
Chroma



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ACMC 2002

Editorial:

I would like to start off by saying welcome to Chroma edition 32. This edition marks my first as editor, and I am still formulating some ideas I wish to incorporate into future editions of Chroma. So keep an eye out for some bigger changes in the coming editions. As for this issue there is still plenty of stuff to keep you interested.

So far in 2002 we have seen a number of exciting events in the computer music world. The one that most readers will be most familiar with is of course ACMC. This year it was hosted at RMIT and the VCA in Melbourne, Australia. I would like to thank Paul Doornbusch and everyone who helped him in running ACMC so efficiently. Also thanks to everyone who spoke, presented music and just turned up to show support for the computer music community in this part of the world. It was an excellent conference and I for one learnt a lot of interesting things, and made some great contacts. It's great to have that annual get together, share notes and dinner, and take home a well produced book of conference proceedings that we can go through at our own leisure in the years to come.

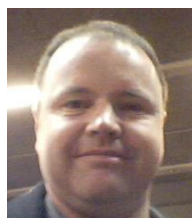
Another exciting event this year was REV, which I was very fortunate to also be a part of. I won't go into detail on it because Gordon Monro has written a great review of it for this edition.

Remember Chroma is made only because it is supported by the members of ACMA who eagerly submit essays on their current projects, concert/CD reviews and other things that concern the computer music community. So, enjoy this edition, and submit something for the next edition!

Timothy Opie – Chroma Editor.

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ACMA Presidents Report:



The release of this edition of Chroma coincides with what I perceive as a renewed level of enthusiasm in the ACMA community.

The recent conference in Melbourne was a great success thanks to Paul Doornbush and his team. We gratefully acknowledge the direct support of RMIT and the VCA in providing venues for the conference and also the support of the significant electroacoustic community present in many of the wee small corners of Melbourne, they came out in force. It was particularly heartening to see both long-standing members of the ACMA community attending the conference and concerts, many of whom have been absent from ACMC's for a few years now, and a significant number of new faces. The momentum is being maintained in Melbourne through additional events such as the MEAN nights at the University of Melbourne, organised by David Hirst.

Continuing the regional-focus, it was also great to see an unusually high number of Western Australians at the conference. We will all get a chance to see them again at the 2003 conference which is being held in Perth for the first time ever.

Adding to the sense of vitality in the community are a number of related festivals, including Liquid Architecture and What is music? These events ran in the weeks following the ACMA conference and demonstrate the breadth of electronic and computer music activities. Also adding to the momentum are the Iteration conferences, the second of which was held late last year.

Recent discussion on the email list has focused on the disappointment of not having members of our community appointed to the music board of the Australia Council, despite their strong

nominations and obvious suitability for the job. This means that yet again electronic and computer music is not represented on the music board, which is a National disgrace given the level of activity in this area in the Australian community. I encourage members to join the campaign to highlight this anomaly and to ensure that it is quickly redressed.

The New Zealand Sonic Art II CD has just been released, get a copy and start composing works for Vol. III which, I believe, a call for submissions will be out soon.

The ACMA Annual General Meeting was held at the conference and the newly elected office bearers are:

President: Andrew Brown
Vice President: Lissa Meridan
Secretary: Paul Doornbush
Treasurer: Ian Kaminskyi
Publications Officer: Timothy Opie
Public Officer: Warren Burt
Promotions Officer: Andrew Lyon
Membership Officer: Paul Doornbusch
Web Officer: Peter Mcilwain
List Administrator: Lissa Meridan

There is an excellent balance of new blood and experience in this line up and we look forward to an exciting year of activities and new initiatives.

Andrew Brown

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Real, Electronic, Virtual:

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The REV (Real, Electronic, Virtual) festival was held on April 5-7 2002 at the Brisbane Powerhouse arts centre. The theme of the Festival was experimental musical instruments, and it was possibly

the first such festival exclusively with this theme anywhere. The main organisers were Linsey Pollak (performer and instrument maker, based in Queensland), Andy Arthurs (head of Music at QUT, Queensland University of Technology) and Zane Trow (Artistic Director of the Powerhouse).

The festival was a very full-on three days of talks, concerts, installations, workshops and events. It was also the culmination of the postgraduate course in instrument building held at QUT over the past year or so. Usual disclaimer: What follows is a personal view of a complex event.

The Brisbane Powerhouse Centre for the Live Arts (to give it its full name) is an old power station on the banks of the Brisbane River which has recently been converted into an arts and performance centre, with two properly equipped theatres and various other spaces. It is quite open and welcoming, which made it easy for members of the general public to come in and engage with the installations, and it is also well situated, near a popular park and the Brisbane River. I was told that well over 5,000 people visited the Powerhouse during the three days of the festival. I was also told that it cost something over \$150,000 to put on, with grants and support coming from quite a few sources.

The festival was able to bring several overseas visitors to Brisbane, and these people made a big contribution. A big contribution was also made by current and former students of what is now QUT's Faculty of Creative Industries (music, dance, visual arts, film, journalism and the like). Apart from those performing or creating installations, an awful lot of the numerous volunteers appeared to be connected with QUT.

At first sight the festival appeared to be mostly about acoustic instruments, but in fact there was quite a lot of electronic work, and I will focus on the electronic aspect of the festival.

Presentations

Bart Hopkin (USA) is a leading expert on experimental acoustic musical instruments. He gave two presentations, one a wide-ranging and very informative survey of work in this area, and a second session on his own instruments. (Unfortunately he could only bring some of the smaller ones with him.)

David Toop (UK) is a writer, composer and sound designer whose interests range from rap and hip-hop to ambient music to people like Terry Riley. He talked about some of the things he had done and some of his early influences. Of these, the sound effects made by the BBC Radiophonic Workshop for the Goon Show seemed to be the most important.

David also engaged in a duologue with Robin Rimbaud, aka scanner (UK), a sound artist and performer who apparently got his performing name from his use of scanned mobile telephone calls in his earlier work. The two of them discussed changing performance practices in the context of various events they had been involved in; there has been a general opening up and mixture of genres. Incidentally

it became clear that both these people have very busy international careers and travel a great deal.

Phil Dadson (NZ) described his work with his group "From Scratch", a small group of focused performers which uses entirely home-made instruments. Before founding "From Scratch", Phil worked with Cornelius Cardew in the UK, and set up a New Zealand branch of Cardew's "Scratch Orchestra". For a while a lot of his work was built around what is now called the thongaphone, an open length of PVC tubing struck at one end with a piece of footwear. The result is a short but resonant note; a suitably tuned group of pipes makes a good bass instrument.

Peter Biffin (NSW) presented his unusual stringed instruments, which have conical soundboards rather than the usual flat plate. It appears that the only other similar instrument is the dobro, which uses a metal cone, but the soundboards in Peter's instruments are made of thin wood, and he arrived at the form starting with consideration of the Chinese erhu. Several people commented that the instruments sounded "amplified", and someone (I think Craig Fisher) told me why: the sound is very directional and very direct, and the cones have quite pronounced resonances. So these acoustic instruments have some of the problems normally associated with electronic reproduction.

There was a "brainstorming" session on new instrument design with Bart Hopkin, Phil Dadson and Craig Fischer (SA). This was notably mostly for Stuart Favila's impassioned comments on Government funding and related matters. He said that the Tasmanian Symphony receives almost all of its funding from Government subsidy, so "Why are they playing Mozart? Why don't they play whatever they want?".

Among the experimental acoustic instrument makers there is clearly a great deal of knowledge about things like how to couple strings to a

soundboard, materials to use for resonators (styrofoam was recommended), and the like.

At the festival I heard almost no discussion of just intonation and so on; though people obviously knew about tuning, it somehow wasn't an issue.

The presenters had a somewhat difficult task in that members of the general public were present, so an audience would include everybody from real experts to people who had never encountered this sort of thing before.

Performances

There were several ticketed concerts, which took place in the two theatres in the complex, and quite a large number of less formal events, some of which took place outside. I didn't get to everything, and in particular I had to miss Jon Rose's extravaganza "Hyperstring".

Quite a few of the performances used electronic technology. The most interesting piece of technology for me was the setup used by one of the dancers in the group "Unaccompanied Baggage". This consisted of two bracelets containing accelerometers and a small radio transmitter. It appeared to work very smoothly, though I'm told the radio link occasionally has brief dropouts. It was mostly designed and built by Aaron Veryard, an electronics technician who is now a QUT student in dance.

There were two other wired-up dancers. One, whose name I didn't catch (she was a replacement for the person named in the program) wore a "Miburi" jump suit by Yamaha. This has flex sensors at wrist, elbow, and shoulder (at least) and sensors which fit into the wearer's shoes. However, the dancer has to trail a cable. (Yamaha no longer make this suit.) This suit was used in an audio-visual piece by Lindsay Vickery (WA),

where the dancer was influencing both the sound and the images.

The third "wired" dancer was the belly-dancer Amber Hansen (a former QUT student). She was wearing lots of jingly things and had (I think) two small microphones on her waist and two more in her bra. These led to a sort of fishtail of cables. The setup allowed Amber to control her music effectively.

An engaging performance was "ewevee", by Jessica Ainsworth (Qld) and Linsey Pollak (Qld). There was an installation consisting of twelve tall poles erected on a concrete platform by the river (part of the old powerhouse construction). The performers wore jump suits with horizontal black and white stripes, and the whole was illuminated by UV light (this took place after dark). The performers jumped about like frogs and struck the poles, which turned out to trigger samples, and indeed the first group of samples were all frog sounds.

Stuart Favila (Vic) performed his light harp together with Joanne Cannon (Vic) on "serpentine bassoon". The light harp is in fact a big MIDI controller in a very attractive form. It has no strings; instead the player's fingers cast shadows on light-dependent resistors. The serpentine bassoon is (more or less) an acoustic instrument, a sexily twisted leather tube equivalent in length to a normal bassoon, and with a bassoon mouthpiece. However, as well as finger holes, the player has a touch pad and some knobs, with which effects units can be controlled and the acoustic sound modified.

The circular harp (David Murphy, Vic) turned out to be an acoustic instrument, in general appearance like a very large kettledrum, with a lot of strings (66) strung in a complicated pattern across the top. During performance, which seems to require three people, a video camera was pointed down at the instrument from

above, and the sound was fed into small speakers underneath containers of water or mercury, which also had cameras trained on them. The resulting images were superimposed to make interesting visual effects.

The most spectacular acoustic performance was that of Hubbub Music (Qld) on their "pyrophone" (fire organ). This was an array of large metal pipes. The performers stood below the pipes with gas-fed blowtorches, and when these were thrust into the lower ends of the pipes, the result was an incredible roaring noise, and occasionally great gouts of flame.

Late at night there were electronic events; I caught the three main events on the Saturday night. They were interesting to me because they gave me a sort of bridge to the laptop noise music I encountered at the "Waveform" conference at the University of Western Sydney in July 2001.

The performers at the late night events in Brisbane were working under some difficulties, because the performance space was in the bar area, and a lot of the quite large (and young) crowd were drinking, talking, and even playing snooker. The atmosphere was good, though.

Oren Ambarchi (NSW) was equipped with an electric bass guitar and some effects units. He played very slow single notes on the guitar, and for a while it appeared that that was all. However, he turned out to be using very long delays, and the sounds slowly built up in the effects units. Eventually he stopped playing the guitar altogether and just manipulated the sounds in the effects units.

David Toop gave a somewhat similar performance using effects units arranged in feedback loops; his live sound sources were some flutes and a bowed metal plate. The general effect was of much harsher sounds than those from Oren's performance.

Scanner gave a performance which compared with the other two sounded quite "commercial": a definite up-tempo beat and reasonably harmonic timbres. There were not the feedback loops used by the others. Scanner had a laptop, a mini-disc player and something that looked like a personal organiser but was actually a dedicated music device made by Roland. I talked to scanner later, and it seems that this performance was at one end of the spectrum of what he does, which also involves a lot of sound design and installation work. He arguably read the audience and the space better than the other two performers, but I thought that Oren's was actually the most interesting performance of the three.

The first two performances connected for me with the laptop noise music (even though neither performer used a laptop), in that effects units were used in unpredictable ways, the performances were totally improvised, and as far as I could tell, you get what you get. This is quite opposed to the careful studio sculpting of sound in "traditional" electroacoustic practice. However, at the Powerhouse performances, the original sound sources were instrumental sounds rather than digital grunge, and it was somehow clearer to me what was happening. Scanner's performance was also improvised, but it seemed to me to belong to a different genre.

I have by no means mentioned all the performances. Highlights were the wonderfully comic percussion performances of Graeme Leak, Linsey Pollak and Greg Sheehan on all sorts of "found" instruments, including office equipment (staplers etc.), cooking gear and a collection of children's toys, and the equally funny wind instrument performances by Mark Cain and Lee Buddle. The wind instruments were largely home-made: PVC pipe and rubber gloves (which make good air reservoirs) were the main construction materials.

I also want to mention "Sprocket" (Hubbub Music again), a bizarre percussion-mobile about the size of a car, mounted on what looked like two motorcycle frames, covered with home-made instruments and a substratum of thongaphones, the whole topped off with a Hills Hoist. There were six players, and it turned out that four of them were attached by harnesses to the Hills Hoist, so that they ended up by swinging wildly round the contraption, merry-go-round style.

Installations

These were numerous, and I am only mentioning a sample. My favourite electronic one was the fish installed in the lift in the Powerhouse. This cute object (devised by Tim Opie, Qld) was actually a MIDI controller with about 10 sliders around its body, and was used to control a granular synthesis algorithm running on a computer also in the lift.

Andrew Brown (Qld) had a computerised sonic walk-through of the centre of Melbourne - the mouse controlled the pointer on a street map, and appropriate sound samples would be played.

Rene Wooller (Qld) demonstrated his ZerOne project, which is a program for creating dance music, using an algorithm controllable by sliders in real time. This seemed to attract quite a lot of interest from the general public.

Paul Cohen (Qld) showed MooZk, an "interactive visual-music instrument", based on a graphics tablet, which as well as displaying in a large screen whatever one drew, controlled a layer of sound generated with the help of the Koan generative music program. (Background sounds were also generated independently of what was drawn.) Both this and ZerOne are intended to be developed into commercial projects.

Remarkably, I think all of the people mentioned above are connected with QUT.

Craig Fisher (mentioned earlier) makes both acoustic and electronic instruments. His construction "Table 4/4" was a small pyramid with wires attached to pickups. The wires could be plucked, strummed, etc. On one side the wires were also being driven by small coils, and could exhibit various modes, including chaotic ones.

Many of the acoustic instruments were displayed outside in a sort of sculpture park. There was a park bench that functioned as a marimba, a set of "water chimes" (tubes suspended by elastic above a trough of water, so they could be dipped in and out of the water while being played), and "Medium Foonki", a bellows-powered outdoor organ made of agricultural pipe.

There was also a large array of "Airbells", tuned soft-drink bottles (Hubbub Music yet again). Take a 1.25 litre soft-drink bottle, insert a tyre valve into its lid, and pressurise it with a tyre hose. The result gives quite a nice sound when played with a drumstick, and can be tuned by adjusting the pressure. The ones installed at the Powerhouse were tuned to a pentatonic scale.

Another remarkable display was the collection of exuberant sound sculptures by Steve Weis. These were meant to be banged, scraped, shaken, and so on. Most were acoustic, but there was one which combined an electric string bass with a didgeridoo. Steve describes himself as a "professional madman" with "a feverish enthusiasm for scrap metal imagination". He was auctioning off some of the sound sculptures near the end of the festival. I was tempted, but I'm not sure what I would have done with something that looked like a two-metre

high metal alien - getting it onto the plane would have been interesting!

The installations were attended by volunteers who explained what was going on and helped people play the equipment or instrument. The resulting sounds could be heard in the main space all day long, the electronic dance music of ZerOne colliding rather with the harmonic sounds of Sarah Hopkins' "whirlies" and the samples people had recorded into Linsey Pollak's sampling percussion instrument made with wooden bars.

The music

The instruments were amazing and the performers wonderful, so what about the music?

I have to say that what I heard wasn't cutting-edge, with the exception of the performances by Oren Ambarchi and David Toop (though I didn't hear everything). Most of the home-made instruments had a humorous character: an extreme example was the "Savart's Wheel" instrument by Bart Hopkin. Unfortunately this was too big for him to bring from the USA, but from his recordings it sounded like a demented singing chicken, and it was very difficult to stop laughing. Bart said that he took it with a folk group to a festival; the group were a success and were invited back the next year - on condition that they not bring Bart's instrument.

This generally humorous quality of the instruments meant that the music tended to have a funky-folk character. It appears that the performances by Phil Dadson's group "From Scratch" have a more serious side, but we only had excerpts on video of these, as the rest of Phil's group could not come over from New Zealand. Peter Biffin played Middle Eastern music on his stringed instruments. Unfortunately I

did not ask him what sort of music his customers use them for.

So in general the music was less experimental than the instruments.

Conclusion

The festival was a great success, both in bringing together people interested in the area and in attracting the general public. I certainly haven't seen crowds like this at an event where substantial technical and artistic matters were being discussed. That said, the talks had relatively small attendances, but there did seem to be some seriously interested people who did not belong to the usual in-crowd.

Some of the installations were really good at demonstrating ideas to people off the street; in particular Linsey Pollak seems to have a genius for this sort of thing.

The fun aspect was very enjoyable, though I would have liked some more cutting-edge music.

Was anything else missing? Well, it wasn't a conference, so there were no proceedings or contributed papers, though for me the festival was actually quite like a conference in feel. There was a packed schedule anyway, so a formal conference would have had to occur say in the two days before the actual festival. Also, it would be great to bring out an electronic instrument builder like Perry Cook or Chris Chafe to complement someone like Bart Hopkin.

I gather there is talk of another REV festival in 2004. Bring it on!

Computer as Part of Improvisatory Theatrical Performance.

Or What I did with Eva and Bill in July and August 2002:

Warren Burt



1. 13 July 2002, Eva Karczag and Warren Burt, Melbourne.

In July 2002 I performed the sound component for a duet performance by myself and choreographer Eva Karczag at Dancehouse, in Melbourne. Later that month, and on into early August, I performed as part of William Duckworth's "Cathedral" project, as part of the Mini[]Max festival at Brisbane's powerhouse. In both instances, live performance on my laptop computer was central to what I did, augmented by amplified instruments of various sorts, and some prerecorded materials. In this article, I'll describe what I did, both with the computer, and how it related to the other things I played/did in performance.

Eva Karczag and I have collaborated on duet sound and movement performances since 1977. There is an ease in our working together that is quite delightful. For this performance (13 July, 2002) I asked her if she wanted to sing (I've heard her singing to herself softly many times in the years we've known each other, and it's a lovely sound), - I would record her singing and use it in performance. She replied that she had been doing a lot of body work where she vocalized in response to the work being done, and that she would be most interested in my recording that and using it. Also, when we were discussing the overall direction of the performance, she made one other request: "Don't make it

pretty." This served as a most welcome check to my tendency to sometimes makes work which doesn't just verge on the saccharine, but happily wallows in it.

The night before the performance, Eva arranged with Jane Refshauge, choreographer and Alexander Technique practitioner, to have an Alexander Technique lesson. While Jane worked on her, she would vocalize. I would record the proceedings and then take samples from that for use in the performance. The lesson took place in Jane's studio on Napier Street in Fitzroy. There is a lot of traffic sound leakage into her space. The recording consists of Eva and Jane talking during the lesson, lots of traffic noise, Eva vocalizing (mostly long tones, some groans, and several very complex multiphonics), and occasional interruptions by either myself or Bryn Kerry, Eva's 15 year old son. From this recording, I was able to get five fairly interesting stretches of solo vocal material to work with. It also occurred to me that the lesson itself would make good listening, but not if the words were legible. Either they were too banal - just chitchat between old friends, or they were too interesting and thus, distracting, to be exposed in public performance. Enter the computer. More specifically, a computer with Ross Bencina's Audiomulch. By using Audiomulch to granulate the lesson recording, (using fairly large grains, with no transposition) I could keep the timbres of the voices, traffic noise, etc. intact, but totally destroy intelligibility. In this way, we could have the structure of the Alexander Lesson (lasting about an hour) as the overarching structure of the sound of the performance (which also lasted about an hour) without hearing its verbal content.

The set up for the performance was to have the output of a mini-disk player with the recording of the Alexander Lesson go into the computer, be processed by Audiomulch, and then be

sent out to the loudspeakers. Additionally, I set up John Dunn's SoftStep to generate control signals based on chaos equations to control the parameters of the Audiomulch's granulator, so that the nature of the fragmentation would be always changing unpredictably, within limits I set that would assure that the voices were never intelligible. (In fact, the only time in the 50 minutes of the performance that words were intelligible was when Eva was speaking to Bryn. His name came through very clearly. Clearly to me, at any rate. I asked Bryn later if he heard his name, and he said he hadn't. Seeing as how we're most sensitive to the sound of our names, I think this means that my voice fragmentation was indeed effective.)

Added to the granulation of the lesson recording were three Bubble Blowers, granulation modules Ross based on Curtis Roads' Cloud Generator, which are specifically designed to process samples. Earlier in the month, Ross had explained to me how one could use the Bubble Blower to, in effect, time stretch a sound. By setting the Inskip parameter to its narrowest possible width, and moving the Inskip slider along the length of the sample, one scans through the sample, producing the effect of time stretching the sound. In each of the three Bubble Blowers, I had 5 samples of Eva's vocalizing available. I then set up my Peavey 1600x box 'o' MIDI sliders so that I had manual control of the Inskip, Transposition and Volume parameters of each of the Bubble Blowers. Additionally, I routed the output of the Bubble Blowers partially to the main Dancehouse speakers (on the far wall away from the audience) and partially to two Roland MA8 computer monitors that I put under the front row of the audience. In this way, I managed to have a low budget multichannel sound space for the audience. (Actually, the audience members I spoke to didn't hear this. They only heard (or thought they heard) sound coming from "in

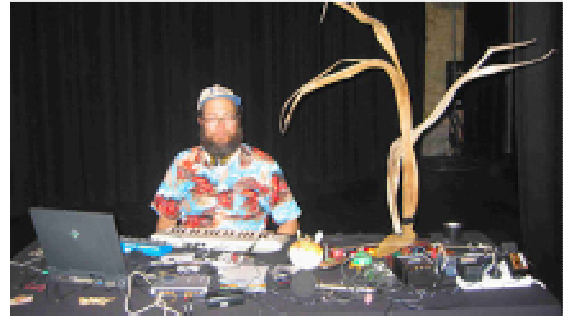
front" of them. Probably the only person who experienced the true surround sound performance was Eva, and she was too busy with her own very complex performing to appreciate it! So much for my attempts at subtle and low-budget spatialisation....)

My performance on the computer consisted of controlling the level of the granulation of the lesson recording, and making synthetic choirs of manually time stretched versions of Eva's vocalizing. That is, all sounds from the computer were derived in some way from Eva's voice, or the attempt to record it. Added to this were a number of other sound sources: a CD player, on which I played fragments of Heitor Villa-Lobos' Fourth String Quartet (now THERE'S pretty!), C. P. E. Bach's Double Concerto for Harpsichord and Fortepiano, the soundtrack of Space Jam, and Bryn's favourite hip-hop CD (which I never wrote down the name of, drats!) which he gave me about 10 minutes before the performance; a "chicken-plucker" (a home-made instrument consisting of 18 music box combs bolted to a sound board), with a contact mic on it; a baritone ukelele, also with a contact mic on it; a voice microphone; and an experimental chord harmonica made by my late father, Raymond Burt, which has it's own internal mics. As well, there was a piano in the space, which I occasionally played acoustically, playing fragments from "Silver", a 1978 piano score which I wrote for Eva at that time.

Performance was usually multilayered. For example, the high point of the first section of the piece consisted of five simultaneous layers of sound: 1) the theme from the 2nd movement of the Villa Lobos, 2) the "chicken-plucker" used to ornament the Villa-Lobos, 3) the granulated Alexander Lesson, 4) a chorus of sustained Eva vocalization tones made with the Bubble Blowers, and 5) the voice games that Eva and I were playing as part of the performance. These consisted of saying the words "begin", "continue",

“now change”, and “end” as offers to each other to do those things, but we were free to ignore the instructions if we wished. I also occasionally said a number. This was how many minutes we were into the performance. It served as a clock for Eva, but again, I don't think any member of the audience heard the numbers as simple time-keeping. Mostly, they thought the numbers were some surrealist code or mysterious structural cues.

It was just as well I had all the other sound sources. At about 13 minutes into the piece, my computer crashed. What, in other circumstances would have been a disaster, was here merely a trigger for extended solos on baritone ukelele (ala Derek Bailey) and chord harmonica (NOT ala Toots Thielemans!), while I rebooted the computer with one hand and played those instruments with the other. On rebooting, I resumed performance with the computer, and listening to the recording we made of the performance, it's impossible to tell that something went wrong. The lack of computer sound from 13 - 25 minutes in the piece sounds like it was meant to happen, and Eva said she appreciated the sonic space created by silence at that point. This underscored for me the essential rightness of my pragmatic decision to make performing on the computer only part of what I do in an improvisatory theatrical performance. Not only do the other objects provide a safety net, but they also imply a kind of performing where one takes one's time going from one kind of sound source to another. A certain unhurried structural spaciousness is implied by the setup, to me at least.



2. Cathedral, 27 July - 3 August, 2002, Brisbane.

“Cathedral”, William Duckworth's web-based gesamtkunstwerk, was another level of complexity greater than our simple duet performance. “Cathedral” is a multi-level thing. It's been going since 1997, and is a series of performances, a website, and an interactive computer instrument, the Pitchweb. The improvisatory performances of Cathedral in Brisbane were part of the Mini[]Max festival, organized by Vincent Plush, for Brisbane's Powerhouse Centre for the Live Arts, and featured a band of five core members, augmented by guest performers, performers from the audience, and performers in other cities arriving by live webfeeds.

The core performers in Brisbane were William Duckworth on 2 Mac laptops (playing Pitchweb) and CD player; DJ Tamara (Tamara Weickel) on turntables and CD players; Stuart Dempster on trombone and amplified toys; Arthur Sabbatini as “The Chronicler” - a spoken voice part; and myself on laptop, amplified toys and plant materials, CD and MD players, and handheld sampler. The guest performers were William Barton, didjeridu; Simone de Haan, trombone; Tenzin Choegyal, Tibetan instrumentalist and singer; and Sulagna Basu, Hindustani singer. Especially interesting contributions from the audience were made by Pitchweb performances by Andrew Kettle and Michael Norris. Amplification and overall mixing and

technical support by the Powerhouse staff was superb. The performances were a joy to be part of.

In such a "big band" context, one of the most important things each player can contribute is silence. Happily, the performances, though often multilayered and complex, never degenerated into mud. All the performers remained keenly aware of what each other were doing, and contributed to shaping the overall sound in very sensitive ways. For my part, I had a large number of resources to draw on. This was so that I would be able to respond to the contingencies of the improvisational situation. For example, during one performance, Tenzin began singing a Tibetan mode based on "C". Stuart responded with extended changing harmonic tones of "C" on his trombone. This was the perfect time for me to mix in the CD of my piece "The Lurking Trilobite", completed in May 2002 at the Pauline Oliveros Foundation in Kingston, NY (Pauline and Stuart are bandmates in the Deep Listening Band), which begins with a 2 minute drone of changing harmonics on "C." A striking interchange of timbres on a single pitch between the three of us ensued. (This kind of performing also requires that the performer have a memory capable of recalling particular sounds, and also being able to recall where they are, and how to access them rapidly.)

My setup for the performances consisted of the following:

- 1) CD player and MiniDisk player
- 2) Four contact mics attached to various plant materials and toys.
- 3) Voice microphone, also used to amplify small acoustic sounds.
- 4) Yamaha SU10 handheld sampler plugged into a Marshall mini-amp, clipped to my belt.
- 5) The computer and related electronics (A Yamaha mini-keyboard and a Doepfer Pocket Dial - a small box of midi controllers.)

The computer resources for the performance were the following.

- 1) Pitchweb 3.04 with patches developed by myself for each day's performing.
- 2) MiniDisk processed through a Sonar 2.0 effects patch.
- 3) Yamaha mini-keyboard into VSampler selecting words by Arthur Sabbatini.
- 4) Doepfer Pocket Dial controlling Audiomulch patches.
- 5) Crusher-X granulator program fragmenting Erik Satie's "Third Nocturne".
- 6) Cool Edit Pro used as a single sample player and modifier.
- 7) Scala controlling Vaz Modular making microtonal chords and pads.

The computer, as can be seen above, was only part of what I played in performance. Especially critical in my performances were the playing with amplified plant materials. These ranged from a single long blade of sawgrass taped to one contact mic, or a pair of 1 metre long dried succulent leaves taped to the table (looking like something out of a Georgia O'Keeffe painting), also with a contact mic taped to them, and scraped with a variety of seed pods. These sounds were unlike those made by any other performer, and provided satisfying noisebands as a balance to the highly consonant pads available on the Pitchweb. Stuart Dempster's use of toys as sound sources inspired me to match him, and acquire some toys of my own. He and I spent a delightful morning cruising the bargain shops of Fortitude Valley, finding all sorts of sound makers, ranging from the sublime to the completely silly. One of the best was a 50 cent mechanical turtle, which when amplified, made a most ominous grating sound. It also looked neat from the audience's point of view. The ensemble nature of the improvisations gave me plenty of time to select new material, or to load programs and patches on the computer. Since one of the focuses of Cathedral is Pitchweb, I began each night's performance with an

extended session with that, and often ended with it as well. Since the first 3 performances were 2 hours in length, and the last was 1 hour in duration, this gave us plenty of time to explore the materials we had available. Here are some further explanations of what I did with the computer during the performance.

1) Pitchweb. This is a sample and midi-file player developed by William Duckworth and Nora Farrell, the webmaster behind the whole Cathedral project. It is cross platform (Mac-PC), runs under Quicktime, and is written in Director. On starting the program one is presented with a palette of 64 coloured shapes. Each of these triggers off a particular sound sequence. These can be either midi-files which play the Quicktime Instruments (a subset of the Roland Sound Canvas samples), or they can be sound files. One selects these shapes, places them on a performance area, and then performs with them in a variety of ways. The two I used were a) simple mouse motion to select particular sounds at particular times, and b) the Autoplay feature - which sends a cursor moving on predetermined paths around the performance area to make automatic accompaniments. There are 10 different palettes of 64 sounds to draw from. Seven of these are midi sequences, and 3 are wave files. I developed the wave file sound banks and three of the midi banks. The original three sound banks, and the most recent "Brisbane" sound bank are by William Duckworth. My wave file banks are 1) a series of microtonal melodies in equal tempered scales ranging from 8 to 16 tones per octave; 2) a series of stretched and otherwise modified Australian bird calls, made with Composers Desktop Project software; 3) a series of short, sharp, often very silly and wiggly sounds, made to act as interjections. The three midi banks I contributed were all fragmentations and processings of music by Erik Satie. In making these I

used a process very similar to that used by John Cage to turn Satie's "Socrate" into his "Cheap Imitation." These three Satie banks (as well as Duckworth's "Brisbane" bank - also consisting of Satie processings and imitations) are the first in an ongoing series of sound banks which constitute the ongoing "Virtual Vexations" part of Cathedral - a potentially endless fragmenting and reprocessing of Satie materials. Both Duckworth and myself developed several new Pitchweb setups for each nights performance. These were usually made in the hour preceding each performance. It was Bill's idea that our preset choices be made fairly spontaneously immediately before each performance, so we would have a fresh source of sounds for each night. It was interesting to me that the current palette of 640 sounds in Pitchweb is both immense, and also, limited. 640 sounds is a lot of sounds, (lots of excellent pieces, after all, are made with only one sound), but in an improvisatory context, it can also be not very many sounds at all. To my ear, at least, things fall into timbral "families" really quickly. A sound in this context becomes not itself, but merely a member of its "family," and the use of two sounds from the same family gets pretty close, in my mind, to a repetition. Not that repetition is bad, but it may not be useful in a particular context. Hence, I found myself using other software and sounds to contribute to the mix.

2) MiniDisk processed thru Sonar2.0 effects patch. Each day I would go out and record some Brisbane environments. These were hopefully places that had a unique and recognizable sonic identity, like the Story Bridge, the City Cat ferry, the Brisbane trains, etc. During the performance I would process these through a very simple effects patch in Sonar. (Basically I was using my computer here as if it were 2 effects pedals, the Plasma FX Pad, and the Hyperprism Pitch Changer.) Each effect was automated, so it was

changing its parameters in real time, but the basic sonic nature of the environment was hopefully unchanged, and was a way of bringing the Brisbane environment into the performance. (Using amplified local plant materials was another way of doing this.)

3) Vsampler controlled by a keyboard. Arthur Sabbatini is a poet, who performs as "The Chronicler", a slightly deranged character who is documenting these performances and is also time-travelling between the various events which inspired Cathedral. He both improvises and reads preset texts in an improvisatory order. From his texts, he selected 54 key words (this will eventually be expanded to 64, and a new Pitchweb sound bank will be made of these). I put these words into the Vsampler program, and triggered them off at various appropriate and inappropriate moments. Arthur wanted me to act as a foil to him at times, so sometimes a word would be chosen that would contradict what he was currently saying. The high point of this each evening would be when I would leave my performing table and wander either around the stage or around the audience playing Arthur's words through a little belt mounted Marshall mini-amp. The Yamaha SU-10 hand held sampler can hold 48 samples, so we loaded 48 of Arthur's words on it, and I would generally play one word to each audience member, or group of audience members.

4) Audiomulch patches. I recycled the Granulator patch from the 13 July Eva Karczag performance, processing the original recording of Arthur reading all 54 words, and then manually time-stretched the words "allegoresis" and "detonation" to make a set of Arthur fragments to obscure his live voice with. Again, he asked me to do this. I wasn't being malicious here without permission! I also used another version of this patch in which I granulated a recording of the birds in New Farm Park, next to the

Powerhouse, while time stretching some of the original samples of stretched bird calls used in the Pitchweb bird sound bank.

5) CrusherX, Joerg Stelkens wonderful granulator program, was used to fragment Satie's Third Nocturne. This was programmed so the result was fairly thick, yet still recognizably Satie. I used this to extend the effects of the Satie fragments in Pitchweb. With this patch, it was as if there were, say, 50 people, all simultaneously playing the same Satie fragments on the Pitchweb. This thick texture was mixed in sparingly - only for about a minute during most of the performances.

6) Cool Edit Pro used as a sample player and modifier. Sometimes you just want to play a sound unaltered. Cool Edit Pro, in conjunction with the 1.4 gigabytes of samples on my hard drive (14 years of sampling in a handful of directories) proved to be the ideal tool for this. Additionally, I used the Pitchbend Preview function as a real time performance device, drawing glissandi in real time, and modifying samples with them. This was especially useful with Arthur's words - making them wiggle and wobble just a bit so that the identity of his live voice and my modifications of his voice were a bit confused, but I also used it with a number of other sounds.

7) Scala controlling Vaz Modular making microtonal chords and pads. Manuel Op de Coul has recently added realtime Midi performance capabilities to his freeware Scala microtonal utility. These enable you to set up microtonal keyboards, lattices, and tonality diamonds, and then play them with a mouse. Although he may have intended them only as devices to try out tunings with (after all, with a mouse you can only start one note at a time), I find them incredibly inspiring as realtime performance devices. Hold down the left button and whizz across that matrix and arpeggiate a microtonal chord! If you use it to

control a polyphonic synth patch with long decays, as I did, you can have an instant melody and chord machine. Performing with a Tibetan and a Hindustani singer, both of whom used rather interesting just-intonation modes, suggested to me that having microtonal performance capabilities would be a good thing. Especially with Tenzin, I was able to match the pitches of his mode, and ornament what he was singing several octaves higher, something that without the instant scale-making possibilities of Scala, I would never have been able to do. The two scales I used most frequently in the Cathedral performances were both 6 by 6 Euler-Fokker Matrices, one consisting of horizontal 7/4s and vertical 9/8s, and the other consisting of horizontal 3/2s and vertical 5/4s. For anyone interested in microtonal performance on a laptop, I would enthusiastically recommend that they download Scala (PC now, Mac "soon"), and explore its many possibilities.

I'm finding this kind of improvisatory performance, where the use of interactive and algorithmic computer software is central, but not the whole story, very exciting. It allows me to both perform electroacoustically, but also to do other things. Further, it allows me to exercise a level of theatricality that I enjoy, adding that to the palette of resources available for electroacoustic performance. Hopefully, I'll be doing a lot more of this kind of performing in the future. Anyone want to jam?

Websites:

Audiomulch: www.audiomulch.com

Softstep: <http://algoart.com>

Cathedral:

www.monorestreet.com/Cathedral

CrusherX: www.crusher-x.de

Scala: www.xs4all.nl/~huygensf/scala

Writing a Device Driver using MIDI System Exclusive Messages:

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Designing your own MIDI firmware can be a daunting task, particularly if your clients have to communicate with your hardware using MIDI System Exclusive (sysex) messages.

Additionally, you could use SYSEX messages to communicate between two or more machines running MAX as a novel way of communicating with your patches. If you are writing firmware for MIDI, *Synthesizer Performance and Real-Time Technique* by Jeff Pressing is a great starting point for understanding the MIDI protocol. To gain a greater understanding, you can purchase the latest MIDI specification from the Midi Manufacturers Association (MMA) at <http://www.midi.org/>. Alternatively, you can do what I did and get the Midi Specification 1.0 for free at www.midi-classics.com/midispec.txt.

I will use the SYSEX protocol that I wrote for the Midi Controller that I presented at ACMC as an example, which in turn could empower someone to write a patch editor for it in Max.

Note: I will be writing the numbers in hexadecimal, using 0x as a prefix to signify that the number is in hexadecimal. For example 0x81 is (8 x 16¹ + 1 x 16⁰), which is equal to decimal 129. The reasons for hexadecimal notation are that the decimal value is irrelevant to the protocol, and it is easier to encode and decode using this protocol, as we may be manipulating one bit of that value

Why write device drivers?

The concept of the MIDI sysex message is that a host device can communicate information not specified by other MIDI message types to target device. For example, if you want to reconfigure your device to echo incoming MIDI data to its MIDI output (independent of the MIDI through output), what MIDI message would you send? The available types of MIDI messages would be unsuitable (although you could program your device to respond to a particular standard MIDI message). The most effective way to communicate this information would be to send your own configuration message over the MIDI cable. For example, let us say that the value of EEPROM address 1 in your hardware device determines whether it echoes the data to its output port, we have to communicate with our hardware that we need to change the value of EEPROM address 1. Using a device driver enables us to focus on the issue of communicating that we want to change the value at an EEPROM address without having to concern ourselves with what the physical transmission allows or disallows. This, effectively, is a buffer that enables you to write highly cohesive code that has a low coupling or dependency on other code modules. The device driver that I have written (and provided) ends up being two functions that encode and decode a data stream.

When writing data communications protocols, the most effective way is to start from the top layer (application) and work your way down to the lower layer (physical connection). The reason for this is that at the application level – e.g. value of EEPROM data at address 1 – it does not need to know anything about MIDI. The layers each communicate at their own level and are only able to decode information at their own level. In order to make the physical connection the information from the source is encoded and then

passed down to a lower layer (closer to the hardware) and encoded by that layer. This will not be decoded until it reaches that same layer in the target device. This continues on until the information has traveled to the actual hardware connection (DIN plugs with a 5mA current loop), each layer adding its own encoding around the information encoded by the previous layer. The device driver in the source device encodes information from an upper layer, encoding it in order that it can be transmitted using the MIDI protocol. In the target device, it receives information from the MIDI protocol, decodes what the device driver in the source had encoded, and passes it to the upper layer. The following sequence describes the parts of the process that concern us:

Source Device

Upper Layer needs to send the following sequence:

```
0x00 0x80 0x70 0x00
```

(note that this sequence is illegal in MIDI as 0x80 has the MSB set, and therefore cannot be sent as part of a SYSEX message)

Upper SYSEX driver encodes information and passes to Lower SYSEX driver

```
0x00 0x01 0x00 0x70 0x00
```

Lower SYSEX driver adds manufacturer ID and our own device ID (first 2 bytes)

```
0x7D 0x01 0x00 0x01 0x00 0x70 0x00
```

Data packed into SYSEX message (first and last byte)

```
0xF0 0x7D 0x01 0x00 0x01 0x00 0x70 0x00 0xF7
```

Data sent out of MIDI port

Target Device

Data received from MIDI port

```
0xF0 0x7D 0x01 0x00 0x01 0x00 0x70 0x00 0xF7
```

Determined a SYSEX message and sent to Lower SYSEX driver

0x7D 0x01 0x00 0x01 0x00 0x70 0x00

Lower SYSEX driver removes manufacturer ID and our own device ID and passes it to our Upper SYSEX driver.

0x00 0x01 0x00 0x70 0x00

Upper SYSEX driver decodes data and passes to upper layer

0x00 0x80 0x70 0x00

You will notice that the device driver was split in two –Upper and Lower. This has been done so a different manufacturer can use the upper layer and modify the lower layer, using their own manufacture ID and other machine specific data without modifying the encoding / decoding algorithm.

Lets take a closer look at what actually happened in the decode / encode stages.

The original data presented was:

0x00 0x80 0x70 0x00

We stated that 0x80 was invalid as a SYSEX data byte. We need to convert 0x80 into two bytes that do not have the MSB set (i.e. the number must be 0x7F or less). We do this by “byte stuffing” the unacceptable character. This is accomplished by defining a control character that notifies the decoder that the byte following requires decoding. We accomplished this by using the character 0x01 as a control character and then encode the data byte by clearing the MSB. The byte 0x80 therefore becomes a two byte sequence: 0x01 0x00. When the decoder sees the 0x01, it knows that it must set the MSB of the following byte. This introduces a second problem: what if we need to send 0x01 as a data byte. e.g. the required data is:

0x01 0x80

We overcome this by creating another control character that notifies the

decoder that the following character does not require decoding. In this case, I have used the control character 0x02 to signify that the character following it does not require decoding. Data byte 0x01 therefore becomes two bytes: 0x02 0x01. When the decoder sees the 0x02, it knows that it is not a data byte, but a control character that signifies that the following 0x01 is not a control character. So what happens if we want to send 0x02 as a data byte? We byte stuff it with the same control character that we used to byte stuff 0x01—we place a 0x02 in front of it. Data byte 0x02 therefore becomes two bytes: 0x02 0x02. We now have two control characters: 0x01, which signifies that the following character requires the MSB to be set; and 0x02, which signifies that the following character is not a control byte.

Now that we have that sorted, let us encode and then decode a series of data bytes for transmission in a MIDI SYSEX stream.

0x01 0x20 0x00 0x81 0x00 0x02

I will show in bold the characters that require encoding

0x01 0x20 0x00 0x81 0x00 0x02

Now encode them

0x02 0x01 0x20 0x00 0x01 0x01 0x00
0x02 0x02

We can now decode the stream. In the following table, each row signifies a change of Machine State, occurring as a result of the incoming byte shown in the Current Byte

column. The current control character value is stored in the Current Ctl val column. If the Current Byte is a control character, this value is stored as the current control character in the next row. The action performed on the current byte is determined by the value of the current control character.

Now let us decode them one character at a time

Current Byte	Current Ctl val.	Comment	Decoded bytes
0x02		0x02 is a control character. The next character is not a control character and does not require decoding	
0x01	0x02	0x01 is not a control character in this instance because the current Ctl val. is 0x02. data value = 0x01	0x01
0x20		data	0x01 0x02
0x00		data	0x01 0x02 0x00
0x01		0x01 is a control character. The next byte requires its MSB set	0x01 0x02 0x00
0x01	0x01	0x01 is not a control character because the current Ctl val. is 0x01. data byte requiring MSB set – 0x81	0x01 0x02 0x00 0x81
0x00		data	0x01 0x02 0x00 0x81 0x00
0x02		0x02 is a control character. The next character is not a control character and does not require decoding	0x01 0x02 0x00 0x81 0x00
0x02	0x02	0x02 is not a control character in this instance because the current Ctl val. is 0x02. data value = 0x02	0x01 0x02 0x00 0x81 0x00 0x02

We can see the final result is that which we started at before we encoded the data at the source.

The following truth tables can be used to encode and decode the data stream:

Encode MIDI Data Truth Table			
Data Byte value – B	Control character	Encoded Data byte value	Number of Bytes transmitted
0x00	Nil	B	1
0x01 to 0x02	0x02	B	2
0x03 to 0x7F	Nil	B	1
0x80 to 0xFF	0x01	B – 0x80	2

Decode MIDI Data Truth Table				
Current Control Char. value	Current Byte	New Control Char. value	Decoded Data value	Valid Data
0x01	B	Nil	B + 0x80	Y
0x02	B	Nil	B	Y
Nil	0x01	0x01	N/A	N
Nil	0x02	0x02	N/A	N

The Music Board Situation:

ARGIA (Artists Resisting Government Interference in the Arts)



The Music Board of the Australia Council recently had three vacancies. A number of nominees were put forward by the Australia Council to the minister for approval, in accordance with procedures as outlined in the Australia Council Act..

Some of these nominees were designed to address the acute shortage of expertise and representation for contemporary music ('rock/pop'), improvisatory, electronic and computer music, new media, and sound art.

The existing Music Board, including its outgoing members, recognised the need to have quality expertise in these areas in order to equitably and effectively assess applications from all practitioners, given that it has been 7 years since anyone with expertise in what one could argue as the dominant modes of contemporary Australian musical practice (electronic music) has been on the board. It has been 3-4 years since anyone with direct involvement in contemporary improvised music has been on the board.

The outgoing music board members were also keen to ensure that incoming board members had the required skills and expertise to fill the gaps created by their departure. This has not happened.

The minister ignored the board and council's recommendations in all but one case, making two appointments of his own choosing outside Council's recommendations. As a result, he has reduced the proportion of active practitioners to 57% and has duplicated expertise which exists on the board. This has yielded a dangerously narrow board which lacks expertise in many of the dominant modes of musical practice. In the year 2002, for example, not one member of the board possesses

expertise in new technologies and/or electronic music. This is quite an extraordinary proposition for any creative arts board in the 21st century, regardless of discipline.

Needless to say, these new appointments have been made in silence. There has been no media release from the minister's office or from council itself. ARGIA would like to know why these appointments were not publicised to the arts community and the taxpayer in the usual manner and sees this as damaging the reputation of the Council and the trust of artists and the general community in its processes.

If you want to find out more about ARGIA and the current issues concerning all computer and electronic music artists then please refer to the following places:

ARGIA Online:

<http://www.argia.c2o.org/>

ARGIA Action Discussion Group:

http://groups.yahoo.com/group/argia_action

Well that wraps up edition 32 of Chroma. I hope that you have been inspired and will have enough ideas to keep you going until the next issue, which will come out in about 3 months.

Please email any essays, reviews, musings, graphics, songs, etc to acma_chroma@yahoo.com.au so that they can be included in the next issue of Chroma!

If you need to contact the editor directly then email:

tim_opie@yahoo.com

