
Chroma



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Editorial

By Timothy Opie

This issue of Chroma brings with it a whole barrel load of musical opportunities, whether you are a composer, musicologist, performer, researcher, sound artist, or just like music. The last 6 pages are devoted to events, concerts and recordings you can all be involved in. So take advantage of all the opportunities, and submit your work. It is a really exciting time to be involved in the electronic and computer music scene. The opportunities are becoming more frequent, the level of experience is rising, and there are many new people to work with emerging all the time. It is my hope that ACMA can work to get all these people together in the one room and see what new works we can come up with.

Also in this issue, a composer profile of Lissa Meridan who is currently working very hard to organise the ACMA conference of 2004. I look forward to seeing you all in Wellington. It promises to be a great event.

Following the high content of discussion arising from questions regarding the need for computer music labs comes a few opinions and experiences related to that topic. This will surely generate more feedback, and I am willing to include letters written in response. If you are looking for an immediate form of response, the acma email list is always up for the challenge.

Warren Burt, diligent as ever, reviews 2 must have books. If you have any books or CDs you would like reviewed or just advertised in Chroma, then please feel free to send me an email. And as always Chroma is looking for articles, reviews, thoughts, poems, pictures, herring, and wallpaper to publish. This is a publication for you, written by you, about you. I am just here to collate it all.

Cheers,

Timothy Opie
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President's Report

By Paul Doornbusch

It's just before Christmas as I write this, and the winding up/down/out period has just begun for me. Several events have occurred within ACMA and everybody should be aware of them:

We are producing another CD. I find this particularly exciting, as it is an opportunity to focus on the M part of ACMA. If I have a tendency to favour any part of the computer music world, it would be the music composition part (note that for me this includes all sorts of DSP, instrument design and performance considerations), mostly because this is the area of infinite human invention and creativity - for me it is about the music. So the CD is an exciting development from my point of view. The focus of the CD is on young and emerging artists, and Julian Knowles and Philip Samartzis are curating it. There is a call for works on the ACMA web site, so I'll not labour the point more here, and there is an intention that this will expand and broaden ACMA's support base as most young artists are looking for musical opportunities and discourse. So, if you consider yourself a young or emerging artist, get started and submit a piece - it will get some international exposure.

The ACMA web site has had a bit of revision recently; most notably we now have on-line membership registration and payment facilities. This will make becoming a member of ACMA, outside of the conference, significantly less painful than it was previously. The bad news is that we have put up the price of employed membership by \$5 to \$35 to help cover our costs. To offset this there is a moratorium on increases to employed membership fees until 2006. Jeremy Yuille helped enormously with making the on-line registration work properly and my thanks to him for the effort and for such a fine job.

It has been mentioned to me by several researchers that they would like opportunities

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to publish their research papers in a forum other than the annual conference. There are a few international options for this, but precious few local opportunities for fully-refereed publications throughout the year. Mikropolyphonie, the online contemporary music journal, has kindly agreed to allow ACMA research papers to be published twice a year via Mikropolyphonie. So, if you have a paper that you have been trying to publish, and you would like that to happen before the next conference, there is now a local option. Also, the proceedings of each conference will now have an ISSN and a copy will be stored in the National Library, which will help to give the publication more credibility and keep it available to researchers for years to come.

The Australasian Computer Music Conference for 2004 will be held at Victoria University Wellington in New Zealand. Lissa Meridan will be chairing it, probably on the days of the 30th of June to the 2nd of July. You can expect a call for works to appear very soon.

I would like to thank the committee for their work and support throughout the last six months, and wish all in ACMA a happy and productive 2004, I hope I see you all at the conference.

Best wishes,

Paul Doornbusch
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Composer Profile

Lissa Meridan

Enchantments and alchemy

I remember as an undergraduate composer at Auckland University being completely terrified of computers and electronics. I guess that is why I decided to take the plunge and enrol myself in the Electronic Music course in the first place. My motto has always been to do what terrifies me, jump of cliffs and set impossible goals, to face my fears head on.

I used to sneak into the studios and look at all the amazing analogue equipment, like the Roland 700 Modular synthesizer, the reel to reel tape recorders and the Emax II. I was fascinated by all the knobs and sliders and the possibilities of discovering amazing sounds which I had never heard before. And those machines were just so damn sexy, I just wanted to get the chance to be alone with them. I guess that is when my search began.

I wanted to hear something that would make my spine tingle, make the hairs on the back of my neck stand up, make my ears strain and focus, I wanted the sounds to enchant me, mesmerise me, surprise me and take me on a journey to a sonic plane I had never been before.

I dabbled a little in the early 90s by taking a short evening class with Susan Frykberg. She was so down to earth about the whole technology thing, and I think for me it was really important to see a woman working in the studio like it was completely natural. Now, all those gender issues seem so dated and irrelevant, but back then it was a big deal. That class really woke up the adventurer in me, and I began to see the exciting possibilities.

When I was in the studio, time had no meaning any more. Hours would just evaporate, day would bleed into night, and sometimes I would even camp out for days on end, hardly eating or sleeping, searching for the perfect solution. I felt like an alchemist, mixing potions with sound and spinning spells to enchant myself.

I wouldn't say I ever really understood what I was doing, it was a very intuitive process for me, and I think that made it even more enchanting that way. Demystifying the whole process down to signal paths and algorithms seemed to take some vital essence away, so I liked to work in a much more improvisatory way, trial and error, making lots of mistakes and hence, some magical discoveries.

I never really took the whole thing too seriously, it was more like a game, an entertainment way better than tv, a kind of escape from real sound of life. In the studio, I could make life sound the way I wanted it to, larger than life, with the tiniest detail blown out of proportion, like listening to sounds with a microscope to discover their secret hidden magic.

I also enjoyed the way that my whole listening experience changed as a result of working with sound in the studio environment, and this had a huge impact on the way I began to conceptualise music, especially when composing for orchestral instruments. I no longer thought of notes and articulations, but now envelope shapes and timbral transformations. I was really inspired by the work of composers like Kaija Saariaho, Arvo Part and Witold Lutoslawski. Although stylistically their works are quite diverse, they all seemed to conjure a deep and mystical magic for me, and I wanted to distill that essence and discover it over and over.

I was never entirely convinced by the concert hall presentation of electronic music, although I did enjoy the intense focus on the sound itself, I felt the looming presence of the loudspeaker to be quite intrusive. So I began my search for the perfect musical experience, by exploring various ways of presenting my sounds. This search has led me to work with some fantastic artists

and musicians on a number of diverse musical projects.

The first of these collaborative projects was a short film titled *Asylum* with Choreographer Willa Gordon and Video Editor Norm Skipp. This film proved to be quite successful and has screened at the NZ International Film Festival as well as numerous festivals in the USA.

At the close of 2001, I travelled to San Francisco to learn Max/MSP at CNMAT at UC Berkeley. During this time I collaborated with visual artist Antonio Funicello to create *Elastic Horizon*, an interactive audiovisual installation, which invites the visitor to manipulate and transform images and sounds from the natural environment. Participant's actions within the space are interpreted, in real time, into a sequence of visual and aural effects.

Over the years I have collaborated on several occasions with cellist Rowan Prior, firstly on *Devil on a Wire*, a performance piece for cello and Live Electronics which investigates the relationship between the two performers. Recently we worked together on *Soundtracks 4* in association with the NZ Film Archive. This project was a real challenge in that we were playing live to silent films which had their own narrative, and were also improvising and interacting with each other too.

These projects inspired me to learn some turntable technique, and I have been performing as an experimental turntablist and electronic improviser for the past two years, both as a soloist and also in collaboration with Strike percussion ensemble, Rowan Prior, and other artists. Thus DJ Fierce Angel escaped the academy and made the difficult crossing to electronic dance culture. The whole experience has been enlightening, challenging and a great deal of fun.

There are too many various pieces of hardware and software available to name them all, but I particularly like to work with programs such as ProTools, which has some fantastic plug-ins for audio digital signal processing and effects, both in a studio situation and live. Some of my

favourite software tools are Spektral Delay, GRM Tools, Metasynth, Max/MSP, SampleTank and Audiosculpt. I also use Peak for quick edit jobs and recording basic setups. As far as hardware goes, in the studio, I run a G4 and use a ProTools Control24 with their TDM system, a DAT recorder or ADAT, a range of microphones, and a few bits of retro gear such as a Roland modular synth, a Synthi VCS3 and a DP4 effects processor. I tend mostly towards a software based studio environment these days. I've had a lot of fun making installation works and live interactive music with an iCube digitiser and Max/MSP. For my live shows, I simply work with a Digi002 ProTools control surface, a couple of turntables, DJ mixer, 16-channel Mackie desk, a MIDI keyboard and of course control the whole process via my Powerbook.

My computer has become a central tool for me over the past 5 years or so, since I bought my first mac (which was a 7600). I still do a lot of composition for symphony orchestra and chamber ensembles, and I run both Sibelius and Finale notation software on my laptop, (as I still can't make up my mind which I like better!) I love being able to scratch around on paper first of course, but I never write my music out fully any more – I just make rough sketches of my ideas and then work directly in computer notation. I try to steer clear of the MIDI playback features in these programmes as I still find my listening imagination makes a more accurate image of what the real orchestral colour will sound like, and although the MIDI playback can be useful for checking out harmony and rhythmic material, I prefer the surprise of hearing the real life band rehearsing my work for the first time, as for me this is one of the most exhilarating experiences of being a composer.

Of course, it is an entirely different process when I am writing for electroacoustics, as I tend to audition recordings, process them, audition again and build up pieces track by track, often in quite small and detailed structures. I love the way I can instantly hear the results of each process, and experiment in real-time with spatial placement within any number of loudspeaker configurations in the studio.

I perform regularly at Wellington music festivals such as Bomb the Space and the Fringe Festival, as well as at national and international events and computer music conferences. In 2002, I worked with a local vocalist Leila Adu, and cellist Francesca Mountfort and we presented a show at the Bomb the Space Festival, which involved live processing of turntables, cello (improvising with extended techniques) and vocal improvisations. We were aiming to create an evolving musical experience which moved from ambient soundscapes through to arresting noise-based electronica, while still maintaining a sense of musicality and beauty. I am particularly intrigued with using tools such as computers, effects and amplification to allow live acoustic musicians to work in a sound-world that is larger than life and allows communication of broader possibility of musical imagination.

Each specific project I work on, whether it be using electronics, computers, orchestras or a mixture, grows out of its own unique concept. I don't have a specific formula for composing my music, but I try to approach each new project with a fresh idea, process or structural basis. I am currently interested in structures which can be drawn from spectral information and other facets of sound morphology. I like the idea of taking small musical details and expanding them into larger structures, like I did with twitter tourniquet, and more recently I have done this in blast, a piece for symphony orchestra.

blast is structurally based on a short digital video of an explosion while the musical parameters are defined by the results of a spectral analysis of the aftersound of a large gong. The piece is in essence a magnification of one sound event, with one attack, decay, sustain and release. Following the initial attack, various elements of the decay surface, hold our attention and then submerge into the texture again.

When I arrived at Victoria University to take up my current position as director of the Electroacoustic Music Studios, I was horrified to find that all the analogue instruments were packed away in storage. I made a pact with myself to rescue them from this exile and put them to good use. Over the past year, with

some TLC from our technician Roy Carr (who is a veritable wizard), we have woken a raft of wonderful machines from their slumber and they are now featured instruments for a vintage ensemble which includes 3 Putney Synthis, a VCS3 and a Roland Modular. Electrolalia performed their debut at the recent Bomb the Space festival in Wellington.

I have also been exploring the interface between instrumental and electronic compositional techniques, the emerging reciprocity between these techniques and the resulting shift in the method of conceiving musical ideas and relationships, and this year I am beginning my PhD in composition.

But at the end of the day, I think that no matter what the technology you use or how you present your music to people, it is the simplest but most elusive essence of a music that moves you, the inspired sound, which cannot be caged or bottled, which remains fresh and magical each time you hear it, that addictive enchantment which cannot be caught simply because we cannot capture time, which we follow to the end, and I simply can't stop following that piper into the mountainside.

Lissa Meridan (b. 1972) is currently Director of the Electroacoustic Music Studios at Victoria University of Wellington, where she also teaches instrumental composition, orchestration, counterpoint and acoustics. She is a committee member and webmaster for the Composers Assoc. of NZ and Vice President of the Australasian Computer Music Association.

For more information about specific works, check out:

www.sounz.org.nz

www.vuw.ac.nz/music

www.waikato.ac.nz

www.sonus.ca



Computer Music Labs?

Peter Mcilwain
Paul Doornbusch
Greg Jenkins

Discussion: 3 points of view.

The last ACMA Conference in Perth triggered a discussion that dominated the acma mailing list for a few weeks. The topic being on the necessity of computer music labs in a university, and what role the music course should play. In order to capture a few larger ideas, and maybe incite some more comments, I asked a few people to share their thoughts on the topic.

Comments on Learning and Computers in Composition

Peter Mcilwain

My first experience in using computer labs for teaching was in a TAFE collage teaching the use of the Encore notation software to full fee paying students. My task was to create a set of structured lessons that would enable students to use most aspects of the program. As I was developing the materials for the classes I was often plagued with the question of why anyone would want to enrol in a course to learn how to use a software package when they could save their money and just read the manual. I soon learned however that learning in a social class situation is never about the topic at hand only and that students will internalise and implement what you teach them in a wide variety of ways depending on the people doing the learning. What was interesting about these classes was that many of the students were secondary school teachers who wished to use this software in their schools. They showed me that there were aspects to the classes that were valuable to them that I had not thought of. For example, they had limited time to pick up new skills and found that the course helped to focus them in an intensive way and due to the social situation in which the learning occurred,

they were motivated by the presence of other students.

The lessons that I prepared were in a tutorial format (a method that I have used many times since then) and it enabled students to work through the lessons at their own pace. During the classes my role was to walk around and assist the students with any problems that they might be having. This gave rise to casual conversations with the students when they asked me about something in the tutorial or just wanted to have a short break. The same kind of conversations occurred between the students as well. I found that this aspect of social interaction was very important in that it facilitated context building (learning is meaningless without a context). The conversations enabled the students to discuss what they would do with their learning. This was particularly the case with the secondary school teachers who initiated many interesting and valuable discussions on how they might use software in their own teaching situations.

The other challenge that I found in developing the materials was to find a way to cover information about commands and software processes that made the learning interesting and meaningful (from a musical point of view). Once again I found that the learning opportunities went further than the topic at hand. This happened because I decided to try to target the lessons towards a creative outcome. I composed a simple piece for piano and flute from a short motif using a number of basic operations available in the software, such as cut and paste, transpose, etc. Then I wrote down all of the steps that I went through and included explanatory comments on using the software to achieve each of these steps. I found that this was an excellent way to illustrate basic compositional processes involving transformation of simple materials and at the same time teach the operation of the software. I think that this was successful in both maintaining interest and making the learning process easier because the process of composition created a context for the utility of the various commands and processes available in the software.

Since then I have taught composition and music technology (a term which is a little meaningless but because it has gained currency I guess we are stuck with) in a number of situations but have often used structured classes in the computer lab. More recently I have created tutorials for small groups of 4 to 5 members. These tutorials have a creative task built into them, such as making a musique concrete piece or doing an improvisation using changes in parameters on a software synthesiser. I think that these group sessions are a very good way to teach basic software skills and give pointers to the creative potential of the software. Most importantly however, group activities encourage students to evaluate their own work and the work of their fellow students. This evaluative process can be built into the activity in a number of ways. One way that I have done this is to give students a detailed list of criteria that I use to mark their work and to ask them to criticise each others work in relation to these criteria (I explain to them that what they are actually doing here is to help each other get a better mark). This gives rise to some useful conversations and encourages students to learn from, and in the context of, their fellow students.

Another opportunity that our computer lab offers is the possibility of more spontaneous teaching situations. One that I enjoy doing (although it can be a little risky) is to teach Max/MSP on the fly. This involves getting students who are actively engaged with some compositional projects (and are therefore looking out for creative options) and to ask them what kind of things they would like Max/MSP to do for them. Based on what they tell me, I then come up with a patch that I draw up on the whiteboard in the lab and get the class to replicate the patch as I am drawing it. I could use a data projector with my computer but I find that the whiteboard is better because I can stop and draw in explanatory scribbles etc. Once again the focus, or narrative of the class is some kind of creative outcome that creates the context for the students as they learn all of the intricacies of Max/MSP programming. One of my honours students who is currently visiting from the USA said that these classes accelerated his learning to the extent that he

learned more in the three sessions that he had in our lab than he did in a whole course in his other University. This style of teaching and learning can become very interesting when the students get to the point where they are able to find their own solutions to problems in programming. What I try to do is set up a session so that all the students are working on the same problem. This then allows for a number of different solutions to emerge creating the opportunity for the students to evaluate the various approaches and learn the various functions of Max/MSP objects with a flexible perspective.

Another learning situation that I have set up in our computer lab revolves around the Working With Sound project. This resource was created in Max/MSP and is designed to function like a web browser. The program reads in text, diagrams, animations and small software patches that cover basic sound physics, sound synthesis and principals of digital recording. The resource enables students to study the theoretical aspects and apply them to their own experiments with sound as they use the software modules. Students are encouraged to use this as a study resource and therefore they tend to use them individually (but I have noticed that some students like to go through the resource in pairs also). While this resource does not necessarily have to be delivered in a computer lab (I have been trying to make it available over the internet) it does originate from the fact that my School has a lab and that I have been using it to create a range of learning situations. I like to encourage the use of the lab. in such a way that the abstract or factual learning is integrated as much as possible with the creative and exploratory aspects of learning.

As far as individual creative work goes I find that unless students have a specific need for the equipment (in that they want to use software that they do not have themselves) they will not use the lab. This is problematic from one point of view in that I believe that one of the great values of an education in a creative area like music composition is that students get the opportunity to establish creative partnerships and opportunities from the fellow students. This rarely happens when students work solely

from home on their own equipment. In the case of study at higher levels such as Honours and Postgraduate, this is appropriate, although it is good to create opportunities for collaboration at these levels as well. In the undergraduate years however, I think this kind of social environment is very important. Because of this I have created assessment tasks that require students to work on software that is in the lab. They cannot use alternative software although I do let them work at home if they have the software.

The above are very brief comments that intended to give flavour of how I go about creating learning environments in the computer lab. My experience has been that when set up correctly, the lab can be a very valuable resource. The problems with labs come the “setting up correctly” part. I have found that it is possible to get funding for the equipment and software but to get resources to get it configured and maintained by staff who know what they are doing is surprisingly difficult. I find that I have often had to do this myself which takes away from more pressing duties. The greatest frustration however, is that fact that I have had to create all of the tutorial materials myself. This entails a great deal of time if done properly. It does have a payoff however in that once a tutorial has been established I can use it many times and often in a number of different contexts and for the students, a well structured learning situation in the computer lab provides them with an enjoyable way of integrating theory and practice.

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Computer Music Labs

Paul Doornbusch

The question of whether or not to establish computer music labs in a complex and shifting educational climate was discussed at the ACMA conference in Perth and on the ACMA email list

some time ago.

At issue are the funds spent on setting up computer labs that may be obsolete within a relatively short period of time. Computer music labs are expensive to set up and maintain and may be under utilised; the money might be better spent in other potentially more useful ways with students supplying their own computing tools (possibly with institutional help) and having laptop “access points” in classes and labs. In many ways this reflects the philosophy of the educational program being “delivered” and the philosophy of the institution, and these may be at odds.

Computer music labs play an important role in making possible for many new students the study of computer music. Not all new students will be able to afford their own computers. In the first few years of study many students do not have their own computer, or it is somehow deficient for the task of composing computer music. However, by the time students are in their third or fourth year, many have their own facilities for computer music (laptop or desktop), and the labs are less useful to them than the studios.

Educational programs need to be able to attract students with ideas, dreams and ambitions more than pre-existing skills in computer music practice, and I think computer music labs can play a significant role toward that end. Computers are commodity items now, and the complete absence of a computer music lab in a computer music course would be an unusual case. While there will always be situations where computer music labs will be under used (holidays and so on), if programs are developed which demand that the students use the lab then that lab will be used.

The pressure to maintain the latest systems could be minimised by doing other useful work on slightly less leading edge computers. There is a lot of extremely useful computer music software that does not need the latest computers to run, and programs can tailor their content to these - to the best of my knowledge no one has been permanently physically or psychologically harmed by using Csound, or a raft of other

mouldy software that is useful in an educational context. Certainly Audiomulch, SoundHack and the like are readily useable on older computers. This is the sort of thing that is quite appropriate for the earlier parts of a course, so there will only be a need for a few modern machines and upgrade costs can be kept in check. As students progress through their studies, some will become more serious about their work and have ideas that will require them to go beyond what the institution - just about any institution - can offer in terms of computing resources. For them the next step is to purchase their own computer. Having access points in labs and classes for students to use their own computers would be a useful development, but it does not forgo the need for some computers on desks and the need for “labs”, even if these labs have only half a dozen machines. These computers will be needed for earlier classes in a course. Also, it is often easier to teach a class with computers that are in a known state of health, rather than debugging student’s computers in class.

There is probably no easy solution to this question and each educational course, subject or program will need to strike a balance between a need for budgetary responsibility and a need for hardware resources that suits the needs of students. This will vary between institutions, classes, courses and course or subject year levels.

Of significantly more interest is the concept that there is more to a computer music course (in the broadest sense of computer and electronic music) than the hardware and software - there are the people involved. It is not at all unusual in the traditional music world for students to go and work with the teacher who most interests them - this is common for both performers and composers. As computer music develops, I imagine this will increasingly be the case. There are many fine teachers in this discipline in Australia and it would be good for students to find out with whom they wanted to study. However, Australian universities in general seem to be poor at capitalising on the people they have so I do not expect a situation, where students will easily find appropriate teachers, to occur soon. When this happens, computing labs may still be

an issue, but the reason for studying at one place or another will not be made so much on the list of available facilities but rather on the opportunity to work with certain people or in a stimulating setting where they are exposed to a certain range of creative concepts and ideas.

Paul Doornbusch

Computer laboratories

Greg Jenkins

I am currently overseeing the upgrade of two of the computer laboratories at QUT. This article covers some of the main issues I have addressed through these upgrades with reference to the ACMA list discussion.

Entry level laboratory - initiate interest:

We need to continue to ensure all music students are conversant with at least the very basics of computer technology in relation to their musical practise. We need to initiate interest in exploring how technology can expand a student’s musical horizons. To support this there will always be the need for an “entry level” computer music laboratory. The key pedagogical issue here is that students with little or no understanding of computer basics don’t become overwhelmed by the technology, thus confirming in their own minds that computers are too hard and not worth the trouble. Reliability and stability, or rather the lack thereof is the main reason I have seen these type of students lose interest in using computers so an entry level laboratory needs to be focussed on this above all else.

The aim has been to keep these laboratories as simple as possible with an emphasis on maintaining a stable, locked down build so that students have a reliable expectation of how the computers will behave. Upgrades and software additions will be kept to an absolute minimum - which will no doubt frustrate the more advanced users looking for the latest software version. They can move to the intermediate laboratory space (see below).

The main mode of operation for music students in this laboratory is seen as individual exploration and confidence building. By necessity there will be a considerable amount of “equipment training” necessary in this laboratory however it is very important that this is seen as a means to a musical end.

Intermediate laboratory - encourage communication:

The idea that computers can be used to communicate musical ideas from one person to another is something that cannot be achieved by individuals working in isolation. If we want to encourage students to come to universities as opposed to spending their money on their own equipment and locking themselves in their bedrooms, this is one of the strategies we need to concentrate on.

More important than an “intermediate computer laboratory” is the notion of a desirable workspace. Whereas the entry level laboratory is mainly focused on individual exploration, a more advanced space needs to allow for real time play and improvisation. Of course, individual work still needs to be catered to but the exponential learning that occurs with group collaboration is extremely valuable. I feel to enable students to play, perform, jam and improvise in real time across multiple computers should be the main goal of this space.

What are the key requirements of this space? In a word ergonomics. This is frequently overlooked when setting up a computer lab. In the same way a lack of reliability discourages the novice user, a lack of amenity in setting up and configuring discourages the more advanced student. Eye contact between workstations is extremely important. How many times have you found yourself collaborating with another computer musician with your backs to each other because your workstations were aligned along two adjoining walls, or worse into opposing corners of the room? How many acoustic musicians would work in this ridiculous arrangement?

The interoperability of the laboratory with student’s own equipment is another key

requirement. There needs to be sufficient physical space to put keyboards, laptops, drum sequencers (empty benches, keyboard stands etc) as well as quality audio facilities (high quality monitoring, sufficient mixing desk channels, patch bays etc). High speed network capability is also essential.

This room should have workstations of preferably (though not essentially) greater capacity than those of the entry level laboratory. The build on computers in this room should be open to the legal addition of any free/shareware as requested by students as opposed to the standardised, locked down approach in the entry level laboratory. The openness of build will help students feel some ownership of the space. This will likely reduce stability of the machines however students working in this area need to understand that computers need constant fine tuning in order to run at peak performance and should be encouraged to work through these issues.

By encouraging the students to communicate musically through performance, to be active in the setting up and configuring of the computing systems and to integrate their own equipment into the set up, this space aims to further advance and integrate the student’s musical thinking and computing knowledge.

Over time, with the increased student uptake of personal equipment, it is envisioned that additional spaces geared more to the notion of a “workspace” with the provision of supporting equipment (monitors, converters etc) will be commissioned rather than expanding the number of rooms full of high end machines.

Greg Jenkins

Email the acma mailing list, or the Chroma editor if you have something further to say!

Two Essential Collections, At Last Available



Book Reviews by
Warren Burt

The Collected Essays of Milton Babbitt;
Stephen Peles, et al, ed.; Princeton University
Press, 2003, ISBN 0691089663; US\$39.50
Hardback

*When Music Resists Meaning: The Major
Writings of Herbert Brün;*
Arun Chandra, ed.; Wesleyan University Press,
2004, ISBN 0819566705, US\$27.95 Paperback;
US\$70.00 Hardback

There is a viewpoint that states that composers should make music, and leave the writing about music and society to musicologists and political scientists, respectively. That this view was emphatically NOT shared by many of the 20th century's most profound and engaging composers is obviously very evident, as evidenced by the voluminous writings of such 20th century luminaries as Schoenberg, Stravinsky, Cage, Partch, Xenakis, etc. Two volumes of writings by major 20th century composers have just come out, both of whom were, among other things, pioneers in electronic music, and both are delightful, engaging, challenging, and inspiring. Both also reveal the multi-faceted interests and talents of their authors, showing sides of them that most readers would have been unaware of before this. Previously, most of these writings have only been available in various hard to find journals, or in photocopies passed from hand to hand, so to have their writings in carefully edited, well-produced compilations such as these is indeed a joy.

Milton Babbitt is well known as a composer, theorist, and teacher, but his "Collected Essays" will also establish him, for the musical community, as a profound and generous essayist as well. There is a richness and depth in this collection that astonished me. I had known some

of his essays on the position of the composer in society, and, as a student, had worked my way through some of his essays on twelve-tone music theory, and I was even aware of his interest in Broadway musicals, but I was still delightfully surprised by the breadth of his musical (and intellectual) interests, and with the variety of his literary style. Some of the essays are very simply written, while some are extremely complex; some are witty and filled with (thankfully awful) puns, while others are serious as your life polemics. His writings on his fellow composers' works are filled with a broad-minded admiration and appreciation (and are not just about the "usual suspects" - whoever they might happen to be - either). For among extremely valuable essays on Schoenberg and Stravinsky are also essays on Jerome Kern (a composer of Broadway musicals now not as well known, alas, as he once was) and Ben Weber (a now mostly forgotten New York serialist composer whose music is noted for its precision and delicacy). For readers of *Chroma*, perhaps the most immediately valuable of these essays will be "The Revolution in Sound: Electronic Music (1960); "Twelve-Tone Rhythmic Structure and the Electronic Medium (1962)"; and "An Introduction to the R.C.A. Synthesizer (1964)"; all of which are absorbing in their description of early electronic music technology and techniques. And his essential essay on psycho-acoustics, "The Synthesis, Perception, and Specification of Musical Time (1964)", poses problems of perception that are as relevant today as when the essay was first written. But even more valuable, for me, were his essays on the place of the composer in society, of which the most famous "The Composer as Specialist (1958)" is only the beginning of a long quest to understand the place and purpose of non-"popular" musics within a society that claims to not need them, but which, in fact, would be the poorer without them. It almost goes without saying that anyone interested in the history of music theory in the 20th century should read all the essays on twelve-tone theory in this book. What delighted me in re-reading them, however (the last time I read most of them was 1974) was how useful they were in suggesting musical ideas and techniques having to do with both more, and less, than twelve tones. His

1987 essay on Stravinsky's late works was, for me at least, highly suggestive of possible musical constructions. And for those who want personal anecdotes and historical gossip, that, too, is here in good measure. His essays from the 1990s "A Life of Learning" and "My Vienna Triangle" are both engaging personal memoirs in which he recounts what it was like being a young composer in New York in the 1930s, being equally influenced by, and hanging out in, the mutually antagonistic circles devoted to the compositional work of Arnold Schoenberg, the music-theoretic work of Heinrich Schenker, and the "logical positivist" philosophical work of Rudolf Carnap. Much of this book is not easy reading - Babbitt's quest for extreme verbal precision often leads him into linguistic complexities. But reading his work slowly is worth it - this book is an extremely rich source of ideas, techniques and viewpoints for the early 21st century composer to engage with.

Equally engaging, and perhaps of more immediate relevance, technologically speaking, to computer music composers, is *When Music Resists Meaning: The Major Essays of Herbert Brün*. Although less well known than Babbitt, the German-born Brün, who lived in Urbana, Illinois from 1963 until his death in 2000, was involved with computer music from its earliest days, and proposed a quite radical approach to the field that has still to be completely explored. Brün's work, like Babbitt's, is wide ranging. He worked in both instrumental and electronic music, made computer graphics, theatres (musical, verbal and political), and wrote essays on cybernetics, systems theory, and the purpose of music in society, and for the last decade of his life, was instrumental in the School for Designing a Society, where the concepts of composition and cybernetics that he first dealt with in music were applied to the functioning and creation of alternative models for society as a whole. The book is full of delights, and also full of challenges. Delights - for example, the side-splittingly funny music-theatre vignette "The Invecticide", which uses its humour to advance a quite radical take on the nature of news and the media; and (for a quite different example) "Towards Composition" his inspiring interview

with Stuart Smith, in which he carefully defines his ideas of what a composer is, and what a composer's work should be. Challenges, too - such as his essays on cybernetics "On the Treatment of Complex Entities" and "The Need of Cognition for the Cognition of Needs" which deal with the many knotty interactions between, for example, cognitive processes and societal problems. Brün's language is challenging as well. As a writer he is always searching for the exact way to express the precise shade of meaning he intends (he regards sloppy language in the same category as failure to bathe - both are simply bad manners, or worse), and, as a result, there can be some highly convoluted sentence structures. But it's worth following him through for the nuances, which are often revelatory. And speaking of language, in the appendices to the book there is an essay by Marianne Brün, his wife, "Paradigms: The Inertia of Language", which I would consider essential reading for any creative person, in any field. Not only does it set the tone for what is to follow, it's a valuable argument for the careful use of language (lest we be used BY it) in its own right. "Choosing the Connections You Make", a dialogue with Kenneth Gaburo, is also one of the treasures of the book, as it also extends and contrasts both composers' ideas about language. Brün was one of the major aesthetic thinkers of the late 20th century. His ideas of "anticommunication" (presenting unfamiliar information as a way of teaching language to say something it is not yet capable of saying); of desiring to create something or condition which would enable someone to hear something as if for the very first time; and of composition as a search for that music which we don't like, yet (and note that "yet" is the important word there); are ideas which are far more profound, and have many more ramifications than these few lines can even hint at. Fortunately, those ideas, and a wealth of others are thoroughly explored in this book. Brün's work with computers was as challenging as his ideas about language and society. He drew a clear, and political, distinction between using technology to express that music one already wanted to express, and using technology to discover a music that one might want to express. His preference was clearly for the

latter. His “Sawdust” programs, which built sounds up from manipulating the tiniest portions of waveforms, were a refreshing alternative to the “Music N” series of programs, often producing wild ear-cleaning results. “Sawdust” is not available anymore, but Arun Chandra, who lovingly edited this book, has produced two multiplatform freeware programs, (<http://grace.evergreen.edu/~arunc/>) “Wigout” and “Triksraks”, which embody many of the same principles found in “Sawdust.” In short, if you want to engage with one of the most profound and far-reaching musical and social intellects of the late 20th century, if you want ideas to sink your teeth into, ideas which then often bite back, you should acquaint yourself with the ideas of Herbert Brün, so abundantly presented in this book.



ACMA WEB SITE

For up to date information on ACMA, membership forms, and conference and event links

<http://acma.asn.au>

Want to keep in touch with other computer and electronic musicians?

Sign up to the ACMA mailing list

To sign up, go to this URL:

<http://list.waikato.ac.nz/mailman/listinfo/acma-l>

New Zealand Sonic Art Vol.III WORKS BY NEW ZEALAND ELECTROACOUSTIC COMPOSERS



TRACKS

1. Hirini Melbourne/Richard Nunns : Te Hau Kuri (Dog's Breath) 4:44
2. John Elmsly : Soft Dawn Over Whispering Island 10:32
3. Kit Powell : Contrasts 6:40
4. Phil Dadson : Zitherum Voice 8:00
5. Ian Whalley : Kasumi 7:46
6. Norm Skipp : The Void 6:03
7. Chris Cree Brown: Aeolian Harp Sounds 7:10
8. Chris Knox : Rake 2:56
9. William Harsono : Subconscious 7:11
10. Michael Norris : Aquarelle 10:24

CD INTRODUCTION

Forty years ago, New Zealander Douglas Lilburn established an approach to electroacoustic composition rooted in the investigation of environmental sound. The intention was to uncover the inner, spiritual values of natural sound and thereby develop an awareness of place. His work proved influential, but there have also been other strands running through the musical fabric of the country since then. Developments in popular music, a persistence of traditional Māori music, experiments with found and invented instruments, works for instrument and tape, together with other approaches have maintained a rich texture of sonic art in the broader sense. In New Zealand electroacoustic music, Lilburn's ideals were superseded for a time by a fashion for the Anglo-French acousmatic approach, the aim be-

ing to explore sound in the abstract, removed from perceived source. In a significant move away from that view, and returning to an ethos more in tune with Lilburn's original vision, on this disc Hirini Melbourne and Richard Nunns perform their work on traditional Māori instruments. The voices of these instruments rise up from the depths of the land, yet 'Te Hau Kuri' also requires electronic technology to exist. Studio machines have been humanly integrated with acoustic instruments, a direction of musical development predicted over thirty years ago by Steve Reich, among others. The piece extends their previous work and the expressive boundaries of the electroacoustic medium. A complementary approach has been taken by Ian Whalley where acoustic and electroacoustic elements are worked seamlessly within a cross-cultural context. These two works signal a new dimension in New Zealand music and, I believe in time, others will also be encouraged to explore these directions in electroacoustic music. Other works in this wide ranging compilation reflect some of the main strands of development in New Zealand sonic art, from Phil Dadson's 'Zitherum Voice' through Kit Powell's 'Contrasts' to Michael Norris's 'Aquarelle'. Only a few of the many submitted contributions could be included on the final disc, and this small collection documents just part of the work currently being produced. Our thanks to all composers who submitted material and made the project possible.

- Martin Lodge, University of Waikato, December 2002.

NZ\$30 (incl. p&p)
Mail/Cheque orders to:
Music Department
The University of Waikato
Private Bag 3105
Hamilton

Credit Card Orders
Also available from
The Centre for New Zealand Music



ACMA CD: Call for Works

The Australasian Computer Music Association is seeking contributions by young and/or emerging composers and sound artists for a compilation compact disk that will be published in 2004. The aim of the compact disk is to showcase some of the best emerging talent from this region, reflect the broad streams of research, production and performance that inform contemporary sound culture, and it will be used to promote Australasian sound culture locally and abroad.

Another important aim of the initiative is to increase the membership of ACMA in order to have broader representation of the activities and debates occurring in the sound community. This would enable ACMA to facilitate events and projects that incorporate and reflect these various interests. Therefore, anyone considering a submission is required to become a member of ACMA, which is \$15 for unemployed and student membership, or \$35 for the employed.

Julian Knowles (j.knowles@uws.edu.au) and Philip Samartzis (p.samartzis@ems.rmit.edu.au) are curating the compact disk and the deadline for submissions is the end of March 2004. The aim of the curatorial team is to select works from various streams of music exploration in order to reflect the range of activities occurring throughout Australasia. Therefore the team encourages contributions from emerging composers, musicians, improvisers, sound artists and designers working with the concepts and methodologies broadly informing contemporary music discourse. Contributions should be no more than 10 minutes in duration. Artists whose works are included on the compact disk will each receive five copies and have their works performed.

Please send works, postmarked before the end of March 2004, to:

Philip Samartzis
Lecturer & Coordinator of Sound Media Arts
School of Art & Culture
GPO Box 2476V
Melbourne 3001
Victoria, Australia





CALL FOR SONIFICATIONS

Listening to the Mind Listening

Concert of Sonifications at the Sydney Opera

The Listening to the Mind Listening Concert will be held at the Sydney Opera House as part of the International Conference on Auditory Display ICAD2004 in Sydney from 6-9 July 2004 www.icad.org/icad2004.

The music in the concert will be sonifications composed from the neural activity of a person listening to a piece of music. Sonification is the mapping of data into sounds for some purpose. A data set containing a recording of neural activity is available for download from the ICAD website as described in the Data section of this call. This is an invitation for you to submit a sonification of this data for the concert. Submissions are open to everyone. Ten of the submitted sonifications will be selected for the concert, an audio CD and accompanying booklet. The concert will be presented by the Sydney Opera House Studio and promoted to the general public www.sydneyoperahouse.com/thestudio.

Motivation

In his acceptance speech for the 1981 Nobel Prize for Medicine, David Hubel describes how the sound of a neuron firing led to his first important discovery. "Our first real discovery came as a surprise. We had been doing experiments for about a month ... and were not getting very far. One day we made an especially stable recording. For 3 or 4 hours we got absolutely nowhere. Then we began to elicit some vague and inconsistent responses by stimulating somewhere in the mid-periphery of the retina. We were inserting the glass slide with its black spot into the slot of the ophthalmoscope when suddenly over the audiomonitor the cell went off like a machine gun. After some fussing and fiddling we found out what was happening. The response had nothing to do with the black dot. As the glass slide was inserted its edge was casting onto the retina a faint but sharp shadow, a straight dark line on a light background. That was what the cell wanted, and it wanted it, moreover, in

just one narrow range of orientations." www.nobel.se/medicine/laureates/1981/

Listening to the Mind Listening is a development of the technique of listening to neurons, but we will extend it to explore the neural activity of the entire brain. The goals of the concert are to

- * explore the idea that people can understand information from sonifications
- * stimulate a new aesthetic of form and function in sound
- * blur and cross the boundaries between sonification and music
- * compare and contrast sonification designs and techniques
- * investigate the listening activity of the mind using sounds instead of graphs

Constraints

The concert is an investigation on the boundary of art and science. The sonifications need to be musically satisfying for a general audience, scientifically interesting to neuroscientists, and help develop design knowledge in the auditory display community. In order to open up artistic possibilities, whilst at the same time providing for comparison and analysis, we are imposing some simple constraints for the sonifications.

* Data-driven. Sonification is a mapping of data into sounds for some purpose. The sonification should be the result of an explicit mapping from the data into sounds. The listener should be able to understand relations and structures in the data from the sonification.

* Time is the binding. The timeline of the data must map directly to the timeline of the sonification. All other mapping decisions are completely open but we need to be able to compare pieces across time, and also compare them with the original data set and source piece of music. This means that the final sonification pieces will all be exactly the same duration as the data set, and original piece of music.

* Reproducibility. The mapping of the data into sound must be described in a manner than can be reproduced by others. Mappings should be described explicitly. Different mappings will enable different perceptions of information in the data. The experiment should lay a foundation for scientific and aesthetic observations and ongoing development by the research community.

Background

The human brain is made up of 100 billion neurons, each with thousands of connections with other neurons! However the brain is not homogenous – it is made up of many special purpose regions. Many of these regions are activated by sounds – starting from the cochlea, up the vestibulocochlear nerve, to the superior olive that processes directional cues, on to the pons for recognition and the thalamus that directs attention, as well as the primary and secondary auditory cortex that connect sounds with memories, emotions and thinking. Most techniques for observing neural activity are visual, but there is potential that sounds may provide alternative insights especially for temporal patterns such as the well-known alpha, beta, and gamma frequency bands. Below are some starting points for exploring sonification, neural activity, and human auditory processing.

* National Science Foundation - White Paper on Sonification

www.icad.org/websiteV2.0/References/nsf.html

* University of Bielefeld Neuroinformatics - Sonifications for EEG Data Analysis

www.techfak.uni-bielefeld.de/ags/ni/projects/datamining/datason/demo/ICAD2002/EEGSon.html

* University of Glasgow Centre For Music Technology - Music From Brainwaves
www.music.gla.ac.uk/HTMLFolder/Research/BrainMus/musicfrombrainwaves.htm

* MIT OpenCourseWare - Introduction to Computational Neuroscience

<http://ocw.mit.edu/OcwWeb/Brain-and-Cognitive-Sciences/9-29JIntroduction-to-Computational-NeuroscienceSpring2002/LectureNotes/index.htm>

* MIT OpenCourseWare - Neural Coding of Sound
<http://ocw.mit.edu/OcwWeb/Health-Sciences-and-Technology/HST-723Neural-Coding-and-Perception-of-SoundSpring2003/LectureNotes/index.htm>

* Boston University EarLab - Images of the Human Auditory Pathways

<http://earlab.bu.edu/anatomy/Images.aspx>

Music

The listener in our experiment was listening to a piece of music by award winning indigenous Australian composer David Page. The piece is 5 minutes long and has a wide dynamic range with natural and synthesised sounds and instruments that is characteristic of David's blend of traditional and contemporary styles. The actual piece of music is being kept under wraps so that it does not influence the composers in their mappings from the neural data structure

into sound. The mystery will be revealed at the finale of the concert, when after the ten sonifications have been played we will hear the original piece of music.

David joined Bangarra Dance Theatre as resident composer and performer in 1991, collaborating on the music for Ninni, Praying Mantis Dreaming and the Atlanta Olympic Games flag handover ceremony in 1996, amongst other projects. He is particularly proud of his music for Ochres which was released as a CD through Larrikin records and won the 1995 Deadly Award for Best Soundtrack (National Indigenous Music, Sport, Entertainment and Community Awards). He went on to win that award for the next two years with Alchemy for the Australian Ballet in 1996, and Fish for Bangarra in 1997. In 2002 David received yet another Deadly, this time for Excellence in Theatrical Score. www.bangarra.com.au/bios/dpagesfrancis.html.

Data

The listener wore headphones to hear the music, and a cap with EEG sensors on it to record neural activity. The 26 sensor electrodes were arranged according to the 10-20 standard for EEG placement. <http://faculty.washington.edu/chudler/1020.html>. The sensors are labelled by proximity over a regions of the brain (F=Front, T=Temporal, C=Central, P=Parietal, O=Occipital) followed by either a 'z' for the midline, or a number that increases as it moves further from the midline. Odd numbers (1,3,5) are on the left hemisphere and even numbers (2,4,6) on the right e.g. T4 is on the right temporal lobe, above the right ear. An additional 10 sensors were used to record heart-rate, skin conductance, eye movements, breathing and other data. The sensors were recorded as interleaved channels of signed 32 bit integers at a rate of 500 samples per second. The channels were separated into individually named files and converted to ascii format for simplicity of loading on different systems.

The data was recorded at the Brain Resource Company www.brainresource.com by Evian Gordon, Daniel Hermens, and Patrick Hopkinson, in collaboration with Stephen Barrass, on 21 November 2003.

Download the zipped data in ascii signed 32 bit integer format < ~1 MB > from
www.icad.org/icad2004/concert/eeg-data-ascii-v1.0.zip
www1.cmis.csiro.au/stephen.barrass/listening/eeg-data-ascii-v1.0.zip

Download zipped data plots in jpg format <~2MB > from
www.icad.org/icad2004/concert/eeg-data-plots-v1.0.zip
www1.cmis.csiro.au/stephen.barrass/listening/eeg-data-plots-v1.0.zip

The Opera House Studio and Sound System
The Sydney Opera House Studio is an intimate, flexible space designed primarily for new music and contemporary performance. The seating capacity ranges from 220 to 318, depending on the configuration. The floor area is approximately 15m x 15m, within which flexible tiered seating banks and cabaret-style seating may be arranged. There are two rows of fixed seating on each of the four sides of the gallery. There is a powered overhead grid for hanging speakers with cabling points that connect to a 32 channel mixing console. Layout plans and technical specifications of the Studio are available from www.sydneyparahouse.com/h/at_venues_fs2.html. An array of 16 speakers will be set up in the Studio to achieve full auditory coverage of the upper hemisphere in the space. The arrangement will be roughly dome shaped with speakers spaced at equal intervals. The exact coordinates of the speakers are not certain at this stage but can be approximated to lie on a dome with radius 7.5 metres. The audience at the concert will be able to walk around the ground floor inside the speaker array to hear the sonifications from different positions, or to sit upstairs in the gallery to listen from a particular vantage point.

The sounds will be placed in the listening space using a Lake Huron sound system provided by Lake Technology Limited www.lake.com. The Huron can place up to 16 channels of audio at virtual locations inside an array of 16 speakers. A virtual location can be specified in hemi-spherical coordinates (Radius, Angle, Elevation)

Radius from centre in the normalised range 0.0 to 1.0.

Angle in degrees anticlockwise from front with range 0 to 360.

Elevation in degrees from the floor with range 0 to 90.

For example – Soundfile4.wav = (1.0, 45, 54).

The locations can also be specified in terms of the 10-20 EEG system described in the Data section. For example - Soundfile4.wav = (F3) would place the soundfile at the Front Left location of the F3 sensor on the scalp. This is equivalent to Soundfile4.wav =

(1.0, 45, 54).

The locations can also be specified according to the speaker layouts in standard setups for Mono, Stereo, Quad, Octal, Surround 4.1, and Surround 6.1.

Submissions

Submissions need to be received by 6 April 2004 to allow for review and selection. Submissions are open to everyone, and will be reviewed by an international panel. The panel will select ten pieces for the concert, audio CD and booklet.

Submissions should consist of a description document and accompanying soundfiles. The description document should have a name made up from the surnames of the contributors, e.g. SmithBrownJones.pdf. The document should be in PDF format laid out according to the template at www.icad.org/icad2004/submission/. The document can be up to 4 pages long and must include the title of the piece, names and affiliations of contributors, a description of the mapping used to sonify the data, and a list of accompanying soundfiles with spatial locations for each.

The soundfiles can be either 16 bit PCM mono .wav format at 44.1 kHz, or ambisonic B-format. The soundfiles should have the same name as the description document with an additional unique ID in the range 01-16 for each e.g. SmithBrownJones01.wav, SmithBrownJones02.wav, ... SmithBrownJones16.wav. The Lake Huron system will be used to mix the Soundfiles to a binaural form so that the selection panel can review the pieces through headphones.

Further enquiries can be emailed to icad-conference@icad.org with the subject line Listening to the Mind Listening.

For discussions please email the ICAD list at icad@santafe.edu.

Electronic submissions can be uploaded by ftp to www.ict.csiro.au/aai/concert.

CD-ROM submissions can be sent by post to

Stephen Barrass

Listening to the Mind Listening
CSIRO ICT Centre, GPO Box 664
Canberra ACT, Australia 2601

Australasian Computer Music Association Conference

Theme: Ghost In The Machine:
Performance Practice In Electronic Music.

1 – 3 JULY 2004
School Of Music
Victoria University Of Wellington New Zealand

Introduction

The Australasian Computer Music Association is pleased to announce its 12th annual conference, Ghost in the Machine.

Ghost in the Machine will present recent research, creative practice and developing trends in performance practice of electronic music, both within the studio and broader live performance contexts. The conference will include concerts, paper sessions, artist talks, discussion panels and studio reports.

Call For Papers

Of particular interest to the committee are papers and artist talks focused around the experiential aspects of electronic music, including performer/audience dynamic, live/real-time performance, interaction with instrumental performer, diffusion/spacialisation, turntablism, composed space and other relevant performance-based practices. Other relevant topics include:

Mechanical/dynamic versus organic/linear approaches to composition and performance and discussion of the changing boundaries between the subject (listener, interpreter) and the creator (artist,composer).

Please Note:

Submission Deadline for Fully Refereed Papers
FRIDAY 16 APRIL 2004

Submission Deadline for Non-refereed Papers
FRIDAY 7 MAY 2004

Call For Musical Works

The conference committee welcomes the sub-

mission of works for recorded media or live performance with any combination of electronic and acoustic elements. Available playback formats will include CD, DAT, MiniDisc, ADAT, turn tables, soundfile/disk based playback and DVD. In addition to audio playback, there will be the possibility for video/data projection. A selection of microphones is available for live amplification and there will be a possibility to utilise an 8-channel sound diffusion system.

Of particular interest to the conference committee:

- * Electroacoustic instruments
- * MIDI instruments
- * Historic electronic instruments
- * Immersive environment
- * Interactivity
- * Live Electronics
- * Real-time Computer Performance
- * Spatialisation, diffusion, multi-loudspeaker arrays
- * Turntablism

The availability of acoustic performers for works is limited and performance of works is subject to the availability of required players.

Proposals for performance must be accompanied by a recent biography and audition CD of recent live performance.

Submission Deadline For Proposed Musical Works/
Audition Materials
Mon 1 March 2004

Submission Deadline For Musical Works
Mon 10 May 2004

Send All Materials To:

Lissa Meridan
Acme Convenor
School Of Music
Victoria University Of Wellington
Po Box 600
Wellington, New Zealand
Lissa.meridan@vuw.ac.nz

