Chroma

In This Issue...

ICMC93

Contents

1994 ACMA President's Address
by Alistair Riddel

As this is the first issue of Chroma after the AGM, I would like to take the opportunity to introduce myself as the new President of the ACMA and make some comments on ACMA's current and future activities.

As a member of the ACMA from its inception, I have been in the unusual position of having watched it develop from outside Australia. In 1989 I went to the US as a graduate student in music. Now back in Australia, I find the computer music scene transformed from how I remember it. I suspect that the ACMA is responsible for providing an effective focus for those interested in computer music around Australia. This is an exciting and positive prospect for Australian computer music and I am pleased to be part of this growing organisation.

My early involvement with computer music came about through a personal project, a curiosity with computer controlled pianos, around 1981. It has since led to adventures in signal processing on NeXT machines and a strong interest in non-real-time composition. As a consequence, it is one of my beliefs that ACMA should encourage innovative musicians and composers no matter what their circumstances. I think Australia is in a unique position to produce interesting computer music and should pursue the idea of this uniqueness. The principle cultural centres of the world are more than interested in presenting computer music that reflects Australia and its cultural position. It is up to the members of ACMA to encourage and foster this position. The ACMA committee will be working towards the presentation of Australian computer music overseas as part of its ongoing activities.

Computer music is, however, strongly supported through academic institutions. From here many composers and musicians emerge with an ongoing interest in computer music. I have been rarely far away from the academic music forum and over the years have developed friendships with teachers and composers at such institutions as La Trobe, Melbourne, Princeton, Columbia, New York Universities and some in Europe. Much of the software that I use is a product of such institutions and is freely distributed by them.

ACMA this year will continue to produce Chroma on a regular basis. In Chroma, members will continue to be informed about forthcoming events, local and overseas activities, and through articles submitted by members. The committee wishes to stress the need for contributions from members. In addition to the "Chroma" newsletter, the ACMA will be releasing another CD of members' works and the journal, "Mikropolyphonie".

ACMA will introduce some new projects in the coming year. These will be announced in due course. Don't forget, however, that the ACMA committee is always interested in new and innovative ideas regarding to the dissemination and promotion of Australian computer music. Don't hesitate in telling us your thoughts on this subject.

It is hoped that members recognise that the ACMA is an organisation that can work for them. I can hardly stress this point enough.

Finally, I'd like to thank David Hirst for his work as President and ongoing contribution to the ACMA.

1993 AGM Results

The 1993 ACMA Annual General Meeting was held at Melbourne University on Tuesday November 9th. The meeting was well attended and discussion focussed on ACMA's Publication activities, both in print and in on CD, possible concert activity and the proposal for an independent electroacoustic studio to be set-up and run by ACMA. As this last concept was new and potentially far-reaching, it was decided that discussion on this topic be held over for a special general meeting, the details of which can be found on page 11, following Lawrence Harvey's original proposal discussion paper. Other discussion addressed the Assocciation's financial position, during which it was decided to not increase the membership rates for the coming financial year. Consult the next two news items for detailed reports on other significant AGM discussions.

The election results were as follows:
President - Alistair Riddel
Vice-President - Lawrence Harvey
Treasurer - Andrew Brown
Secretary - Thomas Stainsby

The new *Chroma* editorial committe consists of Roger Alsop, Ross Bencina and Thomas Stainsby, while the editorial committee for *Mikropolyphonie*, the forthcoming journal consits of Roger Alsop, David Hirst and Thomas Stainsby.

One month after the AGM, Andrew Brown accepted a position teaching in Queensland, and subsequently resigned as ACMA treasurer. Following this, the committee appointed Jane Walker as the new Treasurer.

CD and Recorded Music Publication

The Compact Disc of ACMA members' music has yet to be completed. We still require further material to be submitted by members to give the CD sufficient content to justify the substantial amount of funding and effort required on the part of ACMA. As such, any members who feel they have material of sufficient quality for inclusion on this CD are still welcome to submit their compositions. Note that this reqiuires a financial committment of between $150 to $300 per composer, depending on the number of contributors. The nature of this CD remains in the realm of a representative sampler of Members' works, although other forms of music publication are being considered.

A more immediate form of disseminating members' works, currently being considered by the committee, is the production of a cassette. It is hoped that this project can be entirely funded by ACMA.

A proposal under current consideration is that of a concept CD, where the contributors compose pieces inspired from a common sound resource. The suggestion is to use recordings of Australian bird-song, which are available from a Canberra archive. These pieces are intended to be short, as we hope to encourage a large number of contributors, substantially reducing costs. Further details of this proposal will be available in the next issue of *Chroma*.

1994 ACMA Concert Program

To encourage greater particapation by ACMA members in concert activity, it was agreed at the AGM that it would be best if ACMA supported concert projects instigated by members, rather than directly producing all the concerts for the year itself. This support would be in the from of grants and publicity. ACMA still plans to present at least one of its own concerts in Spring, but in the mean time any concert initiatives form the membership will be strongly supported and any enquiries are most welcome.

Syaesthetica '94

Following on from the CompMusic '93 Symposium, 1994 will see Synaesthetica '94, to be held at ACAT at ANU in Canberra. See opposite for full details.

SYNAESTHETICA '94

A Symposium on Computer Animation and Computer Music
1-3 July 1994

The Australian Centre for the Arts and Technology (ACAT) Australian National University Canberra, Australia.

Important Dates
6 April 1994 - All initial submissions including Papers, (VHS) Video (PAL), audio (cassette)
23 May 1994 - Notification of Acceptances (follows Review Panels' decisions)
3 June 1994 - Master copies due
- Papers: Camera ready A4 double spaced single sided
- Audio Tapes: DAT (48KHz),
- Video: S-VHS or 3/4" Umatic (High Band SP) PAL
10 June 1994 - Discount registration ends

NOTE: Wherever possible, please address all your questions and responses to Julie Fraser via email to cat691@acat.anu.edu.au

Purpose
The symposium will bring together researchers, developers and practitioners involved in the theory, practice, and analysis of computer-based animation and music composition as well as realtime performance systems. This three day program is designed to encourage the interaction between researchers and the interchange of work and ideas in the areas of computer music and computer animation. The symposium will provide a mix of innovative technical sessions and cultural events to promote the understanding and development of both computer music and computer animation and will provide a forum for exploring the technical and aesthetic similarities and differences in these two fields. Transactions of the Symposium will be published. They will contain the selected papers, descriptions of performances, etc.

Scope
Original papers, live performance works, works for screenings and poster presentations are sought on a wide range of topics. The fields are evolving, hence the scope of the Symposium is broad. We encourage and invite submissions in the form of original papers, state-of-the-art reports, live performance works and works on video or audio tapes in every area of the field, including (in no particular order):
- Behavioural Animation
- Special effects
- Animation languages/systems
- Realtime Animation
- Sound and Speech synthesis and synchronization
- Physical Dynamics
- Sonification
- Software and hardware architectures for sound &

image composition.
- Special hardware for image and sound synthesis or processing
- Composition and performance
- Distributed Systems and Parallel Programming
- Spatial Audio
- Collaboration environments & networking and communication
- Media integration and synchronization
- Programming paradigms and environments
- User interfaces
- Animated visualisation
- Robotics and animation (virtual robotics)
- Motion control
- Modeling and Rendering
- Proceedural animation
- Spatial and temporal antialiasing
- Synthetic actors
- Virtual reality

Where applicable, prototype demonstrations or slide, tape etc presentations are encouraged to supplement the papers.

Language
The working language of the conference will be English.

Papers
Authors are encouraged to submit high-quality papers which should be at most 6000 words or 10 pages. Submissions should consist of 3 copies of the paper and a cover letter indicating the primary author's name, affiliation, address, phone and fax numbers and email address. The title page should include an abstract (less than 200 words) and up to 5 keywords. Please see table at the beginning of this announcement for deadlines.

Cultural Events
- An exhibition: Contours of the Mind: A
    Celebration of Fractals, Feedback and Chaos,
- Public Performances
- Audio-visual display/ listening room
- Installations

Open Forum
Synasethetica '94 delegates will be asked to submit in no more than 10 lines a question or statement outlining an issue pertaining to their field of endeavour that they consider currently important. An open forum where questions and discussions relating to these ideas will be scheduled.

Fees (Australian Dollars)
Registration fee $120
Early registration fee $100
Student & Unemployed $90
Early registration fee $75
For those intending to submit a paper, poster, or recording the notification should include the format, title and a brief outline (100 words) of the proposed submission. For more information, notification of intention to participate etc,

please contact:
SYNAESTHETICA '94
Attention: Julie Fraser
Australian Centre for the Arts and Technology
GPO Box 804
Canberra, ACT 2601,
Australia
email: cat691@anu.edu.au

ORGANISING COMMITTEE
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What Is Music? Festival Opening Concert Review
Jon Drummond
email: jond@macadam.mpce.mq.edu.au

The following review is reproduced from the net.

Last night was the opening concert of Sydney's little advertised Improvised Music Festival "What is Music", at the Harbourside Brasserie. The performance featured Jon Rose (interactive/electric violin) with guests Tony Buck (percussion), Jim Denley (flutes/saxophones), Chris Abrahams (piano) and Michael Sheridan (electric guitar). Jon Rose's solo improvisation for interactive violin was without doubt the highlight of the evening. From what I could tell Jon Rose's bowing movements were used to create the system's responses from a sampler. Many subtle effects were achieved with much variety in the performance. A foot pedal turned on electric guitar type pickups on the violin, to produce what would be equivalent to gungy bowed electric guitar sounds. In the various group improvisations these sounds, combined with Tony Buck's energetic drumming, created a formidable barrage of sound. In fact most of the evening's performances relied on sheer sonic volume for their impact.

The festival runs until Monday March 18th with concerts at the Harbourside Brasserie, Sydney, each Monday night. Performers include Rik Rue, Roger Dean, John Napier to name a few.

MIDI TOOL BOX
Tools for Interactive Music Performance

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Document revised 2nd Nov. 1993

This consists of:

[a] a general summary
[b] an expanded overview which gives some more technical detail and
[c] a profile of work created by people using it so far.

This is a progress report on development work done using the MIDI Tool Box written in response to several requests for information on the MIDI Tool Box, here is a transcript of a product overview.

For enquiries of a commercial nature (eg. availability, price, expressions of interest etc.) please contact Sydney University Business Liaisons Office where a product evaluation has been submitted and a record of invention has been lodged.

Business Liaisons Office
University of Sydney 2006.
Fax: 692 - 3636
Phone: 692 - 4000

Contacts:
Mr. Doug. MacLennan (Director)
Dr. Don Thomas (ph: 692 - 2580, Thursday & Friday only)

GENERAL SUMMARY

The MIDI Tool Box

The MIDI Tool Box, designed by Greg Schiemer in 1989, allows people working with computers in sound to design applications beyond the scope of commercial MIDI systems. It contains the necessary hardware and software tools to process audible information in a variety of media formats, and is useful as a development platform for new musical applications, allowing them to be developed and tested with minimal resources. Applications can boot automatically on power-up making the MTB useful to develop music machines which do not use a disk-operating system or console terminal for I/O.

Design is based on a Motorola 68HC11, a microcontroller chip whose instruction set is similar to the 6800 family. Additional hardware on the MTB combined with many enhanced I/O peripherals and memory features of the microcontroller itself make it highly suitable for translating between a variety of signal formats and MIDI. During program development a host machine is used both to assemble source programs and as a terminal emulator for the MTB whose software monitor ROM allows userwritten applications to be loaded, run and debugged. The monitor ROM also contains some commonly used MIDI utilities that can be called from user programs. The host machine can be either IBM PC, Atari, Amiga or Macintosh systems.

Design philosophy of the MTB facilitates low-level programming for composer/ performer(s) who design and construct purpose-built instruments. Typical applications developed to date include:

MIDI Theremin
Spirals *[Drummond]*;
Caged Piano *[Schiemer]*;

MIDI-controlled equal-powered quad panner
Spirals *[Drummond]*;

Audio-controlled Disklavier Interface
Voltage-control Piano Studies 1-4
& Talk-back Piano *[Schiemer]*;

MIDI-controlled Wine-glasses
Glasses *[Parker]*;

Improvising Machines
Roulette Rhapsody *[Drummond]*;
Orbits *[Cabrera]*;
Polyphonic Variations, Spectral Variations, Spectral Dance & Token Objects *[Schiemer]*;

Intelligent MIDI Merge Unit
[Tassopoulos];

High-speed MIDI Local Area Network Interface
[Schiemer & Morris].

EXPANDED OVERVIEW

The MIDI Tool Box: using an Hc11 Microcontroller as a MIDI Processor

Preamble

Used in musical performance, a desktop computer gives many live electronic music concerts the atmosphere of a trade show, a fact which frequently detracts from the theatre of musical presentation.

Microcontrollers can provide a less obtrusive form of music technology that makes it possible for PCs to be left

at the office instead of being brought to the concert. With its 8-bit architecture and an instruction set that can be easily applied to most MIDI tasks, the HC11 microcontroller hardware costs a fraction of the price of a PC. And even though the Personal Computer can now be left at home, it is still used to program software applications that run on the MIDI Tool Box. Moreover, the applications need not be based on the sort of musical assumptions that are usually built-in to many commercially available music packages for PCs, because MTB applications can be user-designed and user-programmed according to a user's perception of the user interface and his/her role in the new musical situation.

Historical Background

The MTB is an outcome of my interest in integrating musical instrument building with ROM-based Algorithmic Composition. Up till 1989 this had been done using a small computer kit called the DATUM, designed and built by Malcolm Haskard and John Duval at the School of Electronic Engineering at the South Australian Institute of Technology (SAIT) in about 1980. In 1984, I made changes to hardware associated with the DATUM's serial port which enabled it to recognize MIDI. In 1989, using facilities at the SAIT I began work on the design of a hardware prototype of the HC11 MIDI Tool Box, and began work with the help of a simple monitor ROM written by John Duval.

The MTB included two external Serial Ports in addition to the internal Asynchronous Port, in effect providing 48 rather than 16 channels of MIDI.

Programming

The monitor ROM contains the code which drives the MIDI Tool Box while the user is loading or debugging an application. It also includes a number of subroutines and interrupt service routines useful for some MIDI applications.

In the MTB provision has been made for a 32 k ROM address space and 32k of Ram for use in program development. The MTB is programmed from a host machine, eg. an IBM PC. The host machine assembles machine code for the MTB using a public domain Cross Assembler [1]. The Cross Assembler creates files called S Records, which are the MTB's machine code arranged in an ASCII format for serial transmission from the host machine to the MTB. Once cross-assembled, this code can be loaded via the RS-232 Port into the MTB. After S-records records have been sent to the MTB, a program is run and debugged.

Terminal Emulation

Once the code of an applications program is loaded into the MTB, the keyboard of the host machine can be made to act as though it was an operator's keyboard (QWERTY)

for the MTB, sometimes referred to as a dumb terminal. A dumb terminal allows a PC's QWERTY Keyboard to test drive a userwritten program on the MTB. In response, dialogue from the MTB appears on the Host PC's video monitor.

Single keys can be used:

. to run a program
. display code at some memory location
. modify code
. fill a memory block
. copy a memory block
. save it in EEPROM
. insert temporary breakpoints in the user's program
. trace program steps
. display HC11's registers
. clear the HC11's EEPROM
. display Help text, etc.
. scan Memory for specific codes

A number of Dumb Terminal Emulation programs are available as either Shareware (eg. Procomm for the IBM PC) or Public Domain software (eg. Kermit on most machines or STTerm on the Atari).

Stand-alone Mode

When an applications program runs, and the code is moved into EEPROM before the power is turned off, the MTB can be set up to run this program automatically on power-up. In this way, applications can be written which require input from nothing more than some synthesizer controls, keys or switches played by the performer. A hardware jumper set after an application has been placed in EEPROM causes the MTB to jump to the first location in EEPROM, where it expects to find the first instruction in the user program. Such a facility makes it unnecessary to use a video screen to start and operate a program. [2]

HARDWARE FEATURES SUITABLE FOR MIDI EXPERIMENTATION

Hardware provision has been made for any MIDI applications which may be required in future by including the following items of hardware:

. two MIDI Ports and a combined RS-232/MIDI Port;

. two 16-bit ports (input or output) accessible in a single 16-bit instruction which allows additional hardware to be interfaced to the MTB eg. providing dedicated (separate) 16-bit input & output windows to a Digital Signal Processor, so the MTB could be used as a MIDI target device.

. provision is made for two 12 bit or 8 bit DACs to be included.

. a 10-20 MHz serial link allowing the MTB to

communicate with a Transputer parallel processor array.

Features of Hc11 Chip

The MTB has been used in MIDI applications which have so far made use of only some of the many on-chip features of the HC 11. Outlined here are some of these. For a comprehensive and up-to-date coverage of the features of all models of HC11 chip, consult the Motorola literature. [See Footnote #2 for references to Motorola documentation].

The MTB has made use of the MC68HCllA1 and MC68HC811E2. While there are small differences from one model of 68HC 11 to another, each chip offers some of the following:

. A Processor Architecture like a reduced version of an MC6809, or an enhanced version of the MC6801. Unlike the 6801 or 6802 it has-

[a] two 16 bit Index Registers, and these can be pushed and pulled onto and off the Stack;

[b] two Accumulators which can be used as a 16 bit Accumulator;

[c] a Clock speed twice that of the MC6802;

[d] 22 hardware Vectors allow for more efficiency in handling Interrupts, as compared with the handful of Interrupt Vectors available on the MC6802.

. Instructions, many of which require fewer machine cycles than their 6802 predecessors

. On board RAM (eg. an application could be devised using the HC11 in Single-chip Mode using this internal memory as a scratch pad).

. Mask ROM which a user could later have customised at the factory for some specific application. This is useful in products designed with a view to mass production, and also offers a form of software protection.

. EEPROM (Electrically Erasable EPROM) in which programs or data are temporarily stored between usage. As is the case with RAM and ROM, the amount of EEPROM varies from model to model. As much as 2k of this is available in the MC68HC81 IE2. Memory Mapping which allows certain areas of the memory to be write protected or addresses of hardware devices to be mapped by software.

. An Asynchronous Serial Port suitable for use as an RS-232 Port or a MIDI Port. Over Sixty different Baud Rates are available by software selection of the appropriate Scalar and Prescalar bits in the Control Register. These Baud rates include all the standard RS-232 rates and many non-standard ones including the MIDI.

. A Synchronous Serial Port (capable of being used either as part of a SMPTE generator circuit or as a LAN Controller)

. At least four 8-bit A to D's (non-multiplexed ie. each with their own physical address in the memory map). 52-pin versions of the HC 11 have eight such A to D devices. (Could be useful to read a number of footpedals or similar devices eg. Theremins which produce Control Voltages)

. Five programmable 16 bit Timers, each with their own separate interrupt vector, and each Timer register being read off the System Clock. (Could be used to derive Key Velocity from external transducers, or, provide accurate Time stamping of MIDI data with MIDI Time Code)

. Pulse Accumulator Circuit plus Three Input Capture lines allow external events to generate interrupts (simple pitch to MIDI conversion, suitable for input of Theremins which produce Sine Waves)

. Control lines that allow the device to be used in Microcontroller mode or another mode where memory and peripherals external to the device are used, where a microcontroller operates like a normal Microcomputer. This is the mode in which most MTB software is developed.

Many of the pins of the Microcontroller used for the on-chip functions described above, also have a second function. I have described only those for which I can see some immediate use in MIDI Processing, and there may be further uses which suggest themselves to others. *[See Endnote # 3 for references to Motorola documentation]*.

Summary

The MTB will offer many benefits to the musician who is prepared to program it. Programming it has provided me with solutions which are free from the imposition of a corporate musical aesthetic on the music I wish to make. Hopefully, the MTB is designed in a way which will not impose my aesthetic on any one else but instead offer those who have the desire and perseverance to adapt it, a tool box of hardware that will bend to suit their needs.

A PROFILE OF WORK CREATED BY USERS OF THE MIDI TOOL BOX

Described here in brief are the sound works done using the MIDI Tool Box.

1 Spirals (1991) by Jon Drummond

Host: IBM PC

This is one of two Theremin projects done using the MIDI Tool Box. Two tubular sculptures were used as antenna to control a MIDI panning program. A dancer, performing in proximity to two coils suspended from the ceiling via fishing lines, as well as triggering MIDI Note On events by moving within the range of the antennae, shifted sampled sounds around in space. Equal-powered quad panning has been implemented using Sine & Cosine

lookup tables, these values corresponding to the respective volumes at which each channel is playing sound.

2 Caged Piano (1991) by Greg Schiemer

Host: IBM PC

The second project to use a Theremin in conjunction with the MIDI Tool Box, to control a Disklavier at the Royal Easter Agricultural Show in Sydney. The piano responded to the proximity of crowds moving near a plate suspended over the Disklavier's music stand by performing an improvisation controlled by the MIDI Tool Box.

3 Voltage-Control Piano Studies 1 - 4 (1990 -1991) by Greg Schiemer

Host: Atari

These pieces were a series of studies for player piano in which information from a voltage-control synthesizer was translated into MIDI Note On - Note Off messages and used to drive a Disklavier. These were my first experiments using the Programmable Timer Ports of the HC 11 to interface to the external world. Changing the voltage control patches on Serge and Driscoll modular synthesizers allowed the Disklavier to be played in non-idiomatic ways. Study 4 contains certain feed-back patches which allow the piano to play itself.

4 Talk-Back Piano (1991) by Greg Schiemer
Host: IBM PC

This was the title of an interactive radio broadcast where members of the radio audience, by phoning the radio station, used vocal and other sound to influence a live-to-air improvisation taking place on a computerised player-piano (Yamaha Disklavier). A real-time improvising program running on the MIDI Tool Box used live audio signals as a stimulus to generate musical cues sent live to the Disklavier. A compere mediates with callers throughout the broadcast with up to three callers on air simultaneously. There were three toll-free numbers to ring: one number if the caller wished to affect rhythm, another to affect the harmonic field and another to affect tempo at which the player piano is playing. All sounds made by participants were broadcast live-to-air together with the player-piano. The event spanned a wide geographical domain covering the four states in the eastern time zone of Australia.

5 Glasses (1992) by Stephen Parker

Host: IBM PC

Using the MIDI Tool Box as the translator, a MIDI-keyboard controls the frequency of several sine wave generators which activate a collection of wine glasses to which piezo-electric transducers are attached. Keys are translated by the MIDI Tool Box into a series of macros

which cause the Microtonal shifts in the sine-wave frequencies, which allow the resonant frequencies of the wine glasses to be selected. Several harmonics are produced with each wine glass. The power amplifier directly drives the piezo-electric transducers. The wine glasses project the sound; no loudspeakers are needed.

6 Roulette Rhapsody (1991-3) by JD.

Host: IBM PC

In this work a computer program written for the MIDI Tool Box responds to an improvised saxophone performance. The program "listens" to the performer's notes, rhythmic patterns and dynamics, using this information to produce its own part. Certain notes have also been set up as triggers. By playing these notes the performer is able to set ostinato patterns, turn the electronic part on and off, change its voices, and so on.

7 Orbits (1991) by Densil Cabrera

Host: Mac-SE

This sound installation consisted of six large spheres each containing a loudspeaker which chatter to one another across the installation space in a simultaneous monologue. The spheres are suspended from the ceiling and hang at about head-height above the floor so that members of the audience can walk freely between them. Each sphere constantly produces automated streams of MIDI Note On Note Off information, which are affected in various ways by other independent streams of Pitch Wheel and After Touch information. The monologues influence another one in subtle ways throughout the course of the installation.

8 Polyphonic Variations (1988, 1991) by GS.

Host: IBM PC

For MIDI percussionist, sampling machine & interactive program based on Polynomial sequence generators. Original version in 1988 is for a 6802 based machine, the code has been ported to the HC11 (1991). [For further detail see article in Footnote [4]]

9 Spectral Variations (1991) by GS.

Host: IBM PC

Percussion & Trombone and live MIDI electronics, performed Sydney Conservatorium by Daryl Pratt (percussion) Simon de Haan (Trombone)

10 Spectral Dance (1991-92) by GS.

Host: IBM PC

This performance uses a mobile sound source as input to

modify an FM Algorithm to change the timbral characteristics of an FM oscillator. The MTB produces Systems Exclusive information which selects and changes parameters in a Yamaha FB01 to produce spectral variation. The mobile sound source, called a UFO, is a battery operated twin-T oscillator, amplifier and loudspeaker mounted in a tupperware container and swung around on the end of a rope. Sound is fed to the MTB via a pressure zone microphone. Using an algorithm based on cyclic codes (used for error creation rather than correction), the MTB program improvises unpredictable and sometimes beautiful timbres in response to these simple performance gestures. It was performed at an International Computer Music Conference in Delphi in 1992.

11 Token Objects (1993) by GS.

Host: IBM PC

In Token Objects, improvising machines react to noise produced by feral (ie. human) intervention. Within each improvising machine there is a program module capable of simultaneous generation of many streams of musical information, each stream being known as a virtual performer. Using an algorithm based on cyclic codes, virtual performers instantaneously generate the musical detail, making decisions about notes played, the rhythms used, and the instrumental sound used to articulate each note. Musical cues, or tokens, are also sent via MIDI from one virtual performer to the next. During performance however, these tokens are passed at the whim of a feral performer who now takes on a role of facilitator, influencing rather than controlling the rest of the ensemble.

Token Objects is a work in progress for which a network of processors is still being constructed. It is currently realised using a single processor on which a handful of fifteen virtual performers play. Sound samples are produced on a Yamaha TG100. I interact with the sounds produced using remnants of earlier purpose-built instruments called the Tupperware Gamelan. Token Objects was first performed in Japan in September, at the 1993 International Computer Music Conference held in Tokyo.

All the above MIDI applications are music composition programs or performance systems written by a composer. The following two are research projects;

12 Towards Intelligent MIDI Merging (1992) by John Tassopoulos

Host: IBM PC

Submitted as a thesis for BSc(Hons), Macquarie University deals with eliminating musically unacceptable time delays which may result from merging two or more streams of MIDI Data and is entitled "Towards Intelligent

MIDI Merging" (John Tassopoulos, Supervisor Prof. Jan Hext, for Computing Discipline, School of Maths, Physics, Computing & Electronics, Macquarie University, December 1992).

13 High-speed MIDI Protocol (1991-1993) by Greg Schiemer, Danny Morris

Hosts: IBM PC & Amiga.

This project is in two-stages:

[1] to model a new MIDI Protocol capable of handling several thousand Channels of MIDI in real-time; Danny Morris, who was responsible for porting the Cross-assembler to the Macintosh, Amiga & Atari also played a vital role, as research assistant, in preliminary work with network design, while the actual protocol was written by Greg Schiemer. Development platforms used to program the MIDI Tool Box included the IBM PC & Amiga.

[2] design of a state machine implementation of the same network protocol based around HC 11 & Gate Array logic design (currently being completed as part of my Masters of Engineering (Res), Uni. of Sydney; due for completion mid-1994).

CONCLUSION

This information is a draft, as the board is not yet in its final form as a teaching and development tool. The hardware has now undergone its third revision and in the second half of 1994 will be revised once more to include the new A4 audio signal processing chip developed at the CSIRO Division of Radiophysics.

The Monitor ROM has also undergone over thirty revisions the current being version 4.5. This contains a growing library of utilities (at present between eighty and ninety subroutines) which are all accessible to the user. The final version of the monitor is expected by the middle of next year to coincide with completion of the high-speed network to be presented as my masters research project *[see above in 13]*.

If the information is insufficient in the area where you required better, more detailed, or simply further information, please contact me. Criticism, far from being taken personally, will be welcome along with any other form of comment or request you care to make.

Endnotes
[1] Costing about AUS$5, the Cross Assembler is a piece of public domain software which comes together with its source code listings in C, meaning that any host machine, Atari, Mac, Amiga, Commodore-64, Tandy Color Computer, Apple 2E, etc that has a C compiler has the potential to program the MTs. The availability of these source files has made it possible for this software to be

ported to the Atari 1024, the Amiga and the Macintosh.

[2] It is worth pointing out my musical preference for using the MTB as a stand-alone device during a musical performance without using either screen or QWERTY Keyboard. However, there is nothing to stop someone wanting to use the MTB connected to the host machine in performance, if this is so desired.

[3] a) Microprocessor, Microcontroller and Peripheral Data Vol 21988, Motorola
b) M68HCl 1 Reference Manual ISBN 0-13-566720-8 M68HCl 1 Reference Manual, Prentice Hall 1989 ISBN 0-13-566712-7 {PH}

[4] Greg Scheimer **Monophonic variations: Spontaneous versus Premeditated Composition** New Music Articles, Vol. 6 with audio cassette of performances by Graeme Leak **Monophonic variations** (NMA6) also **Polyphonic variations** (NMA7); NMA Publications PO Box 185 Brunswick VIC 3085

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1994 ACMA Committee

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Proposal for an ACMA Independent Electroacoustic Music Studio

A proposal is being developed for an ACMA Independent Electroacoustic Music studio. The following text is an abridged version of a discussion paper that was circulated at the general meeting in December. A full copy of the original discussion paper may be obtained from Lawrence Harvey (see contact details below). This proposal is in a very early stage and invites realistic input from all interested ACMA members.

Preliminaries
To provide the electroacoustic music community with a studio facility and support to practice and produce electroacoustic music for live performance, broadcast and in collaboration with other musicians, visual and performing artists. As a secondary role, to provide classes in electroacoustic music as a preliminary to working in the Independent Studio and for the facility to achieve a percentage level of self funding.

An Independent Studio would benefit those electroacoustic musicians working outside institutions, and provide a facility for artists in other fields to interact and work with sound artists. Students of music technology courses or others with high levels of training and skills will have a facility to continue practising and developing their art.

In the absence of direct composer commissions, the studio would be a way for government funding bodies to provide funds for electroacoustic music.

Potential users
• primarily for use by ACMA members
• electroacoustic music composers, sound artists and performers who have studied or gained equivalent experience in music technology fields
• members of the Studio who have progressed through studio courses and proven their competency and responsibility to the facility
• sound designers for theatre and other visual based artists working in collaboration with Studio members to provide high quality sound for theatre
• musicians not able to undertake full or part-time study in an academic institution

Other groups & individuals to benefit via collaboration programmes
• sound artists
• composers
• theatre companies
• visual artists wishing to integrate sonic materials into their work
• contemporary music performers needing to work with electroacoustic sound materials (tape, live electronics, live processing)
• schools via workshop/concert programmes conducted at the individual schools.

Profile in comparison to existing studios

Besides private studios, two main work facilities currently exist for electroacoustic musicians;

• University housed studios; are designed and operated to accommodate full-time teaching loads, to service the host institution and provide facilities for the enrolled students. Such studios often have no mechanism to support outside users.

• Commercial studios ; costs are prohibitive to most electroacoustic musicians, physical structure and work practices are suited to commercial music, not designed for experimentation and collaboration.

It is envisioned that an Independent Studio would provide a facility between these two types.

Physical structure

• electroacoustic music studio (s) both low and high tech,
• editing suite(s) for compilation work to produce tapes in digital or analogue,
• sound proof booth for recording spoken word, interviews, and sampling (due to the preponderance of recording studios and the cost of their establishment to a reasonable quality, it is envisioned that one would not be included in the initial facility),
• performance space.
• Other resources available at startup or planned as future developments;

   - Provision of e-mail/ftp link for non institutional composers.

   - Small technical/artistic reference library. It has been the experience of any composer that libraries are problematic in gaining necessary materials for composers. Accessible by students in courses and studio members.

   - Workshop for maintenance, provision of custom hardware (swinging speakers, analogue processing devices, other specialist hardware.)
• portable playback studio/audio facilities for concerts "off-site".

Working scenarios

While the focus of activities would develop in time, some possible working scenarios are offered to illustrate the types of activities for which the facility might be utilised and to invite further discussion.

   1) Composers wishing to realise compositions of electroacoustic music , would be able to build studio costs into commission applications. Under prior agreements with the composer, studio time could be reserved and appropriate resources set aside. In time, it is hoped that the studio would become a place where compositions can be realised to an appropriate standard.

   2) Collaborative projects, of performance, composition, sound design and software development could undertaken in an environment in which ideas and material may be exchanged.

   3) Contemporary music performers are often critical of music technology after unfavourable experiences due to technical problems. A focus of the studio might be to provide efficient and high quality support of tape components for mixed media works;

achievable by the studio coordinating performers and sound technologists.

   4) Quality production of sound materials for dance and theatre productions and sound installations. The studio could provide a location and resource for sound designers and composers to work with directors and choreographers for the production of quality sound tapes at a reasonable cost. Skills, musical interpretive faculties, acoustic sensitivities would be placed in an environment where projects can be reasonably accomplished.

   5) Composers in residence , would have a working studio with appropriate access hours per day/week without academic and administrative duties.

   6) Competitions & conferences might be developed and hosted by the studio.

   7) Concerts and tape playback sessions; on a regular basis.

   8) School workshop /concerts; conducted in schools by studio members.

There will be an ACMA special general meeting to discuss this proposal (see below). Other issues have already been raised and include location, projected operational costs, establishment timetable, staffing, studio configuration and equipment (hardware, software, operational equipment), operational considerations (numbers of users, performance and educational roles, types of projects undertaken, role in cultural sphere, security, insurance) and forecast for studio development.

Special General Meeting
to discuss
ACMA Independent Electronic Studio Proposal

All members are invited to present their views and suggestions on the establishment of an independent computer music studio to be set-up and run by the Australian Computer Music Associaton, Incorporated.

Tuesday 15th March
8.00 pm

University of Melbourne
Conservatorium of Music
Royal Parade, Parkville

If you are unable to attend but would still like to contribute suggestions, please contact Lawrence Harvey

c/- ACMA
PO BOX 186
La Trobe University
Post Office Agency VIC 3083
e-mail: harvey@music.unimelb.edu.au

1993 Tokyo ICMC Review No. 1

Gordon Monro
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The 1993 International Computer Music Conference (ICMC) was held at Waseda University in Tokyo, on September 10th to 15th 1993. This is a report on my experience of the conference, with some comments on issues involving computer music that presented themselves during the week.

The conference had over 300 participants: about 170 from Japan, 45 from the U.S., 11 from France, 9 from Australia, and smaller numbers from Canada and many European countries. Asian countries represented included mainland China, Taiwan, Hong Kong and Korea. Apparently an international conference held in Japan normally has only about 25% foreign participation, so the organisers were pleased with the attendance.

The conference proceedings form a volume of nearly 500 pages; there were 112 papers and demonstrations (selected from 246 submissions) and eight concerts with 52 pieces (selected from over 300 submissions). Among the successful submissions were four papers and three pieces from Australia. This represents a considerable advance on Australian participation in the 1992 ICMC in San Jose, California, when four Australians attended and contributed one paper and no pieces.

The main venue for the conference was the Waseda University Centre for Scholarly Information (part of the University library), which contains several conference rooms and a nice medium-sized auditorium. Some concerts were held in another auditorium at the Shobi Institute of Education. Waseda University has about 40,000 students on four campuses, but no music department. It does however have a student orchestra and other musical groups, directed by professional musicians, and some faculty members active in research on computers and music. An important role in the conference was played by students and staff from Kunitachi College of Music. The conference was very well organised, and a credit to our hosts. The only problem I was aware of was that the schedule was too tight (or at any rate too tight for Westerners), and so kept slipping. This sometimes meant no time for lunch. There was a fairly severe language problem, as the Japanese education system emphasises written rather than spoken English, and of course most of the visitors knew no Japanese. However contact was made; the presence of some Japanese living in the West, and other people familiar with both cultures, was of great assistance. The conference language was generally English, though for some special sessions simultaneous translation was provided, and there was a book of abstracts in Japanese.

It was noticeable that the Japanese participants were much more formally dressed than the Westerners, in the warm and sticky Tokyo weather. It was also noticeable that many of the Japanese were from companies such as Yamaha, Roland and Casio, and were forbidden to discuss any aspect of their work for reasons of commercial secrecy. Thus there were relatively few papers by Japanese, though there was quite a lot of Japanese music.

The papers and demonstrations were in parallel streams, with up to four simultaneous events. I attended mainly papers on sound analysis and synthesis, including some remarkable work on woodwind, string, gong and drum synthesis by groups from Finland, the U.S. and France. The aim of these syntheses is not just to re-create the sound of the natural instruments, but to learn enough to be able to modify the sounds, and create new sounds of equal richness.

There were also papers on interactive performance, computer languages for electronic music, aspects of composition, music cognition, relating sound and visual images, and other topics. I heard an interesting paper delivered by Zack Settel (an American working at IRCAM in Paris) on computer music from the point of view of the performer, who has to cope with homemade interfaces and imperfectly debugged software. Settel concluded: Fear and distraction are an important part of electronic music today. Perhaps in the future the computer will be as easy to configure and use as a piano is now. If this happens, composers and performers will seek new sources of uncertainty.

I only managed to attend four demonstrations. One was of the remarkable "Automatic Bagpipe Playing Device" with associated "Automatic Drum Playing Device", both developed at Waseda University (apparently as a spin-off from their automatic piano player). The bagpipe (Scottish Highland type) had its bag removed and replaced with an air compressor, with mechanical fingers to open and close the chanter holes, the whole controlled by a personal computer. The system has a repertoire of about 100 tunes. A large crowd was attracted by the sight and sound of two of these instruments, together with side drum similarly played by mechanical arms, performing *Scotland the Brave*.

The keynote address of the conference was given by computer music pioneer John Chowning, who developed the FM synthesis technique used on the Yamaha DX7 synthesizer and many subsequent instruments. Chowning made some personal historical remarks, and also addressed the problem of over-loud computer music (which is not as severe as with rock music, but is still a cause for concern). He closed by gently suggesting that it would be nice if our Japanese hosts could find a way of publishing more of their research.

An invited talk was given by Joji Yuasa, a Japanese composer now at the University of California at San

Diego. In the course of his talk he remarked that whereas tape music had liberated composers from staff notation, so far the use of the computer had not led to a further emancipation. In a pre-echo of the discussion on algorithmic composition reported on below, he criticised the use of other people's computer programs as too easy and not likely to lead to good results, and called for more originality and creativity in computer music.

There was a substantial panel discussion on algorithmic composition, that is on the use of computational methods in the process of creating a work. Of course many composers carry out elaborate pencil-and-paper computations, but the use of computers speeds up the process so much that a difference of degree becomes one of kind. The panel consensus appeared to be that it is not reasonable to expect a computer program to make composition easier. The computer can implement elaborate formal structures, and can generate immense numbers of new combinations that may or may not be interesting. It also makes trial-and-error much easier, and enables the composer to step back a little, and compose the rules that govern the computer's output. However all this simply brings one up sharply against the large-scale aesthetic issues involved in the construction of a piece. Use of the computer as a compositional assistant can be liberating, but diminishes neither the problems of composition nor the responsibility of the composer.

Otto Laske (U.S.) suggested that the tools needed for the analysis of possible musics (that is algorithmic composition systems) will be different from those used for the analysis of existing musics (traditionally composed scores). Several contributors indicated that work on algorithmic composition may help to understand what it is that human composers do. An extension of algorithmic composition is the construction of interactive computer music systems, where the role of the composer is divided between the software designer (meta-composer) and the performer-composer who interacts with the system. Laske remarked that while this "distributed composition" is not common in Western art music (in which most of computer music has its roots), it has analogues in other musical cultures. Unfortunately a persistent problem with the sound system made parts of the discussion difficult to follow.

Concerts

I will not attempt to review the concerts in any detail here, but will make some general comments. To begin with, computer music is, of course, music with a substantial computer contribution to composition or performance (or realization, in the case of tape music). This excludes mere score preparation, where the computer is only used like a word processor, and it also excludes live playing of synthesizers without further computer involvement. From the performance point of view, we can make the following rough classification.

(1) Tape alone.

(2) Tape and live performer.
(3) Live performer, with real-time sound processing.
(4) Interactive computer system that responds to, or is controlled by, a live performer.
(5) Live performer alone (where algorithmic composition was used during the composition of the piece).
(6) Mixtures (eg. tape plus live performer plus real-time sound processing).

Note that there is no definite boundary between classes (3) and (4). Also note that "live performer" can include an ensemble; in Tokyo the largest ensemble had six performers; in the 1994 ICMC (to be held in Aarhus, Denmark) it is planned to involve a whole symphony orchestra. All six classes above were represented in Tokyo: the approximate breakdown was 20 pieces in class (1), 13 pieces in class (2), 10 pieces in class (3), six pieces in class (4), one piece in class (5) and two pieces in class (6). Pure tape pieces were thus in a minority, despite the fact that they are much easier to present than the others. I have included in class (6) the only audio-visual piece in the concerts, namely *Chaos Alpha III* by Kazuo Uehara, for MIDI piano, "sound object", video images and interactive computer system. (The "sound object" was some sort of computer-controlled tubular bells.) Unfortunately I had to miss the performance of both this piece and Jeff Pressing's piece mentioned below.

The live performers (about 40 in total) were all very accomplished, and were mostly young Japanese, many of them recent graduates of the Kunitachi College of Music. Among the more established performers were Teiko Kikuchi (Japan, koto), Mari Kimura (U.S.A./Japan, violin and electric violin), Philip Mead (U.K., piano) and Ryo Noda (Japan, saxophone).

Various methods were used to coordinate the performances. Where a tape was employed, and listening alone gave insufficient cues to the performer, a click track was used, or in one case stop-watches. (In this case the composer told me that he recommended a metronome with flashing light.) For pieces in classes (3) and (4) the computer system may need to know[1] where the performer is in the piece, or which notes are being played. At the ICMC, in some pieces the performer tapped a foot pedal, or played a synthesizer or other instrument capable of communicating directly with a computer. A grand piano with MIDI interface was used in several concerts. Other pieces used pitch followers: these are devices (hardware or software) that interpret the signal from a microphone as a pitch (for example Middle C). They are often of doubtful reliability. Some pieces also used score follower programs: these contain a representation of the score and attempt to track the performer. The better ones can compensate for playing out of time and wrong or missed notes.

As far as I am aware, the only pieces that required improvisation by the performer were *His Master's Voice*

by Jeff Pressing (Melbourne), and *Token Objects* by Greg Schiemer (Sydney). However in several pieces the computer system was improvising in some fashion: as the program notes for *Maritime* by the U.S. composer Robert Rowe put it,

> "During the performance, [the computer program] is listening to the violinist, and makes up responses according to how she is playing in some sections the program asserts its own personality."

With all this technical complexity, it is remarkable that (as far as I could tell) there were no major mishaps in any of the performances. I gather that in rehearsal it was very much otherwise, and that a lot of credit for the final results is due to the hard work of the backstage crew. Of course many of the composers were trying to marry equipment they brought with them with the locally available computers and sound systems, so difficulties were to be expected. So much for performance practice.

Aesthetically, many of the pieces employed great complexity, at least on the surface, and a sometimes overwhelming variety of sounds. And some were too loud. On the whole I enjoyed the pieces in class (3) above more, simply because they tended to present a more unified sound world. Most of the pieces did attempt to construct their own worlds; there was very little post-modern processing of earlier music. One piece that did do this was the very long (26 minutes) and loud *The Other*, by Richard Karpen (U.S.A.), which consisted of a few Beethoven fragments heavily manipulated. Welcome relief from the overwhelming seriousness of most pieces was provided by *Smirk*, by the British composers Simon Kunath and James Smith, and also by the piece by Greg Schiemer mentioned above. Schiemer's piece falls squarely into class (4), with 16 "virtual performers" in a computer system.

After a single hearing, my personal favourite was *Epicycle* for piano and tape, by British composer Michael Clark. It seemed to have a balance and delicacy missing in many of the others. I should add that opinions on the merits of the various pieces varied wildly, which suggests that the music jury did a good job.

On the whole the Japanese pieces were close to the American/European mainstream, though there were some unusual approaches, such as that taken by the evocative piece *Urskogen* (Swedish for "primevalforest") by Akemi Ishijima. Ishijima's piece represented her response to a stay in Sweden, but consisted entirely of processed koto samples. David Worrall (Canberra) remarked to me that Australian computer music is showing some signs of developing an aesthetic that is neither European nor Asian, but Australian.

Distinctively Japanese

There were two distinctively Japanese events. One was the "Welcome Concert" (which I didn't include among the eight concerts of computer music). This concert was in the Noh tradition, and employed electronic sounds, traditional side-blown flutes, modern and traditional percussion, and two Noh performers, one of whom "has been designated an intangible important cultural asset for the Noh play". The piece was visually and aurally striking, but ultimately frustrating for those of us not able to interpret the symbolism of the Noh tradition. Nevertheless I was grateful to have experienced it.

The other distinctively Japanese event was a lecture and concert on the shakuhachi tradition, culminating with what was for me a transcendentally beautiful performance by a distinguished master of the instrument. Whether it was intended to or not, the performance served to remind us all of our ultimate aims, and helped to place in perspective all the difficulties and technicalities of computer music.

Future conferences

The International Computer Music Conferences are held annually. In the last several years they have alternated between Europe and North America; this year's was the first in Asia. It is proposed in the future to share them equally among Europe, North America and the Asia/Pacific region. It became clear that there is definitely an opportunity to bring the conference to Australia in a few years' time. It became equally clear that this would be a big undertaking, requiring major institutional support, very substantial commercial and government sponsorship, and more than two years of advance preparation.

The Tokyo experience

To close, I would like (like every other Westerner who visits Tokyo) to record a few impressions of a culture, which despite its unique homogeneity, leaves the impression of being kaleidoscopic and bizarrely dislocated.

Tokyo is a city:
  where nature is almost totally excluded;
  where the taxi flagfall is $9 and a small amount of laundry cost a colleague $60;
  where nevertheless a good Japanese lunch can be had for under $10;
  where trying to buy a cup of tea is a major adventure;
  where the tea problem was solved by the discovery in our hotel of a machine that dispensed free green tea;
  where much of the population lives in appalling blocks of identical "rabbit-hutches";
  where a hamburger bar is called "Love", a soft drink "Pocari Sweat" and the railway kiosk "Let's Kiosk";
  where 100 grams of salad comes in a plastic container, wrapped in a plastic bag, further wrapped in a paper bag;
  where the attendants in the futuristic Toyota

showroom in Ikebukuro are dressed in silver and gold and collectively called "Toyota Pretty";

where some of the displays in said futuristic showroom didn't work;

where the day I left was "Respect for Aged Persons" day;

where the quickest lunch is from a vending machine that automatically heats a frozen meal, and plays *It's a Small World* while doing so.

The experience that summed it all up for me was that of sitting after a concert in a bar in Shinjuku with a mixed bunch of Japanese and non-Japanese conferees, trying to eat cinnamon noodles with chopsticks, while Whitney Houston blared out from large TV sets on three sides, thanks to a video juke-box.

Endnotes

[1] Twenty years ago, the word "know" would have been placed in inverted commas.

1993 Tokyo ICMC Review No. 2

Stephen Adam
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The following report from Stephen was written as one among many short reflections on the conference for Array, *the newsletter of the International Computer Music Association, and is reproduced below.*

Good: Getting to know Tokyo by commuting between different places as a conferee. Tokyo. The ICMC crew. Many aspects of Japanese people and culture. Meeting others in the field and making new friends ..most rewarding. The technical standard of concerts.

Not Good: The unfortuante aspect of having to commute between different parts of Tokyo..particularly if one wasn't lodged near the main conference site. Why does the ICMA insist on putting so much on at the same time?? I imagine there is a good reason, but it meant that I didn't manage to attend many of the paper deliveries that I wanted to.

The occasional inclination of the crew to resolve crises by committee..admittedly this no doubt had something to do with the language barrier.

Good: The generally high musical standard..particularly in performance..Having a bit of a leaning towards the non-instrumental approach to (computer) music making however, I will mention some of the better pieces in this

regard..mostly tape here: Paul Koonce's *Hothouse* very elegant if a little meandering...Fernando Lopez Lezcano's *Three Dreams*..one of the few(?) quad pieces (shame about the quad diffusion in Vario Hall). Makoto Iwasaki's <<*Aria*>> processed the voice of Fusae Uchida live - nicely controlled and developed. Nicolay Appoloyon's *Extended Noise* gets my Dark Horse award - wonderful textural washes - even though he played it far too loud. Paul Lansky 's *Word Colour* - I heard it from the foyer and it still worked .. many others deserve mention but memory fades and fingers tire..: -)

Not Good: The amount of music that had a certain "sameness" to it: Too many tape pieces that seemed to dwell in the same sound worlds/processes. Too many instruments and not enough new or inventive interfaces in performances ..in particular, too many piano and violin pieces..ughh..("the week that Mari Kimmura and Philip Mead cleaned up"..)These pieces often brought out the worst and most indulgent musical aspects..ie..I would give awards for the most hopelessly romantic music to Ira Mowitz and most postmodern(?) to Ezequiel Vinnao's piece(sp?) - It started out in a promising way though..The best multimedia performance (at least in terms of the CM concerts) was also the worst..hmm

Macintosh Csound in the background.

Ross Bencina
Department of Music
La Trobe University
Internet: muscrdb@lux.latrobe.edu.au

Csound, love it or loathe it, has become the de-facto standard in portable software synthesis. Available on most personal and mainframe computer platforms, it has gained a large following of both amateur and professional users, many using personal computers.

Csound is developed by Barry Vercoe at MIT on UNIX machines. UNIX is a multi tasking operating system, capable of executing many programs concurrently using a scheduling mechanism transparent to the programs themselves. The Macintosh operating system, however, relies largely on each application cooperating with it to provide a semblance of multitasking. This enables the Finder to switch between a number of open applications, and applications other than the foreground application to receive processor time for "background processing". Classically background processing is used for printing, downloading data over a serial line, or other time consuming, but not necessarily computationally expensive tasks.

Macintosh Csound, a port written by Bill Gardener at MIT provides a Mac-style front end to the command line interface of UNIX Csound. In these days of System 7, however, Mac Csound does not behave quite as a

Macintosh application should. Running a closed processing loop, Mac Csound imposes a complete lock up of the computer whilst it is synthesizing data. Often it would be nice to do some word processing or some net surfing while waiting for Csound to finish. Csound may take a bit longer, and overall system performance would be reduced, however these disadvantages would often be outweighed by the ability to get on with one's work, instead of twiddling thumbs and / or drinking too much coffee for five minutes upwards for every Csound score you run.

Following some activity on the net late last year I have produced a modified version of Macintosh Csound, "CsoundRB", which can be switched into the background once it has compiled the orchestra and has begun processing, allowing other applications to be used concurrently. A spin off of the modification is that it runs 10 to 20 percent faster than unmodified versions when the computer is otherwise idle. Orchestras with low k-rate to sample rate ratios demonstrate even greater speed improvements when compiled with the modified version as compared to using an unmodified version.

I hope to make CsoundRB available for anonymous ftp on ftp.latrobe.edu.au in the near future, though I am awaiting formal confimation of this from MIT. If you don't have ftp access, want the source code, or can't wait to get a copy, feel free to email, write, or phone me (in that order). I plan future improvements including a more flexible, user configurable background mode, and Apple Event support to facilitate AppleScripted automation.

The portable Csound source code, the Csound manual in a number of formats, unmodified compiled Macintosh Csound, and Macintosh Csound source code are available via anonymous ftp at cecelia.media.mit.edu in the /pub/Csound directory. For MS DOS users a version called PCSound can be found on a number of the larger PC archives. A useful forum for Csound users on the net is provided by the Csound mailing list:
You may join by sending a message to:

csound-request@maths.ex.ac.uk

the first line of which says 'subscribe name@host' and then post by sending mail to:

csound@maths.ex.ac.uk

Contact: e-mail as above or write to:
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1st New Generation C ompetition

Preliminary information

The Hungarian Computer Music Foundation and the Interart Festivalcenter organise the 1st "New Genoratlon" Musc & Technology Competition in the framework of the International Bartók Festival, Szombathely.

The organisers' main intentions are:
-to foster the outgrowth of the repertoire in the area of music using technology,
-to bring together young talented composers interested in such a creative field,
-to invite them for a common work in the following years,
-to give them the opportunity of meeting other musicians and discussing their ideas and motivations in the context of the International Bartók Seminar,
-to present the selected pieces to a wide and international audience.

The competition will confer the following awards:
-New Generation Prize, consisting in a sum of $1000,
-up to 5 mentions.

All the selected pieces will be performed during the 1995 Budapest Spring Festival. The composers will be invited to attend both the rehearsals and the concert.

The Hungarian Radio will assure the broadcast of the selected pieces.

Depending on the programming circumstances, a choice of pieces could also be performed during the 1995 Szombathely Bartók Festival. The composers of the selected pieces wlll be asked to participate in the Festival and give a lecture on their work.

The competition is open to composers born after June 1st, 1964.

The subject of the competition is a piece for tape and/or live electronics, alone or in combination with instruments.

The entries will be judged by an international jury under the presidency of Jonathan Harvey.

Al the works shall arrive at the address below before June 15, 1994.

For additional information and appiication forms write to: New Generation Competition
Interart Festlvalcenter
1366 Budapest, POB 80.
Tel: (36-1)117 9838
fax: (36-1) 117 9910

Gender and Computer Music

Following on from Judy Pile's article in the previous issue of Chroma, ACMA is interested in stimulating further discussion among its members about the gender issues in computer music. The following is a statement from an American professor in computer music, which we hope will prompt responses from our readers. All comments are welcome, as it is planned to publish a variety of responses in the next issue of Chroma.

Mara Helemuth

Assistant Professor of Music
Texas A&M Unversity

I would like to say that gender and computer music are unrelated. That women and men create computer music, and experience it as their art. However when I attend the ICMC and look around, I find I am often one of only a few women in the room. There are few women represented on the concerts, and fewer doing papers. While I know many women doing computer music, I know of only one woman computer music professor. Since there is no reason to believe women are less intelligent or creative, I wonder how they have been so effectively filtered out of this field.

Some of the reason is no doubt a self-perpetuating system. If there is likely to be discrimination, many minorities will play it safe and choose a career that will bring a secure job rather than a new artistic field which may not. Also, if there are no women doing something, those who do attempt to do it feel less comfortable trying. A male culture is built up in which women find less resonance. Women are no doubt encouraged to think more intuitively and less technically. Since computers and composition are both fields with fewer women than the average, it perhaps is not surprising that in the intersection of these fields there are even fewer women.

However there are women who do try to overcome this and do computer music. Supposing there must also be some mechanism keeping women out other than their own choices seems entirely reasonable considering the history of social and political inequality women have experienced. How does this work? I first want to say that I have not felt particularly oppressed doing computer music as a woman. Most people I have worked with would prefer equality. The competitive aspect of our culture, however, does color perception and action. A woman can be seen as an easy target. She can be accused of achieving things because she was a woman: she must have slept with someone to get somewhere; she must have been given special treatment; it must have been her father/husband/boyfriend's influence/money/teaching. She can be criticized as "not being a true woman" - unattractive, the ultimate insult for one whose traditional role has been as a sexual slave and childbearer, or unmotherly, as when hiring illegal nannies or not baking cookies. Not that these myths are ever really believed by people, but they can create enough energy temporarily to thwart many efforts toward change.

This competition and political intrigue merely results in limiting the culture. I won't exclude women from blame either, as some of the more vicious attacks may even come from them. Remember Liz Holtzman's attacks on Geraldine Ferraro. More often, devaluation of a woman's work is done subtley, by a casual comment implying the insignificance or non-legitimacy, a joke, or a concert ignored.

But I do not want to take on the tone of a victim wailing against the evil oppressor. Women clearly have much to give to computer music, even if the reverse is not yet true. I could go on trying to analyze the mechanics of bias, but I think it is more important for each person to do that for him/herself. We all grow up in a biased culture, and all absorb it in different ways. It is up to us to honestly assess how to change it personally within our lives. The recent backlash against the "politically correct" is understandable. Labelling the personal efforts of people to make change as "politically correct" creates a distance from the idea, and is a useful weapon for those who would prefer things as they are. Making change is hard. We have to think about it. Sometimes we can't do something that we thought was "fun" before. Sometimes a woman may even take advantage of a situation to her own undeserved benefit. But how often does this happen in comparison to the continual bias in the opposite direction? Look around. Who is making the decisions about who is hired, promoted, commissioned, and honored? It is certainly easier to have rapport with those who we have something in common with, so if the decision-makers are mostly men it is not surprising that they choose men to work with. But we do not have insight and creativity to waste in this world. While I do not want to stereotype women's contributions as always "more intuitive", if this aspect of women's music is sometimes more developed, perhaps it would make computer music more human and accessible to people. Computer music is not so complete, complex, sophisticated and joyful today that we do not need women's voices.

Mara Helemuth *is currently Assistant Professor of Music at Texas A&M Unversity. Mara received here DMA from Colombia University where she studied music with Mario Davidowsky and Brad Garton. Since the late 1980's, Mara has developed several computer music systems, the latest being Stocgran, a stochastic granular synthesis application for the NeXT computers. It is freely available from various ftp sites. She has worked as a consultant to the computer industry in New York and has presented papers and musical compositions at various conferences throughout the world.*

Watt Concert Review

Martin Wesley-Smith
Conservatorium of Music
University of Sydney

"watt" was formed in 1976 (a long time before computer music was, for most composers, a practical reality). Since then it has presented many concerts and events in Sydney and elsewhere. There is no standard membership of "watt". Directed by composer Ian Fredericks and myself, the group tends to form itself whenever a gig is coming up. It is based in the Electronic Music Studio of the Sydney Conservatorium of Music. It used to be based also in SUESS (Sydney University Experimental Sound Studio - the studio of the Music Dept of Sydney Uni), but since Ian Fredericks retired from his job there earlier this year that studio has become virtually defunct.

Through complicated internal university funding arrangements, we used to get the Downstairs Theatre of the Seymour Centre for a week once a year for free, but that no longer happens. Last year we did a "mini-watt" concert (no visuals) in the Old Darlington School at Sydney University, which we got for free. This year, with Australia Council funding (for the first time ever), we used the Domain Theatre of the Art Gallery of New South Wales. Date: Sat Oct 23.

No critic turned up, so there was no review - hence this self-interested one, which has been written in response to several requests (from my Mum, brother, auntie and next-door neighbour).

The main piece on the program was *Dry Solace*, a 45-minute collaborative audio-visual piece about Somalia (this was performed next day, also, at a concert in the National Gallery in Canberra as part of the National Festival of Australian Theatre). It used transparencies taken earlier this year in Somalia by artist/photographer/filmmaker etc etc George Gittoes, who came back with 7000 or so slides for us to choose from. Rik Rue, Jon Drummond and I made the initial selection.

Having looked at the slides on light boxes, a team of composers started work. Rik Rue and Julian Knowles (who are at this moment in the USA with "Machine for Making Sense") were the first to come up with concrete music (computer music, actually): two sequences on tape designed to have live music added on top. Other composers, inspired by their example, got on with their own contributions. Gradually the music started coming together, with strong sequences coming from Ian Fredericks, Adrian Luca and Gordon Monro. Space was left for live saxophone improvisations by Mark Elliot. In the meantime, Jon Drummond, assisted by Damien Ricketson, was assembling and programming transparencies, at first without music, using a Clear Light Superstar control system (nine projectors on one screen - spectacular!). Once the music had come together, and was assembled on tape, the visuals were programmed to the music (one of the audio tracks on a Beta PCM tape carried time code to which the Superstar computer - an Apple IIe! - listened, allowing precise synchronisation). The result? A powerful look at a country, and a people, in turmoil. As the program note said:

"When watt saw the transparencies that George Gittoes brought back from Somalia a new composition was on its way. We poured over light boxes, painfully choosing which images to leave out while discussing how to deal with and express the conflicting emotions we all felt. Composers composed, and programmers programmed, at first with scant notion of how we would put it all together. But then, gradually, as snippets formed, and ideas developed, tentative threads started to emerge. A scrap of music suggested particular images, or inspired ideas in another composer, or contained rhythms that were immediately seized by a programmer. Or a visual rhythm would spark off a counterpoint of ideas that would influence music that appeared months later. As in any collaborative composition, individual ideas that sounded good at the time went west as all participants strove for something greater than the sum of its parts. At all times we were inspired by George's incredible enterprise, energy, enthusiasm and skill. But, more than that, we were confounded by the big picture of which the little pictures were part. There was the suffering we expected to see, but there was laughter, and hope. There was kindness amidst the brutality, and great beauty despite the despair. The situation in Somalia developed - and worsened - as we worked. What seemed right yesterday was turned on its head today. Television blasted us with images at times almost too horrifying to contemplate, and we were tempted to send George back for some shots of this, or for a recording of that. But we kept to what we had: a document of one man's journey. It became our journey also - towards an understanding of a complex and tragic situation, one already occurring in other parts of Africa. We never got there. Possibly no-one ever will. But the audio-visual medium offers rich possibilities: the conjunction of sound and image - at times in harmony, at others in dramatic contrast - can lead to sudden insights. Not necessarily insights one can put into words, but, even so - or as a result - powerful insights often close to the bone. The experience of creating any new work can be exhausting, and draining. But when you are dealing with other people's emotions as well as\your own, it can turn you inside out. For many of us, "Dry Solace" did just that."

Next posting, coming soon to your computer: a report on the other pieces on the program -

The Opiate of the Masses music & video: Adrian Luca
percussion: Adrian Luca & Philip South
electric bass: Richard Otmar

Roulette Rhapsody 2, for computer and performer live computer processing: Jon Drummond, sax: Mark Elliot

Transfiguration, for sampler, synthesizer, and analogue & digital tape manipulations composed and performed by Julian Knowles (sampler & synthesizer) and Rik Rue (analogue & digital tape manipulations)

Token Objects, for soloist & improvising machines composer/performer/instrument builder: Greg Schiemer

Balibo, for flute, tape & transparencies
music & transparency programming: Martin Wesley-Smith
computer graphics & photography: Kia Mistilis (based on images supplied by various photographers, including Max Stahl & Sven Cox)
flute: Geoffrey Collins

Advance CD Release Announcement

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Transmission Communications, the new Brisbane-based electronic music label, formed just over a year ago, is proud to announce its inaugural compilation release 'Evidence'. The 17-track CD has been 12 months in the making, and brings together 10 bands/artists, predominantly from Brisbane but also including artists from Sydney, Melbourne, and the United States. This release is probably the first of its kind in Australia, and marks the beginning of a new base for underground, innovative and progressive music generation in this country. The label has gathered together these artists through local dissemination of the label's existence, in combination with the resources of (and connectivity to) the global systems network 'TheInternet'. Calling upon this base of underground musicians, electronically-influenced artists, and cybermedia users, Transmission Communications is emerging with a view to infiltrating the Australian music scene with a new 'true alternative'.

'Evidence', as the name suggests, provides a glimpse of the substance of the label's intention. 10 very different bands, 17 somehowconnected ideals, but most of all listenable bass-oriented excursions. Now:
Zero have previous material represented on Volition's 'High' dance compilation, and are directly involved with the Australia-wide experimental/techno interest

collective Clan Analogue.
SonnenSystem - Melbourne-based Paul Tan. One of several to get involved via 'the Net'. SonnenSystem's innovative output leans towards ambience and exploratory techno. Paul has been involved in several remix projects, and is also heavily involved in the Melbourne electronic music scene.
House Guests - The first of 7 Brisbane contributors, the House Guests emerge from several years of experimentation, evolution, and a wide spectrum of underground synth-pop influences. The House Guests provide a glimpse of their back-catalogue as a pointer to what is yet to come...
The U.N - Brisbane's new techno-grebo funsters, the U.N make their debut appearance on 'Evidence'. Fast, fresh, groovy, and cool, the U.N have an immediacy that sets them apart from all equivalents.
Sphere - Mode-influenced, Sphere follow on from their debut release 'Doomsday Clock' with several thought-provoking newer-wave tracks. Walls of atmospheric synthesizer wash with resonant guitars and driven lyrics.
Blood Party - Percussive, haunting, innovative. The name conjures images of angst, yet they themselves betray this first impression. Seriousness with an air of amusement. Electronic with the flavour of anything you care to name...
Ghee - Our American connection, but as far as you could possibly imagine from what one would conceive as 'Stateside music'. Linked via Internet, we've never met him, never spoken with him, but we know him. The music is unbelievable, the future is now...
Daniel Hack - Daniel comes to us with a veritable catalogue of good ideas. His distinctive experimental edge and enthusiasm for interesting projects bodes well for the label and indeed Brisbane.
The Isle - From seemingly nowhere come the senses and the clarity of The Isle. As they themselves state; "An Isle, an Archipelago, a bridge between the Brain and the Heart". Beauty mixed with the bass...
Evolver - Classy techno. Deep, 4a.m mind-wandering techno. Bare, brilliant, stylish, with a habit of making you listen to the final distant ebb of the sequencer.

The essence of the exercise is to increase awareness of new players, and a new entity in a scene desperately in need of fresh ideas. We plan to prepare our releases periodically, including DJ vinyl editions, special cassette releases, the odd video, and other items as we conjure them. The important factor is; we do it because it's interesting, and we're doing it because it needs to be done.

The Evidence...
CDCOM3 - Limited Run of 500 CD's - In Store 28/03/94*
LCCOM3 - Advance / Media Cassettes - Available Now
COM3a - Evidence Launch / Transmission Outing #1 - ZanZiBar 02/04/94 - cnr Edward & Mary Sts, Brisbane 8p.m - late

* East coast independants + Central Station Product available now via Mail Order CDCOM3 - $25.00 per CD LCCOM3 - $15.00 per pack (limited) (free to qualified media)

- Postage & packing, $5.00 for the first item, $1.50 thereafter. All figures in Australian Dollars (AUS$1.00 = [approx] US$0.70) Send Bank Drafts / Cheques or Money Orders only (in AUS$ Currency) made out to 'Transmission Communications'

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Transmission Communications -
Electronic Music Label, Production, Innovation