranes. But there is no discussion of the fipple mouthpiece, how the Bronx cheer forms the basis of brass embouchure, or the role of the sound post in the violin family. On the other hand, not every musical acoustics book presents Bessel functions to describe membrane vibrations, as the author does here.

The final chapter, “Composition and Methodology,” will be regarded by many as the book’s tour de force. At 123 pages, it is longer than any other chapter, and comprises some 25 percent of the book’s length. The chapter is striking in its integration of both the philosophies and the nuts and bolts of objective compositional methodologies dating from Guido d’Arezzo to the present. The list includes set theory, stochastics, probability, information theory, neural nets, and finally an exploration of the nature of intelligence itself. The scope of Mr. Loy’s discussion is broad and noble, indeed. Examples of all methodologies are realized with a programming language, Musimat, that the author created for this book. Readers are encouraged to download the code and create their own examples.

The Appendices provide background, trivia, and extra working tools. Appendix A provides a review of relevant mathematics, plus an enticing set of extra features that includes Zeno’s Paradox and excerpts from Pope John XXII’s 14th-century Bull advising composers on how to write godly music. A good example of Loy’s apt humor is evident in his justification for presenting the Greek alphabet as being “useful not only for the study of mathematics but also for students being rushed for fraternities. It may also come in handy when eating alphabet soup in Greece” [p. 419].

The second Appendix presents Musimat, the procedural programming language Mr. Loy created that specializes in realizing the musical operations presented in Chapter 9. Although this program is handy for demonstrating procedures for musical algorithms, it is an illustration of principles only, as it does not synthesize audio. But as a generator of symbolic examples, it is certainly a well-conceived program, and no doubt some will find it highly effective.

Mr. Loy provides a new organization and integration of these subjects that is beautifully conceived and clearly relevant to musicians, using humor to skip elegantly to and fro in areas of mathematics, philosophy, and cultural commentary. The ordering of topics differs from book to book and class to class. Some instructors will want to follow the author’s ordering, others won’t. But given the tidy outlining and segmentation that characterizes the book (and many other books from MIT Press), it will be an easy matter for instructors to create a reading sequence of their choosing by simply re-ordering the well-defined sections. Often these topics are covered far more thoroughly than will be necessary for an introductory course, which means that those students wishing to go
more in depth will have ample resources available to them in the text. Although the book is amply illustrated, it is visually “lo-fi.” All images are simply designed and none are in color. This probably accounts for the book’s low cost, and will be a welcome tradeoff for most purchasers. Most are entirely sufficient, although in some places more detailed illustrations would be helpful. The section on the human auditory system, for example, would be well served by some more-detailed anatomical images. Such images are easy enough to find elsewhere, but those who want them will have to take the extra step of consulting other sources.

The difficulty in presenting this material is the interdependence of many of its topics, and it can be confounding to navigate through this web of dependencies in the one-dimensional book format. Mr. Loy tackles this challenge admirably for the most part, although in some cases terms are introduced before they have been defined. Standing waves, for example, are mentioned on p. 193, 62 pages before they are actually defined and described in the context of resonance.

This small breach of information ordering may be handled easily enough by a competent instructor, but it does bring about a larger point. Those familiar with this material will welcome the book’s precise, concise, and modular format. But it is not a casual read for initiates. When it gets dense, many readers will likely benefit from an instructor who is able to expand upon it for them. [Don’t read this at home alone, kids—consult a professional!]

Sometimes descriptions are a little too concise. For example, the nature of nodes and antinodes in pipes is explained in its entirety as follows: “At the open end of a pipe, there is a displacement antinode because the air inside is free to move in and out of the tube. At the closed end of a pipe, there is a displacement node because the air can’t move longitudinally [the closed end prevents it]” (p. 263). There’s a bit more to it than what is provided here, and a few more paragraphs could clarify things considerably. Although this might be a good reminder for someone already familiar with vibrational modes of pipes, a novice is likely to need a bit more explanation.

Given the thorough treatment of most topics, it is surprising when some areas get comparatively thin coverage. The definition of the Golden Mean is simply “about 2/3.” I personally found this a bit disappointing, considering the interesting geometrical explanation of this ratio, and its rich underlying role in nature and culture. But given the wealth of topics covered in the final chapter, understandably the line had to be drawn somewhere.

Mr. Loy’s definition of chaos theory is also not entirely complete—while emphasizing the deterministic nature of chaotic systems and their sensitivity to initial conditions, he does not discuss their aperiodicity or boundedness, which would have rounded out the four essential characteristics of chaos. But even though one might nitpick this issue, such a position risks losing sight of the larger issue, which is explained in the author’s unusually sensitive and insightful summation of nonlinear dynamics’ relevance to musical creation:

> These characteristics of self-regulation are cornerstones of healthy responsiveness to life and mental well-being. How appropriate that stability, adaptability, and flexibility are also hallmarks of successful music . . . Here is the foundation for a music theory that weaves together information theory, chaos theory, complexity theory, cognitive psychology, and nonlinear dynamics in a way that honors music’s therapeutic capacities [p. 306].

Wow. Amen.

This book distinguishes itself from the vast majority of acoustics texts with its thorough treatment of the subject matter and its frequent reinforcement with philosophical underpinnings. Mr. Loy has, overall, heeded Albert Einstein’s advice to keep things as simple as possible, but no simpler. Volume 2, which explores digital audio, is scheduled to appear June 2007, after this review has been submitted. Based on Volume 1, I eagerly await Mr. Loy’s treatment of digital audio and digital signal processing theory.

Recordings

Various: GRM Archives


Reviewed by James Harley
Guelph, Ontario, Canada

In the history of electroacoustic music, the work done in Paris at the Groupe de Recherches Musicales (GRM) studios throughout its long
history and various forms is central. The Quatre Études de Bruits by Pierre Schaeffer, first presented to a shocked but intrigued public in 1948, changed the world of music composition, riding the wave of recording and broadcasting technological innovation that was already changing the wider world of music production and reception. New terms such as musique concrète, acousmatic music, electroacoustic music, and electronic came into being in order to provide labels for this new music that was conceived and created using studio technology, and not necessarily using musical instruments or voices. Not only the techniques had to be developed, but the ways of thinking about this new music also had to be developed. Pierre Schaeffer and the GRM have been crucial to these ends.

In 2004, to celebrate 30 years of the Institut National de l’Audiovisuel [INA]—the administrative umbrella organization that includes the GRM among other elements—a large archival recording project was released, to celebrate the 50-some years of creative musical activity at GRM. Archives GRM comprises five compact discs, each with substantial liner notes in French and English, and an 80-page booklet of photographic images portraying the people and technology of GRM. The discs are organized thematically: (1) les visiteurs de l’aventure concrète [the visitors of the concrète adventure]; (2) l’art de l’étude [the art of the etude]; (3) le son en nombres [sound by numbers]; (4) le temps du temps réel [the time of real time], and (5) le GRM sans le savoir [GRM without knowing it (or . . . without knowledge?!). This grand project was overseen by Christian Zanési, a GRM affiliate composer, and was clearly a labor of love, no doubt involving many others who go uncredited.

Is it typical for French technocrats to also be intellectuals? (One thinks of Jacques Attali, politician-economist who penned Noise: The Political Economy of Music.) Emmanuel Hoog, Président Directeur Général of INA, quotes Victor Hugo in his introduction to this exceptional publication: “La musique c’est du bruit qui pense” [“Music is noise that thinks”]. After going on to state the INA’s mission, “to conserve and diffuse audiovisual heritage,” he concludes rather poetically: “Résolument, l’INA construit l’avenir de votre mémoire” [“The INA is steadfastly building up the future of your memory”]. From the top down, this is an intelligent, creative, and engaging production (it is also self-important, but one would expect that from an institution as large and active as this one). Along with Mr. Hoog’s introduction, each of the five liner-note booklets contains an opening essay by musicologist Jean-Christophe Thomas, five variations on a theme of avoiding classification while having fun “dreaming up taxonomies.” In addition, each of the five booklets contains more targeted essays and notes on specific works by GRM associates: François Bayle (CD 1), Régis Renouard Larivière (CD 2), Yann Geslin (CD 3), Daniel Teruggi (CD 4), and Christian Zanési (CD 5). There is a great deal of interesting historical and technical information contained in these texts.

What is missing, though, are composer biographies of any sort. Although some of the artists of this collection are well known, such as Pierre Schaeffer, many are not, and even pointers to biographical information would have been helpful. The INA has been taking some steps to address this lacuna with its Portraits Polychromes series of publications on individual composers important to the history of electroacoustic music [and, by strong coincidence, mostly active at GRM], and the associated Acousmaline Web site (www.ina.fr/grm/acousmaline/index.fr.html).

Disc 1, les visiteurs de l’aventure concrète, documents a variety of musical experiments carried out at GRM over the decade from 1951 to 1962. Most of the contributors were one-time, or one-piece, visitors to the studios. There are exceptions: Henri Saugé [represented here by Aspect sentimental from 1957], Claude Ballif (Points-Mouvements, 1962), Iannis Xenakis (Concret PH, 1958). These three spent years working at the studios of GRM, but not their entire careers. In any case, it’s of some historical interest to be able to listen to the two short Études [1951] by Pierre Boulez [who has actually been highly critical of much of the work done at GRM], and especially the more extensive Timbres-Durées [1952] by Olivier Messiaen. There is an interesting jazz-based work by André Hodeir from 1951, Jazz et jazz, combining live performances with studio-manipulated recordings of a jazz piano trio. La rivière endormie [1954] by Darius Milhaud is also worthy of historical note, as this neo-classical composer is not usually associated with studio experiments. An excerpt of Edgard Varèse’s Déserts [1954] is of course included, this being one of the most famous works created at the GRM facilities. The other contribu-
Recordings

Disc 2, l’art de l’étude, introduces the listener to the music of Pierre Schaeffer and a number of his disciples from the early decades of GRM. The term “study” (étude) was favored by Schaeffer for its modesty in terms of musical ambition and for its association with scientific research. Many of these pieces focus on particular techniques or sound sources. But all of these pieces are musical, and certainly listenable; some are quite ambitious, the longest lasting close to seven minutes. Schaeffer himself is represented by one of his first “noise studies” from 1948, Étude pathétique (sometimes called “Étude aux casseroles”) and by two later studies: Étude aux allures (1958), and the first movement of Étude aux objets (1959). These pieces are elsewhere available on disc, but it is good to listen to them here within the context of other work being done at GRM. Monique Rollin, an early music specialist, made use of the Phonogène, a custom-built tape recorder capable of keyboard-controlled variable-speed playback (see Figure 1), to record a sample-based version of a 13th-century motet for her Étude vocale (1952). Mireille Chamass-Kyrou, an Egyptian-born composer who studied with Olivier Messiaen in Paris and spent some time at GRM, creates quite an evocative study of evolving textures in her Étude 1 (1960), as does Beatriz Ferrari, Argentinean-French composer who worked closely with Schaeffer on his Soljège de l’objet sonore, in her Mer d’Azov, étude aux iterations (1963). [These three, it must be pointed out, are the only women heard on this set of five discs.]

Of the early GRM associates, Pierre Henry is conspicuous by his absence [although reference to his work is given in the liner notes]. Michel Philippot is there, however, with his Étude No. 1 (1952), as is François-Bernard Mâche with Prélude (1959), Ivo Malec with Réflets (1961), and Alain Savouret with Étude aux sons réalisés (1969). [A second work by this composer, Étude numérique, from 1985, provides a link to the digital focus of the works found on Disc 3.] Luc Ferrari, probably more known internationally than these others, is represented by a trio of short works from 1958, the start of his affiliation with the studio: Étude aux sons tendus, Étude floue, and Étude aux accidents. The disc is filled out with interesting contributions to the electroacoustic étude genre by Philippe Arthuys [his name is misspelled on the back of the disc, unfortunately] with Boîte à musique (1955), Philippe Carson with Phonologie (1962), and Akira Tamba with Étude No. 2 (1962).

According to the liner notes for Disc 3, GRM acquired its first computer, a PDP 11/60, in 1977–1978. Using Music V as the point of departure, a team began implementing the software, building converters, and trying to develop strategies for composers to work with these new tools. This research was going on concurrently with (actually, slightly later than, in spite of what the liner notes say here) early developments in computer music at the Institut de Recherche et Coordination Acoustique/Musique (IRCAM). Jean-Claude Risset carried on associations with
both institutions, providing the benefits of his long experience in computer music and his relationships to American researchers such as Max Mathews and John Chowning. [The work of Iannis Xenakis, who had been experimenting with digital synthesis at his research center in Paris for several years and whose graphic computer music system, the UPIC, was inaugurated in 1978, is not mentioned in the liner notes.] What the GRM eventually settled on for the focus of its efforts in digital music was transformation rather than synthesis [this path diverged from Xenakis’s work, although Mr. Boulez, as early director of IRCAM and continuing associate, has been interested in sound transformation, certainly]. A set of distinctive tools was implemented that enabled a sound to be fed into the computer, digital signal processing algorithms applied to it, and a modified sound be sent out. Composers were provided with controls for adjusting the processing techniques, but there was no need for composers to be programming experts (which isn’t to say that working with this early computer music technology, especially the interfaces, was particularly easy!).

The collection of mostly extracts heard on this disc covers the decade 1979–1989. The first composition to use the GRM digital transformation techniques was Eros Bleu by then-studio director, François Bayle. The sound sources are not obvious, but the spectral transformations through resonating filters create rich, evolving textures. Chronologically, the next work is by Yann Geslin, one of the core team at GRM working on this new computer music technology. Variations Didactiques—movement 2 [1981–1982] uses a recording of spoken text (a poem by Stéphane Mallarmé recited by Michael Lonsdale) as its “theme,” subjecting the sample to various transformations: speed, pitch, spectrum, fragmentation, etc. Ivo Malec, one of the “old-school” composers long associated with GRM, created Week-end in 1982. It, too, uses vocal samples as source material, for even more radical transformation. As with Mr. Geslin’s piece, this one revels in rich spectral transformations, but it ranges more widely in its explorations, so that the sources are not always apparent. Jean Schwarz, another long-time associate composer of GRM, also explores the rich world of spectral transformation in Quatre saisons (Hiver) [1983], apparently building his textures from transposed, radically stretched samples from the singing voices that are heard live. Without being given this information, I doubt one could deduce the sources of these sounds. There is an icy transparency to much of the piece, creating an effective accompaniment to the solo voices, that is rarely heard.

Jean-Claude Risset’s Sud [1984], a commission from GRM, is a well-known work, long available on disc. This excerpt demonstrates his meticulous skill in creating transitions from recorded natural sounds to highly filtered and transformed sounds to musically organized material. This is one of the masterworks created at GRM, I believe, and it’s good to hear part of it here within the context of other work from the 1980s. Gilles Racot’s Anamorphées (1985) is apparently built from a single recorded phrase of a saxophone. The transformations the source is subjected to are truly virtuosic; again, without being told of the source material, one would be very hard-pressed to guess. Bénédic和平 Maillard is another GRM associate who took up the challenge of creating a composition from a single source, in this case a short sequence of metallic sounds [heard right at the beginning]. Affleurements (1985) draws on a wide catalog of sonic transformations, including some impressive spatialization that includes Doppler effects.

Dieter Kaufmann, an Austrian composer who studied with Messiaen in Paris and apprenticed for a period at GRM, has worked a great deal in the realm of music theater, and Voyage au paradis [1987] is appropriately dramatic, featuring spoken text (in German) that is subjected to digital manipulation, mostly stretching and filtering rather than chopping and mixing. Denis Smalley’s Wind Chimes [1987] is built from recordings of glass and metal wind chimes and bells [and other materials]. The combination of grainy, percussion textures with background drones is carefully varied to draw the listener on a sonic journey of spectral and textural exploration. This is another of the masterworks of GRM, and the full work, available elsewhere, is worth seeking out for those who do not know it. Finally, the first decade of digital production at GRM as presented on this disc is concluded with an excerpt from Novars [1989] by French composer Francis Dhomont. Long acknowledged as a master of creating evocative sonorities using analog means, this GRM commission demonstrates how easily Mr. Dhomont was able to move into the digital realm, producing a rich, poetic work drawing, among other materials, recorded excerpts from Pierre Schaeffer and Guillaume de Machaut.

In the 1980s, real-time digital synthesis was simply not possible using commercial computer technology. There were a few products on the market—notably, the Synclavier, and the Fairlight—but these were aimed at the music industry and did not contain enough of the kinds of tools that electroacoustic composers might want to draw on. At GRM, as Daniel
Teruggi points out in the historical outline he presents in the liner notes for Disc 4, research and development for building a unique computer system for creating and transforming sound in real-time began early on, running in parallel to the development of non-real-time software tools implemented on the PDP 11. The first system, named SYTER (for “Synthèse en temps reel”), was operational in 1984 (see Figure 2). Subsequent versions continued to be developed until 1989, and the SYTER was operational at GRM through 1995. A number of the algorithms developed for this system were later adapted for distribution as stand-alone software (or plug-ins), marketed as GRM Tools (widely used around the world today). The SYTER was a unique, dedicated computer music system, developed in parallel (in competition) with the 4X system at IRCAM (succeeded by the ISPW—IRCAM Signal Processing Workstation), and the UPIC system at CEMAMu. According to Mr. Teruggi, around 100 works were composed in part or in whole using the SYTER.

This disc, le temps du temps réel, presents a selection of ten of these works, some of them acousmatic, some involving real-time transformations of live instruments. The dates of these works are not always given, which is an oversight, but, like Disc 3, they are apparently not presented in chronological order. The first is Exercisme 3 by longtime GRM associate, Bernard Parmegiani. This work (according to other sources, it was completed in 1986) is a highly dynamic study of the potential for the SYTER tools to transform electro-acoustic materials produced previously. Swedish composer Åke Parmerud produced Les objets obscures after a month of working with the SYTER in 1991. Stone marbles and a voice are the sound sources here, revealed only at the end. Sonic manipulations are used to create morphological connections between the two. Denis Dufour, a French composer who has also worked at IRCAM, has the distinction of being the first to use the SYTER for real-time processing of live instruments. Pli de perversion 2 for synthesizers and violin was presented at the 1984 International Computer Music Conference (held at IRCAM in Paris). The year 1984 was still early days for real-time computer music (recall that Pierre Boulez’s Repons, with its quite restricted application of interactive technology, was in development in 1980–1984, and Philippe Manoury’s Jupiter, the first composition to use score-following in anything beyond a rudimentary way, wasn’t created until 1987). The transformations of the violin in Mr. Dufour’s piece are actually quite impressive, and those sonorities, together with the palette of the synthesizers, makes for a solid contribution to interactive computer music.

Horacio Vaggione has built his career on what one might term “micro composition,” the creation of rich, evolving textures primarily built from streams of short samples of recorded sounds. In Ash (1990), the sound sources are not obvious, although there is a clear sonic connection to the burning charcoal embers of Xenakis’s Concret PH, an homage hinted at in the title as well. The SYTER was used to create the “multiplicity of sounds” used for creating the dense, granulated textures of this music. Alain Savouret apparently stretched the capacity of the SYTER to the limit with his La complainte du bossué for double bass, voice (of the bass player), and real-time processing. In this case, the technical difficulties involve capturing both the bass and the vocal sounds accurately, with the processed sounds forming part of a theatrical presentation where timing and quality would be critical. François Bayle is heard again on this disc, here contributing Mimamêta, a short acousmatic work that combines SYTER-generated sounds with materials produced by other means. In this case, the music is the focus, not the technology.

French composer Gilles Racot had already worked quite extensively with the SYTER when he came to compose Subgestuel [199?] for six percussion and fixed sounds. For this ambitious work [we hear on this disc a five-minute excerpt of the full 22-min composition], he subjected...
pre-recorded percussion material to a
variety of digital processes, in the end
creating a highly unified mixed work.
He did not attempt to make use of
the real-time capabilities of the sys-
tem. Neither did Daniel Teruggi, an-
other composer (and present director of
GRM) who worked extensively
with the SYTER over many years. For
*Instants d’hiver*, he “built or assem-
bled tools for performing unique pro-
cessing techniques on certain types of
sound.” The sources range from
children’s voices to orchestral snip-
pets. Spanish composer Ramón Gon-
zález Arroyo is not a GRM regular,
but for *De la distance* for double bass
and fixed sounds he took the time to
program his own synthesis and pro-
cessing modules. In this piece there
are a range of “instruments” used to
create the tape part, and the bass solo
part treated as an equal player in this
piece rather than as the main focus of
the sonic textures. The disc closes
with *Appel d’air* (1991) by French
composer Michel Redolfi. The ex-
ccerpt heard here explores the spatial
presence of a variety of sounds using
the processing tools of the SYTER,
including the Doppler effect. There
are quick dramatic gestures that tail
off into long, evolving reverberations.

In comparing the works of Disc 4
with those of Disc 3, it is not particu-
larly obvious which were produced
using the non-real-time approach of
the software implemented on the
PDP-11 and the potentially real-time
approach of the SYTER system. Only
a few examples made use of the
SYTER for its interactive capabilities.
Most used it as a studio utility for
exploring and creating sound. What
one might notice is that the music
created with the SYTER exhibits
more confidence in the technology,
and one has the impression that the
processing capability and user inter-
facing is much improved over the ear-
lier utilities.

Disc 5, *le GRM sans le savoir*, is a
motley collection of sometimes sur-
prising odds and ends produced in the
studios of GRM. The collection
might be classified, roughly, as func-
tional sound design work. For ex-
ample, *Indicatif Roissy* is a
four-second electroacoustic chime
created by Bernard Parmegiani that
has been used since 1971 to signal
public address announcements at the
Roissy-Charles de Gaulle Interna-
tional Airport in Paris. Anyone who
has traveled through that airport has
heard this sound, an “audience” that
must number in the millions. Mr.
Parmegiani has contributed a few
other sonic “signatures” over the
years, including the identifying mu-
sic for the radio network France Cul-
ture, and the theme for “Stade 2,” the
main sports program on French Tele-
vision (Channel 2). Christian Zanési,
who also supervised the selection of
tracks for this disc and contributed
the liner notes, has himself produced
a very well-known signature sound,
that used for the metro system in
Paris. Jean Schwarz contributed a sec-
ond signature tune for France Culture
in 1982, updating Mr. Parmegiani’s
1972 creation.

According to Mr. Zanési, Radio-
France, back when it was known as the
O.R.T.F., had a “Light Music Ser-
vie.” Alain Savouret, in response to
a commission from this department, composed *Valse molle* in 1973. This
ten-minute work is not particularly
light, in fact, but it sounds more tra-
ditional than most work produced at
GRM, probably for following a
waltz-like rhythmic scheme. The
combination of instrumental and
studio-produced sounds is masterful.
Way back in 1962, Mr. Parmegiani
created a “musique concrète” orches-
tration of a French chanson by Boris
Vian (sung by Caroline Cler). *L’alcool
tue* sounds like cartoon music, evok-
ing Tex Avery, and also Spike Jones.

Edgardo Cantón’s 1967 treatment of
*Rengaine à pleurer*, a chanson by Jean
Tardieu (sung by Mouloudji), is much
less manic, although the electronic
sounds behind the voice are, accord-
ing to Mr. Zanési in his liner notes,
“highly kitsch.” In 1986, GRM com-
poser Jean Schwarz collaborated with
French jazz musician Michel Portal
on *Chantakoa*, combining synthetic
instrumental lines in parallel with
the improvised bass clarinet part, of-
ten sounding like a giant harmonizer.
Another unusual collaboration took
place in the early 1970s, this time be-
tween GRM director François Bayle
and Soft Machine founder Robert
Wyatt. A series of musical improvisa-
tions (or “experiments”) at the
GRM studios were recorded then
subjected to editing and manipula-
tion by Mr. Bayle.

GRM composers also provided mu-
sic for other media, including film,
television, and dance. Jean Schwarz
created *Il était une fois* for choreogra-
pher Carolyn Carson in 1980. Robert
Cohen-Solal created the soundtrack
for an animated series, *Les Shadoks*,
shown in French television in 1968.
We are here given a “concert” version
of this music, highly evocative and
often humorous ([the animation series
is available on DVD, apparently).]

The disc is filled out with a couple
of interesting, perhaps unclassifiable,
works. Guy Reibel creates a canonic
texture on a short African-sounding
phrase. The music he produces in
*Canon sur une trompe africaine*
(1971) is reminiscent of the amazing
polyphony of the Baka forest people.
Finally, Mr. Parmegiani is rep-
resented with a more extended work,
*La rose Ferris* [The Ferris Wheel],
from 1971. This piece could have
been included in the collections of
“serious” music created at GRM, but
is heard amongst this odd set of
tracks because, for one, it made a
strong impression on Mr. Zanési

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when he first heard it as a student, and, second, because of its “electronic plastic jewellery, its lightweight mechanism, its geometrical swirling, and the overlapping vertigo of its meticulous cycles.” Perhaps, this piece is included here because it is . . . fun!

Archives GRM, then, is a substantial, important collection of electro-acoustic music produced at the GRM studios over some 50 years. The sonic production is great—each piece sounds pristine. No doubt the mastering process was more difficult than might be apparent, due to the varying condition of the original recordings. There are a number of misprints and errors in the texts, but this is a relatively minor point (although there really should be dates given for all tracks, and biographical information for all contributors). This is a collection that ought to be on the shelf of anyone with more than a passing interest in electroacoustic music. More than that, it should be listened to, for the rich history it presents of an innovative field of studio composition.

Irwin Chusid, Curator: Interesting Results: Music by a Committee of One

Compact disc, Sonic Arts Network, 2004, available from Sonic Arts Network, The Jerwood Space, 171 Union Street, London SE1 0LN, UK; telephone (+44) 20-7928-7337; electronic mail info@sonicartsnetwork.org; Web www.sonicartsnetwork.org/.

Reviewed by Andrew Fletcher Fenham, Newcastle Upon Tyne, UK

Irwin Chusid has been described (by music critic Robert Christgau) as “a tedious ideologue with a hustle,” which is believable after listening to this. The Hoboken-based “landmark preservationist” is responsible for salvaging these lost or overlooked musical gems. This album’s consistently outlandish twists and turns betray an obsessive tenacity in Mr. Chusid’s research, reminding me of a retrospective John Peel.

Interesting Results “celebrates the individual,” and particularly the DIY phenomenon heralded by the emergence of inexpensive home-recording devices. Mr. Chusid has selected 12 recordings by “outsider artists” spanning the United States and nearly 40 years. Some of these musicians are beginning to emerge, blinking in the light of publicity (partially through Mr. Chusid’s hustling), and names such as Ariel Pink and R. Stevie Moore sound increasingly familiar. The album has twin pop and folk centers, but with a heavy dose of “other,” each track bound to the rest by a défiant sense of rampant individualism.

Most of the artists represented here remain untroubled by the shackles of conventional pop or musical sensibilities. Elaborate multi-tracked home productions sit comfortably alongside scratchy live recordings. Many are considered “ahead of their time,” possibly a polite term for “unfathomably idiosyncratic.” But factors such as location, poverty, or simply a reluctance to engage with the music industry also contribute to their obscurity. The single factor these tracks all share is an overbearing sense of guileless eccentricity. This lack of self-awareness is key, infusing the music with a carefree joy that permeates the album, making it not only an intriguing listen, but also delivering it with a smile.

Ariel Pink kicks off with a slice of lo-fi pop, evoking garage recordings and the complex set of angsty relationships that come with that particular lifestyle. Aside from roping the indie-fraternity in with a relatively mainstream sound, he also exudes a certain punk aesthetic. This is also found in the following track, Nothing, by Peter Grudzien, which is equally slapdash, but this time addressing existential values in a heartily whimsical manner. Lucia Pamela’s Hap-Hap-Happy Heart sounds like an alcoholic southern belle on uppers, and is infused with an addictive jubilation. And Harry Merry’s strange, quirky organ song, Hoydenish Ambrosial, lives up to its title, evoking unbridled, almost maniacal jauntiness. Less sympathetic reviews would liken this to a sound-track for bedlam.

Each track is connected by its sheer disconnectedness. Yes, Ariel Pink evokes FM pop and Lucia Pamela sounds a plausible character—the music here is not contrived—but it is difficult to draw comparisons with other genres, let alone between tracks. It’s as if the artists have never heard music, yet worked it out all on their own. Granted, this isn’t true, but many of these tracks betray a certain idiot savant quality.

Chris Butler is manic, whilst Petra Haden’s a capella music results in a bizarre, yet effortlessly dynamic, track—and sounds more human than Björk. Shooby Taylor scats
impressively through Indiana and the vocal theme is continued in Bob Vido’s Boo-Bah-Bah. The next three tracks are aptly unhinged, yet maintain an assured sense of coherence. B. J. Snowden’s Drug Free is disarmingly sincere. Indeed, it is the earnestness in most of these tracks that demonstrates their sense of meaning, even if their message is unclear [Y. Bhekhir’s Hot in the Airport is pretty oblique]. The album ends with an epic by R. Stevie Moore, asking Where do I Come From? before flying away on a whimsical odyssey through increasing distraction and innocence.

Every track warrants mention because they all stand out. Mr. Chusid’s intention is to showcase the best in DIY and individualist music. In his words: “Nobody works in a vacuum. But some musicians are too single-minded, stubborn, anti-social, or dysfunctional to be team players.” The idiosyncrasy demonstrated here pinpoints the message that music cannot be quantified, or boxed into cozy, genre-specific categories. These are a motley crew of musicians and amateurs, who aren’t contriving to be pioneers, doing it differently. It is this aesthetic that breathes life and imagination into contemporary music. This is the drive to create, crystallized on the fringes of the industry, yet filtering through to inform the mainstream.

There is nothing on this album that sounds either produced, or even arranged, on a computer. In this respect, Sonic Arts Network (a UK organization created by electroacoustic composers, and counting Karlheinz Stockhausen as Honorary Patron) has strayed from its usual fare of electroacoustic and high-concept work, in favor of a more organic approach. Computer music is thus conspicuous by its absence, deflecting the focus onto those musical elements often sidelined by a concentration on processing and human abstraction. This acts as an apt reminder of the outer vestiges of the cyborg binarism, which is appropriate, as the trend these days seems to be focused on blurring the boundaries within, rather than exploring the full extent of this terrain.

This collection brings new meaning to the word “exclusive.” The term, far too often slapped across an album as a quick-fix sales-upper, has drifted into the realms of cliché. Here, however, it is reclaimed and recontextualized to mean “outside” of established production sensibilities and “beyond” accepted industry conventions. The works here are exclusive in the ironic sense, some being so strange that you would be hard-pressed to find anything similar anywhere else. In this respect, Mr. Chusid’s efforts have paid off with a rewarding and intriguing listening experience, showcasing human foibles and ingenuity in equal measure.

Products

Primera Bravo SE Disc Publisher
US$ 1,495; available from Primera Technology, Inc., Two Carlson Parkway, North Plymouth, Minnesota 55447-4446, USA; telephone (+1) 763-475-6676 or tollfree in North America (+1) 800-797-2772, fax (+1) 763-475-6677, Web www.primera.com/.

Reviewed by James Harley
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Primera is a Minnesota-based company producing disc duplication and printing devices. The company manufactures a whole range of these units, from entry-level to high-end, and has recently released what it claims is the first Blu-Ray disc duplicator. This review concerns itself with one of the entry-level units, the Bravo Disc Publisher [suggested manufacturers price: US$ 1,495, although this unit can often be found for less]. This particular device can duplicate CDs and DVDs (the new Bravo unit that also handles Blu-Ray discs costs about double the price), and is able to handle up to 20 discs at a time (see Figure 1).

The Bravo connects to either a Windows or Macintosh computer through a USB cable [but must take its power through an external cable/adapter]. The system requirements are not particularly onerous: Windows 2000 or XP, 700 MHz Pentium III/IV processor, 512 MB RAM, 10 GB hard drive space; Macintosh OS X version 10.2 or higher, G4 700 MHz (it will run on an Intel Mac as well), 256 MB RAM, 2 GB hard drive space (6 GB for producing DVDs). The one factor that requires care is the need to connect the Bravo to a USB 2.0 port on the computer (2.0 ports appearing identical to USB 1.0 ports, of course).

The unit is simple to unpack and set up. You need to make sure the
unit is set on a stable, flat surface, all the packing adhesives removed (that prevent the robotic arm from moving unnecessarily, etc.), and the printer cartridge installed. The installation disc loads the necessary drivers and software to the computer. On a Macintosh (this review was carried out using an Intel iMac, Mac OS X 10.4), it is necessary to add the Bravo as a printer option using Printer Setup Utility. The software for managing operations—selecting what kind of disc format, loading the content, attaching image files for printing, and so on—is provided by CharisMac Engineering. The Discribe software presents options for burning data CDs, audio CDs, or copying a CD/DVD. What is not provided for the Mac platform is any software for creating the disc labels. Templates are provided, but you must possess graphics software such as Adobe Photoshop or Illustrator to prepare your labels. According to the company, a survey of Mac users indicated that the vast majority of them already use Adobe software for working with graphics. For users who need something more economical, Primera recommends Magic Mouse Discus Labeling (listed for US$ 45; Web www.magicmouse.com/) or Smile On My Mac DiscLabel (listed for US$ 32.95; Web www.smileonmymac.com/). If you have the Bravo connected to a Windows machine, Primera provides its own project management software, called PTPublisher. In addition, the company provides a version of SureThing Disc Labeler, a dedicated graphics program that enables the user to create disc labels using helpful templates.

The first step in producing a disc for duplication is to create the audio or media content and have it available on the computer hard drive. Then, the text and image(s) for the disc label need to be prepared and saved as a graphics file (the software supports any file type Apple Preview supports: JPEG, TIFF, PICT, PDF, GIF, BMP, etc.). The printer utility Page Setup enables the particular type of disc to be selected (there are choices beyond the standard CD/DVD, such as Business Card Disc, 80 mm CD, etc.). The printer driver is supposed to center the image and crop it to the shape of the CD. You should be able to create a graphics files using a custom page size of 120 mm square (4.72 in.) and center your image and text in that area. I had some trouble getting this to work properly. As I discovered, it is critical to properly set the Inner Diameter [the area where there will be no printing], and the Outer Margin. There are also adjustments to be made for Print Quality, Disc Surface Quality, Color Matching, and Intensity. Getting these right takes some experimentation, but it is important to take the time to do so, as the results can vary quite a bit. I would also advise creating the graphics file (in Photoshop or whatever other software) to be high resolution (300 dpi should be sufficient), in order to retain the sharpness of the text and images. I should also note here that you of course need to make sure your discs are printable, and while there is no need to use the Primera media, you would be advised that not all printable discs are equal in quality, and this will definitely affect the quality of the print using the Bravo (Primera discs range from US$ 48/100 to US$ 64/100, depending on surface quality and water-resistance).

Once the label has been created, the printer settings properly adjusted, the content loaded (a simple process of selecting the tracks and ordering them), all that is necessary is to load up the blank discs into the Bravo’s Input Bin and click the Print button on the computer. The robotic arm will first check that there is not already a disc in either the burner drawer or printer tray. Then, the arm will lift a disc from the Input Bin and move it to the open burner drawer. Depending on the disc type, the media, and the burn speed selected, this stage will take a few minutes. When the first disc is burned, the drawer ejects the disc, it is picked up by the arm and placed onto the printer tray. Before printing commences, the next disc is loaded into the burner. Once the first disc is printed [again, this will take some time, depending on settings and content], the arm lifts it up and drops it into the Output Bin. These operations proceed automatically, and it should be noted that they happen quietly and smoothly. The software settings provide for doing a test burn/print [probably a good idea, in particular to check that the printing results in the best possible image, that the text is centered, and so forth], and to verify after burning, if desired.

All in all, the Bravo Disc Publisher works very well. For producing small runs of discs, this device offers an affordable, relatively trouble-free option. For more intensive requirements, Primera has a comprehensive range of other units. The company also produces and markets ink cartridges for the Bravo. It may not be easy to find these cartridges at your local office supply store, but they are available from a number of online suppliers [at discounted prices].

Products