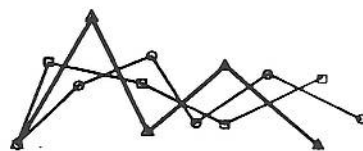


Chroma



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International Computer Music Conference 1992

Three Views



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1992 is history. Now that the dust has settled, we present three independent and occasionally overlapping views on last years ICMC.

Membership Renewal and New Members Drive

Welcome everyone to Chroma 1993. The 28th February is the end of the ACMA financial year and hence it is time for all memberships to be renewed. As well as looking forward to your renewals, we are currently undertaking a major new membership drive, particularly aimed at new members from the less well represented states. You will find at the back of this issue an information sheet and two copies of the 1993 membership subscription form. The information sheet is intended for display on any notice or advertising boards around your place of employment, study, or musical activity. Mail us your own renewal and pass the other subscription form on to a friend. Note that Chroma will only continue to be sent to financial members for 1993. All subscriptions and correspondence should be addressed to:

ACMA, Inc.
PO Box 4136
Melbourne University 3052

Concert Activities

The first ACMA concert for the year is currently being planned for the evening of the 10th July in Sydney, however the venue has not yet been established. Anyone interested in having a work performed should contact Anthony Hood on

(02) 882 8289 (work), or
fax (02) 428 1734, or mail
1 Kellaway St,
East Ryde NSW 2113.

Gordon Monro will be organising a day-long symposium in conjunction with the concert. Low-cost accommodation at one of the Sydney University Colleges can be arranged for anyone coming from outside Sydney. Suggestions and contributions should be directed to Gordon Monro (see back page for contact info).

1993 CD Submissions

We have already received submissions for the next CD but need more material. The deadline for submission of pieces is 8th March. If you cannot submit the final master of your piece by this date, please notify us of your intention to submit.

ACMA Networking and News Sharing

We are continuing to look at ways of sharing information and news by computer networking, with a few helpful ideas already submitted by members. The currently preferred option is to set up a subscriber forwarding list, whereby any information posted by a subscriber to our bulletin board will automatically be forwarded to each other subscriber. Stay tuned for further information, or feel free to contact us if you have any helpful suggestions.

Music Education & Technology Association

The newly-formed Music Education and Technology Association aims to provide support for staff and students at secondary schools involved with music technology. The intention is to circulate information via a regular newsletter, provide a contact for sharing ideas, and also to organise concert activities within schools. ACMA supports the initiative of furthering the area of music technology in the wider community and looks forward to any collaboration in future projects with MEATA. In the next issue we will be able to provide details of the Music Technology Week to be organised by MEATA for June 21st to 25th. Anyone interested in obtaining further information should contact Julie Lindsay at:

c/o Eltham College
P.O. Box 40
Eltham 3095
ph: 437 1421

Ars Electronica - Last Days !!!

The deadline for entries in the computer music category of 1993 Ars Electronica is 28th February - post marked. Entries should be directed to:

ORF,
Landesstudio Oberösterreich,
Franckstrasse 2a, A-4010
Linz, Austria.

Chroma contributions

We are always looking for contributions to Chroma, so please submit any articles, letters or information you feel is appropriate. We look forward to hearing from you.

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Comments on the ICMC

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The 1992 ICMC had far too much happening for one person to take in. I attended mainly sessions on sound synthesis and analysis, so what follows are comments largely on those topics.

Physical Modelling

There was a substantial section of papers on physical modelling of musical instruments. Fairly recently it has become practical to use simplified physical models of instruments, especially wind instruments, in real-time sound synthesis.

A highlight for me was the demonstration by Perry Cook (Stanford) of his "meta-wind controller". This object (made by Cook out of plastic plumbing and various switches and sensors) looks something like a flute. However the bottom section can be slid up and down trombone-style for glissandi, the head joint rotates, and there are other controls. The simulation sounded quite realistically like a flute or clarinet or trombone, but it could also sound like hybrid instruments somewhere in between these three.

Another interesting demonstration was the string simulation by Paladin and Rocchesso (Italy). This simulation allows the stiffness of the string to be varied. The stiffness of piano strings is what causes upper harmonics of piano notes to be somewhat sharp. In the simulation, zero stiffness produced in-tune but somewhat boring notes, a little stiffness gave piano-like notes, and a lot of stiffness gave inharmonic metallic sounds. Modulating the stiffness at high speeds (e.g. 50 c.p.s) gave strange FM-like effects.

A third demonstration along the same lines was that by Van Duyne and Smith (Stanford) of a simulated string with a movable pickup. Different positions of the pickup result in notes with different harmonic contents (as with an electric guitar). Moving the simulated pickup slowly gave a flanging effect, while moving it very fast again gave an FM-like effect.

What I found nice about these demonstrations is that they were all based on physical considerations but went on to do things (such as varying stiffness rapidly) that are physically impossible, or at least very difficult. There were also papers on the lips/mouthpiece system of a trumpet, low piano notes, modelling the piano action, and various papers on filters and the like. The Winter 1992 number of the Computer Music Journal (vol 16, no 4) is

devoted largely to physical modelling.

Sound Analysis

There was a group of papers devoted to this. One that I remember was by Sandell and Martes (Berkeley). Wind and brass timbres (including the initial attacks) can be reduced down to about 6 "principal components" (curves showing the relative intensity of harmonics). These can be used for resynthesis, including the synthesis of timbres intermediate between those of the original instruments. This is the opposite of physical modelling in that only the sounds of the instruments are used.

Hardware

The latest hot machine that everybody wants, but only a few have, is the Silicon Graphics Indigo machine. Its attraction for sound synthesis is that it is fast enough to do real-time synthesis when programmed in C, thus avoiding unpleasant machine coding of DSP chips.

There was a panel session at ICMC on real-time hardware and software. The trend is to do more and more with general-purpose computers, moving away from special-purpose synthesis hardware. However a representative from E-mu Systems said that musicians will only spend say \$US 1000 on a box. Using special-purpose chips, E-Mu can achieve the equivalent of 100 MIPS for that price. A general-purpose workstation with the same synthesizing power would cost ten times as much. So it will be a while before special-purpose synthesizers disappear. The recent rash of systems using DSP chips represent an intermediate stage between special-purpose hardware and general-purpose systems. It seems that DSP chips will also be with us for some time.

Languages

David Wessel (Berkeley) called for a general real-time synthesis language (to be to real-time sound synthesis what PostScript is to desk-top publishing). Such a language would be independent of platform. Older languages such as CSound, apart from the fact that they were not designed for real-time synthesis, have separate "scores" and "orchestras" and separate audio-frequency signals (sounds) from much lower frequency control signals. Roger Dannenberg (Carnegie-Mellon) has proposed more than one language in which the distinction between sounds and control signals vanishes. A representative from Apple spoke about the forthcoming Apple Real-Time Architecture, but this seemed to be more about hardware aspects of real-time control than new languages.

Conclusion

Real-time sound manipulation with computers is the current fashion - it has only recently become possible,

and all those people with access to the hardware are busily exploring it. This was evident in the concerts, where only about one-third of the pieces were pure tape pieces (i.e. the sound was generated off-line); the other two-thirds involved various sorts of live participation, real-time sound manipulation and "conducted electronics".

Comparison with TISEA

Shortly after I returned from the ICMC I attended the Third International Symposium on Electronic Art (TISEA) in Sydney. This in fact was devoted almost exclusively to electronic visual art; music somehow missed out. I noticed two very big differences between the ICMC and TISEA. Firstly there were almost no women at ICMC, but there were lots at TISEA, heavily involved in the technology as well as the "artistic" side. Secondly there was evident at TISEA a premium on the bizarre (as, for example, in Stelarc's performance, though there were many other weird things). The events at ICMC were much less off-the-wall, with the possible exception of the "computer cabaret" - I won't forget the ensemble being conducted by a bowl of exploding popcorn.

Reflections on the 1992 International Computer Music Conference

David Hirst

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I flew across the United States from east to west on a cloudless day. The Rockies erupted with snow-capped peaks out of hundreds of miles of flat plains just the other side of Denver. Beyond the Rockies came the Sierra Nevadas and finally San Francisco Bay.

My introduction to California this time around involved events on a shuttle bus from San Francisco airport to San José, the location of the 1992 International Computer Music Conference. Fellow passengers were a Samoan Seventh Day Adventist bishop, an Indian woman, someone's Californian aunt, and a bikie couple who had a flat tyre on the freeway.

The first passenger to deliver was the aged Samoan man. Unfortunately he didn't know where to go, or who was meeting him, and he didn't speak English. To the rescue came the wonderfully affable teddy-bear bikie who, after 15 minutes on the phone in the blazing sun, had a vague possibility that the old man's destination may be the Seventh Day Adventist Church in Palo Alto. It proved to be correct. The bikie and his girlfriend were on their way

to a rock concert at an open air stadium, it seemed as if it was located in just a suburban back-street.

I suddenly felt as though I was trapped in a time warp. There were thousands of people with bare feet, long hair, beards and floral shirts. Was this 1968? Had 'The Rain, the Park, and the Other things' come back to haunt me? No - it was California '92, and a half-hour bus shuttle trip turned into a three hour adventure as I finally arrived in San José. Ah, San José, where it's twenty something degrees everyday, the sun perpetually shines, and it hasn't rained for five years.

What was I expecting from this conference? The latest research in computer music? - certainly, but I was also interested to hear lots of music scheduled for lunch-time and evening concerts. I expected to be blown away by new works and sounds I'd never experienced before.

On Monday and Tuesday there were pre-conference visits to open house sessions. Monday saw us at Stanford - like a giant Spanish hacienda. The Centre for Computer Research in Music and Acoustics is poised in a 'Fright Night' - style haunted house building on the knoll overlooking the main campus. Much of its upper floors can't be used because of earthquakes in recent years. Most of their researchers gave presentations on their work. Physical modelling seems to be the name of the game at CCRMA these days, and Perry Cook seems the most accomplished (and interesting) research fellow. For me the highlight of this visit was a talk by Max Mathews on his radio baton, in his own studio. I especially liked how the final test for him on the feasibility of his device was how it worked in concert. He performed a piece with a lady cellist friend which she wrote for electric cello, Yamaha TG77 and the radio baton, while on a visit to Australia - a delightful expression of pure enthusiasm.

On Tuesday, Steve Adam and I spent nearly 2 hours taking busses and the BART (Bay Area Rapid Transit) all the way up to Berkeley (now I know why they call it the bay area). Here a multi-storied Spanish-styled villa has been converted into the Centre for New Music and Audio Technologies (CNMAT). This Centre is well endowed with NeXTs, SUNs, Silicon Graphics machines, Macintoshes, etc. It has major researchers like David Wessel, Xavier Rodet, and Adrian Freed, but its demonstrations were crowded and not very well organised as they had only recently moved into their new building.

Paper Sessions

Paper sessions began on Wednesday 14 October, with parallel sessions making choices very difficult. Under the banner of 'Realisations' the first session's most interesting paper was given by Robin Bargar - 'Correlated Sound and Image in a Digital Medium'. He presented several examples which contained post-produced correlations between some images and sounds. The

movement of an object was used to trigger sound, for example. His third example was a real-time experiment on the Silicon Graphics Indigo machine where four dimensional Lissajous figures were projected onto three dimensions graphically, then the same data set was used to synthesize sound synchronously.

In the second session (New Venues and Media) I was struck by a number of papers. David Keane's Sound Lodge is modelled on a North American Indian Lodge. Looking like an aluminium frame for one of the great pyramids, it uses capacitance sensors and a Yamaha CX5M to create a fine outdoor sound sculpture for young and old alike to enjoy.

The nationalistic overtones of 'The Future Role of Japanese Composers in Music Technology' by Kojiro Umezaki were rather disturbing, but a completely different political stance was taken by Dominique Richard in his paper entitled 'Short Circuit: The Computer Music's Edison Complex'. Monsieur Richard has an eloquent capacity for creating contrasts of subjects like; discourse of music compared with discourse about music; high art versus low art; dropping out of history and pastiche; text versus isolation; time versus space; the 'apolitical' and consumption; the detachment from nature. Quote: 'We live in a highly communicative environment but communicate with nobody'. This was a great paper dealing with the real problems of computer music. I recommend it to readers of the proceedings.

Were others like me, considering what David Zicarelli would be like? Users of MAX-perhaps! Well he is tall, thin, with long hair, and radiated just a hint of mega star status in the conference auditorium. In the Cognitive Science Approaches session Zicarelli's paper provided an interesting examination and critique of cognitive science. He uses a host-parasite analogy of music (the musician) and technology. In this situation, the musician has become an office worker. There is a creative mind here, but many of his arguments are not developed beyond the initial metaphor.

In this session Larry Polansky gets down to reporting on some real work in this field. He spoke at length on distance functions and revealed a method for harmony interpolation or imitation.

David Evan Jones spoke of his 'counterpoint Assistant' and addressed a harmonic counterpoint model in his talk. He uses a matrix of controls with a melodic template and a harmonic template.

In other paper sessions Phil Burke and Robert Marsanyi (an ex-Aussie) unveiled 'Wire' for HMSL - iconic programming a la MAX. Roger Dannerberg examined the processing considerations on superscalar architectures. That is: when a CPU (eg. i860 or R52000) can run as fast as a dedicated DSP, what are the important programming considerations for maximum efficiency and

flexibility? He performed bench-mark tests on the effects of: blocksize; cache utilization; the size of the inner loop; high level language overhead. His results should help programmers of fast processors in the future.

While my mind began to glaze after about 3 days of this stuff, an important session for me was the inauguration of the IRCAM Signal Processing Workstation (ISPW) Users Group. At La Trobe Music Department we had recently taken delivery of several NeXT computers and an ISPW board, which wasn't quite working as it should. This session made it possible for me to make contact with Miller Puckette and his team at IRCAM. Miller gave an update on the ISPW and its software. The thrust of his report was that there would be a major effort over the next 2 years to develop and document the software, with most of the effort centred around MAX and FTS. A new card for 4 channels of audio I/O and 8 channels of AES/EBU has been developed by Crystal Semiconductors as a daughter board for the ISPW. The ISPW has had some hardware and software problems in the past (our board has to be returned to Ariel for repairs) and many promises were made at the San José meeting. I am pleased to report that all of the promises have been fulfilled and support from Ariel and Miller Puckette has been great. MAX v 0.21 is now running reliably on our system and it is a great real-time processing environment.

Concerts

Others will report in more depth on the concerts and works presented at the 1992 ICMC, but I will add my overall impressions. The NeXT/ISPW combination was released at a previous ICMC, but this year saw the compositional use of this instrument. There were a number of pieces with live processing of acoustic instruments using the ISPW, and they revealed one of the more-interesting directions of the works I heard. This year's concerts were also plagued by disklavier pieces and I hope I never hear another player piano. What is the point of having a pre-composed work for pianist and disklavier when the disklavier part could also be played by another pianist? This sweatshop approach robs the human performer of any interpretive creativity and expressive freedom.

Many of the works were too loud for the acoustics of the theatre, and there was a feeling of divorce between the tape part and instrument part for a number of pieces for acoustic instrument and tape. Dexter Morill's 'Six Studies and an Improvisation' for tenor saxophone and computer music system was a notable exception to this trend.

Was I blown away by any works? - No, but I was seduced by the craftsmanship and originality of sonic material of Jonty Harrison's '... et ainsi de suite ...', composed at GRM while Jonty was on leave from

Birmingham University.

The most impressive work for me was Alejandro Viñao's 'Chant d'Alliers' (Chant from Elsewhere) for voice and tape. This prize-winning work is a set of three chants from a fictional culture, based on the traditions of Eastern musics, and on one Mongolian folk tune in particular. Vicki Burns' energetic performance and impressive stage presence contributed enormously to the overpowering effect of this piece. Its standing ovation was wholly justified.

Conclusion

This records just some of the things I came away with from San José's 1992 ICMC. Some other memories were of the balmy autumn Californian nights, the friends I'd made - including near neighbours like New Zealanders and even Sydney-siders.

1992 ICMC - An Overview

Stephen Adam

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The 1992 International Computer Conference was held at San Jose State University in sunny downtown San Jose, October 14 - 18, and attended by some 400 conferees from all over the world. I flew in the day before the first conference related activities, and as a consequence, the ICMC and my first taste of life in the U.S. of A. were inseparable phenomena; a double serve of fascinating new sights, people and experiences. Being part of California's Silicon Valley, San Jose's intimate relationship with computing technology is a given, while its proximity to the San Francisco Bay area provides a rich local history in tape, electronic and computer music activity. These elements formed the backdrop and doubtlessly influenced the complexion of 1992's ICMC.

Pre-conference events included tutorial sessions on MIDI, Max, Compositional Automata and DSP basics, and Open House Sessions at CNMAT (Centre for New Music & Audio Technologies - UC Berkeley) and CCRMA (Centre for Computer Research in Music and Acoustics - Stanford University).

I did not attend any of the tutorials, but the response from those who did attend was that they were essentially introductory and aimed at beginners in the respective topics covered. The Open house sessions gave one a fairly good overview of the scope and level of the research activities as well as the opportunity for

discussion with researchers and general perusal of the facilities and working environments. Most of the demonstrations were effectively informal presentations of papers to be given at the conference.

CCRMA presentations included demonstrations by Max Mathews (the New Conductor Program, controlled by the Radio Drum), Perry Cook (Real time Physical Model Controllers and Speech Modelling), Daniel Oppenheim (Compositional Tools for adding expression to Music in DMIX) among others. CCRMA also presented an outdoor concert that evening in the Frost Amphitheatre featuring a quadraphonic presentation of John Chowning's Turenas, a pioneering work employing f.m. and quad sound spatialization techniques, tape works by Allen Strange, Bill Schottstaedt and David Soley and live music featuring the Biomuse (a general purpose neural interface/biocontroller developed by Biocontrol Systems which monitors electrical activity in armbands which the performer wears) in a piece entitled "Kagami", composed by Atau Tanaka and performed by Galen Brandt, and an improvised piece by David Wessel (Buchla Thunder and Lightning controllers) and Chris Chafe (Celletto) entitled "Finding Buried Signals".

The following day, a similar open house afternoon was held at CNMAT which is situated off the main campus in a renovated/converted house and included demos and talks by David Wessel (introduction and overview of research activities), Adrian Freed (distributed signal and event processing and network considerations), Xavier Rodet (New additive synthesis methods and non linear oscillator models of musical instrument excitation) and Michael Lee (Connectionist models for realtime control of synthesis and compositional algorithms, using a Neural object for Max and a stripped down Powerglove).

The conference proper began at 8.30 in the morning on Wednesday and continued to Saturday evening with committee activities being held Sunday morning. In general, the scheduling of presentations, demonstrations and poster sessions made it necessary to plan one's itinerary in advance as many sessions were held concurrently. Concerts of live and tape music were held every day after lunch and at night, after dinner; a full day of conference and concert attendance left little time for other activities outside of eating, sleeping, and in the local parlance "shmoozing", otherwise defined as conferee interaction.

As an overview of the proceedings, paper sessions were divided into the following categories, with each session having four or more speakers: Realizations, Studio Reports, Optical recognition of music symbols, Cognitive Science approaches, Physical Models, Real-time software, Spatialization, Synthesis Control, The MARS project at IRIS, Analysis-Synthesis, Rhythm and Expression, Music Representation, Controllers and Software Environments. Special panels were held on New venues and Media, Toward a Common embedded

software environment for synthesis control and Algorithmic Composition.

The level of skill and expertise of many speakers, panelists, and much of the audience was both inspiring and humbling. While I did not attend as many sessions as I could have, I found that those I did attend varied widely in quality and interest, perhaps a perspective coloured by my own philosophical views on the nature and function of computer music and a less than appropriate level of impartiality. On the whole, I felt that the less technical, philosophical aspects of the field were under-represented (and often arbitrarily categorised to fit within the program), while those topics leaning towards the computer science end of the spectrum were in abundance, giving one the slightest hint of 'technology for its own sake'. This isn't a surprise given the nature of the conference (not to mention the local influence described in the introduction), however a little more of the former may have helped to instil a greater overall sense of direction. (See elsewhere in this issue for descriptions of various papers and presentations)

David Hirst was the only (resident) Australian actually presenting work at the conference, his session entitled "Patching and control of multi-processes in a real-time DSP environment" outlined the recent work of a collaborative research project undertaken with Jim Sosnin and Graeme Gerrard. (For more info, see Chroma 9)

A number of special interest sessions were held, one by representatives of Apple Computer featuring Quicktime®, Apple's current multimedia protocol for their machines that do not run any specialist Multimedia hardware or software, and some software under development for the playback and creation of (General) MIDI files with a view to integrating MIDI and Mac Sound capabilities. There did not seem to be any immediate plans with respect to built in high quality (ie 16 bit) sound capabilities but there was some talk of a longer term view with respect to real-time high quality sound. The almost chronic failure of the demonstrations attempted by the reps resulted in their receiving a savage (and not completely unjustified) grilling by one disgruntled conferee.

The research group currently developing the IRCAM Signal Processing Workstation - ISPW, aka IRCAM Musical Workstation -IMW(Miller Puckette, Zack Settel and Cort Lippe), presented two longish sessions on the ISPW specifically intended for users of the system which concentrated on recently developed live performance applications using Max. These sessions held special significance as the La Trobe Music Department has recently acquired an ISPW.

Briefly, the ISPW is a system which currently runs on a NeXT host, and uses at least one Intel i860 based coprocessor board (2*i860s) manufactured by Ariel Corp. A version of Max (running under FTS-Faster than Sound)

provides a number of signal processing primitives known as the tilde (~) class objects which enable the creation of a host of real-time signal processing, analysis and synthesis algorithms. While the Opcode version of Max for the Mac is a far more elegant and extensive implementation (see Chroma 10), the addition of the tilde class objects in the NeXT/i860 combination allows the user to intimately link control structures with the manipulation and generation of sound (for more details, see Computer Music Journal vol 15, no.3 Fall 1991, in which the feature topic is the ISPW).

The demonstration, peppered with a generous portion of dry humour, commenced with a description of recent compositional strategies and algorithms. Hardware and software developments were also outlined, such as the Crystal board which features 8 channels of AES/EBU I/O, four of which also have ADC/DAC combinations. On the software front, documentation for writing external tilde class objects was being prepared, and new tilde class objects are in continuous development.

Musical examples were provided by Mari Kimura, who played passages from her piece "U (The Cormorant)" demonstrating pitchtracking and scorefollowing of a solo violin part using Max on the NeXT to control the synchronisation of a Mac based sequencing program to control the synthesised accompaniment.

A further ISPW demonstration (in the second of the two sessions) featured the work of Peter Otto, Rick Bidlack and Stephen Master of SUNY at Buffalo and their "MixNet" system, a multi-channel realtime digital-audio production environment. The system uses a NeXT based front-end modelled on a sixteen channel audio mixing console which is controllable by the MIDI based Audiomatica Contact Fader Panel (or alternatively, a mouse), which drives a Max based rear-end for the DSP tasks. The system is open ended and the user can easily incorporate their own signal processing routines.

The ISPW had a high profile in many live interactive pieces as did Max on the Mac. If one draws any conclusion about the popularity of this software in realtime applications and compositions as evidenced during the conference, Miller Puckette and his co-workers at both IRCAM and Opcode have a great deal to be proud of. While not serving every need, Max has been embraced so widely that it has become a defacto standard.

There was more music than most people managed to hear and see. In addition to the two-per-day concert schedule, performances and events (mostly pre-conference like the CCRMA concert mentioned earlier) were held at Mills College with guest composer Paul Lansky, the Electroacoustic Music studio at SJSU featured a collaborative effort between composer Michael McNabb and the Liss Fain Dance Ensemble while San Francisco's Theatre Artaud was host to performances by the New

Music Theatre, and a number of events were held in downtown San Jose. Over the duration of the conference, a number of open air installations entitled the "Earthbits" series featured works based on environmental sensing, using phenomena such as wind and deep-space satellite transmissions, while IDEAMA (The International Digital ElectroAcoustic Music Archive) provided a continuous program of historically significant electroacoustic music and selected ICMC'92 musical entries for private listening in the student union listening room.

The main concerts were very well attended, and served as the staple in the overall musical diet. Each of the eight concerts lasted an average of about an hour and a half (usually too long in terms of the auditorium's "seat comfort factor"), with anywhere from 4 to 10 pieces. In general, the standard of music was high, both in terms of compositional quality and aural fidelity. There were however at least a few gripes worth mentioning; on at least a few occasions, the volume levels were excessive, particularly towards the back of the space, and at times, the overly enthusiastic sound people took license with the pseudo-spatialization of stereo tape pieces on the quad system (ie. panning two channels of audio arbitrarily over four speaker channels), achieving little more than distracting the listener's attention from the piece. Occasionally, the balance between live performers and the tape/electronic accompaniment was less than ideal. Most of these problems were resolved over the span of the eight concerts.

Prior to the second evening concert, Prof. Max V. Mathews, a significant figure in computer music history (the Max program is named after him) addressed the audience with the keynote speech "My view of the Future of Real-Time Computer Music" in which he outlined important trends in recent computer music in terms of "patterns of performance" and suggested likely new trends.

A significant number of the compositions featured live performance components and outnumbered tape-only pieces, however many of these employed taped or sequenced material as some form of accompaniment to the live performer(s). Some of the highlights of compositions which fall into this last category, and specifically employing tape include French Canadian Stephane Roy's "Mimetismo"; a piece for amplified acoustic guitar and tape in which the acoustic and electronic elements mimic, merge into and diverge from each other, resulting in passages containing broad textural sweeps far removed from the more guitar-oriented sounds and harmonic structures created by the performer, Arturo Parra. Alejandro Viñao's "Chant d' Ailleurs" (Chant from Elsewhere) (Argentina/GB) worked with similar premises. In this piece, the impressive vocalist (soprano Vicki Burns) has Viñao's imaginary, eastern influenced singing style extended and transformed by the computer generated tape part. The

aural result was an interplay of impossible melismatic phrases, elaborate ornaments and elegant timbral transformations. This piece was very well received and not surprisingly, received the Golden Nica in the Computer Music category of the 1992 Ars Electronica.

Leaning towards the more traditional solo and tape accompaniment approach were works by Robert Morales (Mexico) entitled "Nahual II", featuring a virtuosic performance by the composer on an unusual instrument known as a chamula harp, a light wooded, steel stringed device whose intonation can be altered by applying pressure to various parts of its resonating body. Characteristic sounds of the instrument including plucked glissandi and arpeggios underpinned the overall flavour and sound of the piece. Canadian composer Bruno Degazio's "On Growth and Form" featured the largest ensemble in the concert series and required careful synchronisation between ensemble and sequencer click-track, a task skilfully executed by conductor Janet Averett. Musically, the piece drew on fractal and 'game-of-life' processes to achieve a constantly growing and developing motive with a steady underlying pulse which gradually climaxes to reveal a new cycle...

Algorithmic composition techniques were employed to provide the improvisational accompaniment in the final section of Dexter Morrill's "Six Studies and an Improvisation" using Bruce Pennycook's MIDI-Live software. This allowed the tenor saxophonist, Gary Scavone to control the sequences triggered in the improvisation as well as manipulate the delay characteristics of the processed saxophone sound. The three short movements comprising Tod Winkler's "Snake Charmer" also employed algorithmic processes to provide a pulsed jazz-like accompaniment for the clarinet soloist, Mark Brandenburg.

The sixth concert in the series featured guest composer Bruno Spoerri with guest artist Donald Buchla, designer of synthesis systems and more recently the Thunder and Lighting controllers which featured heavily in the series of pieces and improvisations presented that evening. One particularly humorous example of the evening's entertainment was to be found in the piece "En Plein Vol" for percussion and two thieves; Susan Rawcliffe and Donald Buchla. The piece began with the percussionist, Mark Goldstein happily playing his battery of percussion instruments. The thieves would sneak out at intervals and steal the instruments one by one but, to their surprise, it did not perturb the percussionist who happily played onto thin air and still created the required sounds! Other interesting performances were given by The Hub; a group of six composer/performers who specialize in what they refer to as 'network music'. They created a number of very dense, textured pieces and their stage setup reminded me of a scaled down NASA ground control.

On the real-time signal processing front, pieces such as Zack Settel's "Hwok Pah" for voice, percussion and live

electronics (read: ISPW) made extensive use of analysis, signal processing a la pitch shifting and real-time sampling under performer control. The piece emphasised processed speech and text, revealing a shifting complex character, with the percussion often adopting a supportive and dramatic role. The "Three inventions" of Takayuki Rai (Japan) focussed on transformations of the individual elements of the ensemble's sound for the purpose of redistributing these transformations into the quadrasonic system.

Tape pieces that stood out included Paul Lansky's "Tables Clear", a charming, slowly evolving minimalistic piece with a constant underlying pulse and occasional dramatic harmonic shifts. Its sound materials comprised of (stunningly recorded) found sounds of the dinner table, created with help from his sons. Jonty Harrison's "...et aussi de suite...", a very French influenced piece, featured a series of elegant manipulations of cut glass sounds using the Syter system of the GRM, which were combined to create wonderful timbral passages interspersed with dynamic interjections of percussive and processed sound.

Overall, the ICMC was a rewarding and enjoyable experience. Having first-hand contact with so many individuals and their respective areas of research was illuminating and also served to de-mystify many aspects of the field. The breadth of musical territory covered and the sheer number of pieces to experience added to the magnitude of the event, as did the opportunity to make many new friends. The atmosphere was friendly and an air of co-operation and goodwill permeated the conference. If forthcoming conferences are anything like this one, I would not hesitate to recommend them to anyone seriously interested in the field of computer music.

The 1993 ICMC will be held at Waseda University, in Tokyo Japan, September 10 - 15. While the deadline for submissions has now passed, information for individuals interested in attending the conference is available by contacting:

ICMC 1993 Secretariat
c/o The Campus Corporation
Babashita-cho 9, Shinjuku-ku,
Tokyo 162, Japan

Tel: +81-3-3202-7521
Fax: +81-3-3202-7523
Email: icmc93@waseda.ac.jp

The 1993 SEAMUS Conference

"Music, Media & Movement"

University of Texas at Austin

Austin, Texas USA

31 March 93 - 3 April 93

The Society for Electro-Acoustic Music in the United States (SEAMUS) announces their 1993 National Conference, which is being held at The University of Texas at Austin, March 31st through April 3rd. The theme this year is "Music, Media and Movement," with a special focus on interdisciplinary collaborations. Highlights include evening concerts by the Paul Dresher Ensemble and the Bella Lewitzky Dance Company, nine concerts of Electro-Acoustic Music chosen from over 250 submitted pieces, five paper sessions, three panel discussions, and a Choreography Workshop led by well-known dancers and choreographers Heywood McGriff, Yacov Sharir, and Llory Wilson. Other special guests include computer music pioneers John Chowning and Max Mathews, and session chairs Richard Boulanger (New Performance Interfaces), Otto Laske (Knowledge Technology), and Marcos Novak (Sound in Virtual Worlds). Last but not least, there is the SEAMUS'93 Riverboat Banquet, featuring Texas Barbeque and the presentation of the annual SEAMUS Award. For further information, contact:

SEAMUS'93 Department of Music
University of Texas Austin,
TX 78712 (512) 471-8310 email:
seamus93@emx.utexas.edu

Schedule of Events

Wednesday 3/31/93

8:00 Registration

9:30 Paper Session I:

Knowledge Technology (Otto Laske, Chair)

"Robot Choreography" (Margo Apostolos)

"Computation and Semiotic Practice" (Insook Choi)

"Intelligent Musical Instrument Systems" (Peter Farret)

"The Composer's Toolbox" (Jonathan Hallstrom)

"Continuity of a Musical Pattern" (Rick Roth)

12:00 Lunch/Bass Lobby 3-D Sound Diffusion

Concert I:

Anderson, Chowning, Furman, McTee, Mills, Phelps

1:30 McCullough Theatre Concert I:

DaLessio, McInturff, Mielak, Montague, Nazor,

L.Nelson, J.Nelson, Yekovitch

3:30 Paper Session II:

(Matthew Witten, Chair)

"Computers and Chor. Thinking" (Peggy Brightman)

"StochGran" (Mara Helmuth)

"The Accelerando Real-Time Audio Processor"

(Turker Kuyel)
 "Integration of Composition & Performance" (Neil Leonard)
5:00 Wine and Cheese Reception
6:00 Dinner Break
8:00 McCullough Theatre Concert II:
 Lorna Dunn, Michael McBride, Butch Rovin, The Paul Drescher Ensemble

Thursday 4/1/93

8:00 Registration
9:30 Panel Discussion:
 Artistic Freedom of Expression
10:30 Panel Discussions:
 State of EAM, EAM Studios in Academia
12:00 Lunch/Lobby 3-D Sound Diffusion Concert II:
 Aikman, Chen, Fortuin, James, Joslin, Koonce, Nye, Schrader, M. Smith
1:30 McCullough Theatre Concert III:
 Boulanger, Chamberlain, Koykkar, Oppenheim, Piekarski, Schultz, Terry, Thome, Weymouth
3:30 Paper Session III:
 New Performance Interfaces Pt. 1 (Richard Boulanger, Chair)
 "A Neural-Net Based Conducting System" (Guy Garnett)
 "PowerGlove Based Conducting System" (John Lamar)
 "Software for the Radio Drum" (George Logemann)
 "The Radio Baton & Conductor Program: New Developments" (Max Mathews)
 "Real-time Transormation of Musical Material" (Gary Nelson)
 "Interactive Electro-Acoustic Performance" (Cleve Scott)
5:30 Dinner Break
8:00 McCullough Theatre Concert IV:
 Beck, Bevelander, Garnett, Miller, Mobberley, Phillips, Vinao, Winkler

Friday 4/2/93

8:00 Registration
9:30 Paper Session IV:
 New Performance Interfaces Pt. 2 (Richard Boulanger, Chair)
 "A Next based Composer's Workstation" (Steve Beck)
 "Kyma 2.0 on a Windows-based PC" (Kurt Hebel)
 "Modular, MIDI-controlled Mixing System" (Jim Kerkhoff)
 "An Interactive Compositional Method" (Scott Martin)
 "Virtual Dance Lab" (Thomas Miley)
 "Integrating Performance, Live Electronics & Interactive Video" (Sylvia Pengilly)
12:00 Lunch
/Lobby 3-D Sound Diffusion Concert III:
 Field, Fredrics, Jaffe, Mowitz, Wingate
1:00-on Bass Concert Hall Lobby Multi-Media Exhibits:
 Apel, Morrison, and others.
1:30 McCullough Theatre Concert V:
 Appleton, Chasalow, Gottshalk, Holmes, Jones, Schroeder, Welstead

3:30 Choreography Workshop:
 (Heywood McGriff, Yacov Sharir, Llory Wilson, Co-c hairs) Composers TBA
5:30 Dinner Break
8:00 Bass Concert Hall Concert:
 Bella Lewitzky & Sharir Dance Companies

Saturday 4/3/93

8:00 Registration
9:00 Panel Discussion:
 Composer/Choreographer Collaborations
10:00 McCullough Theatre Concert VI :
 (Videos) Bestor, Korte, Lamar, Mason, Payne, Rolnick, Sweidel, Tucker, Weidenaar
12:00 Lunch Break
1:30 Paper Session V:
 Sound in Virtual Worlds (Marcos Novak, Chair)
 "Correlation and Performance of Sound and Image" (Robin Bargar)
 "MAX as an Overall Control Mechanism" (Charles Bestor)
 "Banff Center Virtual Reality Demo" (tentative)
 "The Virtual Dervish" (Gromala, Novak & Sharir)
 "The Last Garden: Music, Media & Movement..." (Richard Povall)
 "Music and Animation Toolkit" (Rick Roth)
3:30 McCullough Theatre Concert VII:
 Ainger, Chowning, Hass, Ingalls, Lippe, McCarthy, Mitchell, Wyatt
5:30 Riverboat Cruise/SEAMUS Award Banquet

Bourges 1993

21st International Electroacoustic Music Competition

The Groupe de Musique Expérimentale is now accepting entries for the 21st International Electroacoustic Music competition. Submission deadline is May 24 1993. For further information and submission of materials contact:

Group de Musique expérimentale de Bourges
 Place André Malraux
 Boite Postale 39
 18001 Bourges Cedex France
 Phone: (33) 48 20 4187

CALL FOR PAPERS & COMPOSITIONS

Xth COLLOQUIUM ON MUSICAL INFORMATICS

Milan, December, 2-4, 1993

A.I.M.I. - Associazione di Informatica Musicale Italiana
& L.I.M. - Laboratorio di Informatica Musicale
Dipartimento di Scienze dell'Informazione
Universi degli Studi di Milano

INTRODUCTION TO THE COLLOQUIUM

The Colloquium on Musical Informatics is an international biennial meeting of researchers in computer applications to music, organised by the Italian Association of Musical Informatics and by local partners. Previous editions (held in Pisa, Milano, Padova, Pisa, Ancona, Napoli, Roma, Cagliari, Genova) showed an increasing interest in this area, proved by the number and the quality of scientific contributions and the appearance of computer music systems providing tools for new aesthetic solutions. The special topic of this 10th edition is musical informatics and hypermedia systems. Contributions to the Colloquium can be of the following kinds:

scientific papers, posters, demonstrations, compositions.
Proceedings of the Colloquium will be edited.

SCIENTIFIC SESSIONS ISSUES

Music Assisted Composition- Automatic Composition-
Music Theory & Formal Tools- Artificial Intelligence &
Music- Computer Assisted Musicology- Music Analysis
by Computer- Digital Sound Analysis, Processing &
Synthesis- Computer Music Systems & Subsystems-
Acoustics & Psychoacoustics- Musical Information
Graphic Representation- Multimedia Composition &
Performance- Hypertexts & Multimedia within Musical
Informatics- Videoclip- Musical Texts Filing &
Recognition- Music Teaching through Computer-
Activity Reports from Research Laboratories

PROCEEDINGS

All contributions accepted for presentation at the Colloquium will be included in the Proceedings. Instructions to Authors will be communicated together with the communication of contribution acceptance. Proceedings will be available at the Colloquium. Contributions will be in English or Italian. A brief summary in English should be included as well. These summaries will be considered for publication in the Newsletter Surveys of IEEE Computer Society Task Force on Computer Generated Music.

EVENTS

Several events will take place at the X Colloquium on Musical Informatics, including:- a panel supported by IEEE Computer Society Task Force on Computer Generated Music- a presentation of the Italian National Research Council Project "Intelligent Music Workstation"- invited lectures on advanced research topics by researchers from leading research centres- evening computer music concerts- multimedia

performances- the annual general meeting of the Italian Association of Musical Informatics

CONTRIBUTIONS

Papers, posters and demonstrations can be submitted to the Organising Committee of X C.M.I. sending:

- a) an extended abstract in English of two pages approx., type-written or printed;
- b) a cover page with the following information: title of contribution, authors, affiliation, address, kind of contribution (paper, poster, demo), technical requirements for presentation, addresses for contacts (mail address, E-mail, phone, fax). Standard equipments (personal computer + MIDI synthesiser + sound amplification and diffusion) will be available, shared for all demonstrations. Any other equipment will be provided by participants, who must get in touch with the Organising Committee.

Compositions can be submitted to the Organising Committee of X C.M.I. sending:

- a) written description of the most relevant musical, technical and methodological features, in English of two pages approx., type-written or printed;
- b) a cover page with the following information: title of the composition, authors, affiliation, address, duration, composition date, date and place of tape realisation, equipment used, assistants and technical executors, tape velocity and tail/head (for open-reel tapes only), address for contacts (mail address, E-mail, phone, fax);
- c) tape registration of composition; tapes should be open-reel (1/4", two-tracks) or DAT, recorded without noise reduction devices. The Organising Committee of X C.M.I. assures the public execution of the musical tapes selected by the Musical Committee. However, for live performances it will be possible to take advantage of instrumentalists of the Chamber Ensemble of the University of Milan (Director M! Angelo Paccagnini). Composers who are interested in live performances can contact M! Angelo Paccagnini directly.

DEADLINES

- 3/15/93: Arrival of extended abstracts (scientific papers, posters, demonstrations);
4/15/93: Scientific papers, posters & demonstrations acceptance notification;
5/31/93: Arrival of music compositions and descriptions;
7/31/93: Music compositions acceptance notification;
7/15/93: Arrival of final scientific papers in camera-ready format;
9/15/93: Arrival of final descriptions of compositions, posters & demonstrations in camera-ready format.

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Synthesizer Ensembles Concert

Students of the University of Melbourne,
Institute of Education

**Monday April 5th
7.30 pm**

**The Open Stage,
Arts Education Building**

**Cnr. Gratten and Swanston Streets,
Carlton**

**Contact Andrew Brown for Details
(see contact list opposite)**

ACMA Contact List

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