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Array

Communications of the ICMA

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***ARRAY* is the triannual publication of the International Computer Music Association.**

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ICMA News

ICMA NEWS

Allen Strange,
President

As an academician I find myself being seduced into the current cyber-space mania purely as a matter of intellectual defense. The current Web-craze, whether friend or foe, is creating a simultaneously inclusive and exclusive global village which we must individually manage or remain content to have managed for us. I am, of course, very pleased to find references to the ICMA World Wide Web page being cited quite frequently on various pages, lists and bulletin boards. While our presence on the Web is getting the ICMA name into previously inaccessible places, we have now gone "where no name has gone before." I was recently forwarded from the *ICMA* web site a message from an organization claiming to be the *ICMA* "established over eighty years ago"! A gentleman, who will remained unnamed, linked to the *International Computer Music Association* page via some undefined route and claimed rights to the *ICMA* as an acronym for the *International Commerce/Community Management Association.* Our legal advisors tell us that unless the stated missions of each organization present conflict or confusion, similar acronyms are no problem. In addition, the correct acronym for the *International Commerce/Community Management Association* should be IC*/CMA* ! In a brief email back to this organization I tactfully explained our mission, position and suggested that they may even be in an advantageous situation in helping us target future conference cities— I have not yet received a reply!

In a coincidentally related matter, the name *International Computer Music Conference [ICMC]* is now a registered service mark. In the past years there have been other computer music conferences attempting the use of the ICMC title. The Board of Directors have decided to protect our efforts and in the future all references will appear as ICMC® or International Computer Music Conference®.

The *Bits n' Pieces* project of an on-line anthology of computer music recordings is now complete. Works by: Zack Settel, Francis Dhomont, Mary Roberts, Rikhardur Fridriksson, Craig Harris, David Claman, David Gottlieb, Charles Bestor, Jøran Rudi, Heinrich Taube, Gary Singh, Michael Andrade, Drew Lesso, Mary Simoni, Andrea Libretti, have been selected by an international jury and will soon be available from ArtneT's IAMFREE Museum at http://www.iuma.com.quagmire. Please see page 3 of this issue for further details.

While internet communications is becoming the most expedient means of communication we can only reach you if we have your address. If you have not been getting ICMA postings please send your email address to Mary Simoni at msimoni@umich.edu. The ICMA does not rely exclusively on email communication

NOTICE TO CONTRIBUTORS

The deadline for submissions for the next issue of *ARRAY*, Vol. 15, No. 3, is **September 15, 1995**. All submissions to *ARRAY* must be in machine-readable form. You must submit items using electronic mail or on a floppy disk (either Macintosh or IBM). If you submit anything solely as hard copy, it will not be considered for publication in Array. If you send a submission on floppy disk, please send two copies: one as a plain ASCII text-only file, and the other copy as the file that your word processor uses.

Please do not use any formatting other than italics and bold face. If you wish to include graphics with your submission, please do so in TIF or EPS format only. It is helpful if you can include a hard copy as well. If you would like your disk returned, please include a self-addressed, stamped return envelope.

Send *ARRAY* submissions to :
ARRAY/International Computer Music Association
Suite 330, 2040 Polk Street
San Francisco, CA 94109
e-mail: icma@sjsuvm1.sjsu.edu

Email submissions and inquiries will receive the quickest response.

ICMA News, continued

and all formal membership information and communications still go out via regular mail routes. Special announcements regarding festivals, other conferences, competitions and job opportunities are, however, sent out via email only.

The first edition of the *ICMA Composer's Registry* will be distributed on disk to all attendees at the 1995 International Computer Conference in Banff this September. So far the Registry has over 300 listings, but this is far less than expected. If you have not yet responded with up to five compositions please send us the information via fax or email.

This year's International Computer Music Conference will be yet another landmark event *ICMC '95 Digital Playgrounds* will emphasize the connectivity of computer music with a world of artistic, technological, social and cultural influences, practices and possibilities. The National Center for Supercomputing Applications Audio Group [USA] will present *Park n' Ride,* a hands-on installation/demonstration of VR graphics, music and sound. The Banff Centre's Walter Phillips Gallery will house various sound sculptures, installations and video. The National Gallery of Canada will present *Video/Sonority: Video Born of Noise.* Keynote performances will feature *Fleabotics* and *Seven Wonders of the World,* both large-scale computer-controlled multi-media works. The concert program will present over sixty new compositions, at least a dozen world premieres which includes the 1995 ICMA Commission Awards compositions by Jonty Harrison [UK] and Carla Scaletti [USA]. See the ICMC '95 Conference Schedule on page 3 of this issue and visit the ICMC95 Web site at: http://www.ffa.ucalgary.ca/icmc95.

You can also get an advance glimpse of ICMC '96 in Hong Kong by contacting the Computer Music Journal at http://www-mitpress.mit.edu/Computer-Music-Journal/CMJ.html. The ICMC in Hong Kong will continue the transition started in Tokyo by increasing the opportunities for participation of Asian composers and student composers in the ICMA while continuing the diverse international participation that already exists. In addition, the conference will carry the melting pot idea into the community with computer music installations at strategic locations throughout Hong Kong. Hosted by the The Hong Kong University of Science and Technology, the Hong Kong Urban Council and International Computer Music Association. The 1996 International Computer Music Conference. ICMC '96 *On the Edge - Transitions and Opportunities,* will be held on the slopes of scenic Clear Water Bay, and the campus grounds are terraced with unobstructed panoramic views of the sea. The main academic complex, on the highest level of the slope, is surrounded by beautiful outdoor pavilions appropriate for concerts and installations.

On a final note, the ICMA has increased its current membership by almost 15% as a result of a membership drive with the International Alliance of Women Composers. Thanks to the efforts of ICMA Secretary Patte Wood and ICMA Board Member Mary Simoni and the cooperation of Sally Reid and Deon Nelson Price from the IAWC, almost 100 members of the IAWC have joined the ICMA. We welcome our new constituents and hope their affliliation with ICMA is beneficial.

The ICMA WWW site has added a new feature referred to as the ICMA Member Home Pages. This is a link to any individual member wishing to have his/her home page listed and linked from the ICMA site. Simply send your name and URL to Robert S. Newcomb at this address: ICMA_Library@Dartmouth.edu. The addresses will be verified and then added to the ICMA pages. In turn, any member wishing to provide a link back to the ICMA page is certainly encouraged to do so.

Bits 'n' Pieces

The ICMA *Bits 'n Pieces* Internet Anthology of Computer Music is complete. Thanks to the efforts of ICMA Recording Coordinator Paul Lansky and an international selection panel, the following 90 minute concert of works for the recorded media will be available at the Internet Arts Museum FREE multi-media on-line site.

Zack Settel (France), *Skweeit-Chupp;* Francis Dhomont (Canada), *En abime;* Mary Roberts (USA), *Things Fall Apart*; Rikhardur Fridriksson (Iceland), *Study #1 for Player Piano*; Craig Harris (USA), *Somewhere Between*; David Claman (USA), *70*; David Gottlieb (USA), *Beyond B & D;* Jøran Rudi (Norway), *Moment;* Charles Bestor (USA), *Into the Labyrinth*; Heinrich Taube (Germany), *Gloriette for John Cage*; Gary Singh (USA), *Ryokousha no tame no Arabia go*; Michael Andrade (USA), *Umbrae;* Drew Lesso (USA), *Constellations Pt. 1*; Mary Simoni (USA), *Death Dance*; Andrea Libretti (Italy), *Frastagliate Odne* . The URL is: http://www.artnet.org/iamfree/

ICMA DIFFUSION i MeDIA Discounts

ICMA has made arrangements with DIFFUSION i MeDIA to make a special price reduction to all ICMA members. DIFFUSION i MeDIA will offer a 15% reduction on the selling price of each empreintes DIGITALes and SONARt CDs to active ICMA members. This offer is guaranteed through December 31, 1995. You can check out their catalog on the Web or request a catalog via email. Just identify yourself as a ICMA member (which will be verified) to receive this discount.

DIFFUSION i MeDIA + empreintes DIGITALes + SONARt
4487, rue Adam - Montréal, QC H1V 1T9 - Canada
T +1 514 254-7794 - F +1 514 281-1884
URL http://www.cam.org/~dim/
Email dim@cam.org

Also remember the Centaur Records CDCM Computer Music Series discounts available to ICMA members.

CDCM
P.O. Box 560102
Dallas, Tx 75356-1012
USA
+ 817-591-8128

Both of these series contain a wealth of historically significant music. Take advan-

tage of these special ICMA arrangements and add to your personal or institutional collection.

ICMC95 Digital Playgrounds Conference Schedule September 3 - 7, 1995

Saturday, Sept. 2:
10 a.m. - noon
Tutorials A & B
1 - 3 p.m.
Turtorials C & D
7:30 p.m.
Gallery Opening

Sunday, Sept. 3:
8:30 - 10:30 a.m.
Paper Session 1
11:00 a.m. - 1:00 p.m.
Concert 1
Paper Session 2
1:00 - 3:00 p.m.
Workshop A
2:00 - 4:00 p.m.
Concert 1
Paper Session 3
4:00 - 6:00 p.m.
Paper Session 4
8:00 - 10: p.m.
Concert 2

Monday, Sept. 4:
8:30 - 10:30 a.m.
Paper Session 5
11:00 a.m. - 1:00 p.m.
Concert 3
Paper Session 6
1:00 - 3:00 p.m.
Workshop B
2:00 - 4:00 p.m.
Concert 3
Paper Session 7
4:00 - 6:00 p.m.
Paper Session 8
6:30 - 8:00 p.m.
Reception

8:00 - 10: p.m.
Keynote Concert 4

Tuesday, Sept. 5:
8:30 - 10:30 a.m.
Paper Session 9
11:00 a.m. - 1:00 p.m.
Concert 5
Paper Session 11
1:00 - 3:00 p.m.
Workshop C
2:00 - 4:00 p.m.
Concert 5
Paper Session 11
4:00 - 6:00 p.m.
Paper Session 12
8:00 - 10: p.m.
Concert 6

Wednesday, Sept. 6:
8:30 - 10:30 a.m.
Paper Session 7
11:00 a.m. - 1:00 p.m.
Concert 7
Paper Session 14
1:00 - 3:00 p.m.
Workshop D
2:00 - 4:00 p.m.
Concert 7
Paper Session 15
4:00 - 6:00 p.m.
Paper Session 16
6:30 - 8:00 p.m.
Concert 8
9:30 p.m.
Banquet

Thursday, Sept. 7:
9:30 - 10:30 a.m.
ICMA General Meeting
11:00 a.m. - 1:00 p.m.
Concert 9
Paper Session 17
1:00 - 3:00 p.m.
Workshop E
2:00 - 4:00 p.m.
Concert 9
Paper Session 18
4:00 - 6:00 p.m.
Paper Session 19

8:00 - 10:00 a.m.
Concert 10

Friday, Sept. 8:
8:30 a.m. - noon
Information

Announcements

Digital Playgrounds brings cyber music to Banff

BANFF — The Banff Centre for the Arts will vibrate with cyber music from September 3 to 7, 1995 as 500 computer music practitioners from around the world meet for Digital Playgrounds — the 21st International Computer Music Conference (ICMC).

The gathering of composers, musicians, researchers and computer music enthusiasts is hosted by The Banff Centre for the Arts, in conjunction with the International Computer Music Association.

The conference will include an intense festival of high-tech, computer-enabled musical performances utilizing state of the art sound platforms developed by Sound Traffic Control (San Francisco) and Harmonic Functions (Vancouver), and an extensive program of demonstrations, exhibits, panel discussions, research presentations and tutorials covering the latest developments in the practice of computer music and convergent art.

Highlights:

Candy for Your Ears:
Two concert halls will be in constant vibration with a sumptuous program of 15 full-length concerts. Each hall will be specially equipped with an unique multi-channel sound system spinning webs of sound through 3-D space. 80 pieces of music, many of them world premieres, will offer a spectacular overview of the most exciting experimental music being created with computers today. Most of the music presented at the festival involves live musicians performing with computer-generated materials. Covering an immense range of aesthetics, from meticulously crafted soundscapes captured on tape, to elaborate interactive performances mediated by sophisticated computer algorithms, these performances will challenge, delight, provoke and amaze.

Cutting Edge Chamber Music:
The opening night concert will feature the highly acclaimed Penderecki String Quartet performing five new works composed for them under a special jury category (repertoire for string quartet and computer music) of this year's festival.

Candy For Your Eyes Too:
The keynote concert will include the world premieres of "Fleabotics" and "Seven Wonders of the World", two large-scale multimedia performances adding computer-controlled video, lighting, robotics, improvised story-telling, theatrical stage-craft and a range of interactive performance control systems to computer music.

Virtual Audio:
The relationship of virtual reality and computer graphics to music and sound will be explored though a special presentation by the National Centre for Supercomputing Applications Audio Group (U.S.A.). Park'n Ride is an installation and hands-on demonstration of networked virtual sound, navigated by the use of NCSA's acclaimed CAVE realtime graphics technology.

Digital Playgrounds On-Line:
The sights, sounds, and ideas of ICMC'95 will be alive on the net, before, during, and after the conference. Along with on-line documentation of the proceedings, the web site will offer networked panel discussions, special guest appearances, on-site reviews and commentary, as well as other innovations. Check http://www.ffa.ucalgary.ca/icmc95 starting June 1.

Environmental Music:
A theme concert inspired by natural soundscapes and the striking Rocky Mountain setting of the conference site.

Tutorials and Workshops:
Along with a full slate of papers and panels on a range of subjects, short courses are offered in a selection of practical topics. These will include Sound Design for Immersive Environments, Computer-Controlled Audio Diffusion, Realtime Computer Graphics for Musicians, and CD Production and Distribution. Contact the organizers for a complete list of topics, dates and pricing.

For further information, contact:
Erin Michie. Phone (403) 762-6401

Write:
ICMC'95, The Banff Centre
Box 1020, Station #8
Banff, Alberta, Canada, T0L 0C0
e-mail ICMC95@banffcentre.ab.ca.

A PROPOSAL: ASOCIACION LATINOAMERICANA DE MUSICA POR COMPUTADORAS EN LA INTERNET (ALaMCI) - LATINAMERICAN COMPUTER MUSIC ASSOCIATION ON THE INTERNET (LaCMAI)

I am the deviser of a project, on which I am working in collaboration with other four ICMA members from Latinamerica, called "Asociacion Latinoamericana de Musica por Computadoras en la Internet (ALaMCI)- Latinamerican Computer Music Association on the Internet"(LaCMAI).

The project is very ambitious and consists of creating an association whose members are Latinamerican (whether or not currently living in Latinamerica), devoted in any way to computer music and with access to the Internet (at least email as a minimal requirement). Composers of instrumental music only would be accepted as an exception. To have an email address as a minimal condition will be an indispensable requirement to join the association. It is a goal of the association to gain a space for Latinamerican computer music in the international scene, and to exploit the countless resources that the Internet offers to musicians and other organizations, such as the ICMA or NoTAM in Norway. Any kind of event (concerts, symposiums, festivals, etc.)would not take place on the Internet - but be organized through it.Therefore, it would be an Internet-based network.

The five ICMA members working in the ALaMCI/LaCMAI project and who have full access to the Internet and are:

Ricardo Dal Farra (Argentina)
Juan Ignacio Reyes (Columbia)
Roberto Morales-Manzanares (Mexico)
Eduardo Reck Miranda (Brazil)
Martin Alejandro Fumarola (Argentina)

Juan Reyes suggested that the ALaMCI/ LaCMAI could work together with the ICMA in order to get its endorsement and support. As it was outlined in Array Vol. 15-1 by Allen Strange, the ICMA is being regionalized in three main areas: America, Europe and Australasia and I think that ALaMCI/LaCMAI could represent the Latinamerican branch of the ICMA, as part of the American region. It can be noticed in the 1995 ICMA Membership Directory that from a total of 611 membersthere are about ten members who are from Latinamerican countries so an enhancement of the ICMA membership in Latinamerica would be avery important contribution of the ALaMCI/ LaCMAI.

Nowadays, there are several Latinamerican composers of electroacoustic and computer music who do not know what the Internet is and work isolated or semi-isolated and communicate with their colleagues (if this occurs) through snail mail or fax. The proposed association should encourage all of them to have, at least, an email address. In Latinamerica, communications through email are the best alternative to the slow and inefficient postal services that exist in most countries.

The Second Brazilian Symposium on Computer Music, which will be held from July 30 in the south of Brazil could be the occasion for the official launch of the ALaMCI/LACMAI.

The drafted inner organization would be as follows: Ricardo Dal Farra, President; Juan Reyes and Eduardo Reck Miranda, Events Coordinators; Roberto Morales, Scientific Coordinator with special emphasis on algorithmic composition and I would be the Membership Coordinator.

I suggested that Ricardo Dal Farra could be the President of the organization because of his background in computer music and his importance in all Latinamerican areas. At the moment, he is the most internationally recognized Argentinian composer of computer music(at least among all those who live in the country), has the oldest affiliation to the ICMA among Latinamerican members and has been its South American representant, informing in each Array issue of what is happening in this part of the world.

Eduardo Reck Miranda and Juan Reyes are prominent organizers of international events, and that's why they are candidates to be Events Coordinators. Eduardo Reck Miranda is the Program Chairman of the "Second Brazilian Symposium on Computer Music", whose first edition was, undoubtedly, a significant point of departure for the formation of a substantial computer music community based in South America. The organization of the Second Symposiun is being totally carried out through the Internet. Juan Reyes has been the main organizer of the series of the "Festival de Musica Contemporanea",whose fourth edition was held in April 95 in Bogota including the "Segundo Ciclo Acusmatico" and with the presence of Canadian ICMA members Stephane Roy and Francis Dhomont. Roberto Morales is finishing a Home Page concerning the Laboratorio de Informatica Musical of the Guanajato University to be placed in the World WideWeb. This will be the first Home Page available in the WWW to the public from a Latinamerican computer musician.

I am very interested in the feedback, suggestions and opinions from Latinamerican colleagues devoted to computer music and relatedfields, living or not in the continent. I am sure that the realization ofthe ALaMCI project will be a significant contribution for the region and also for the computer music community.

Martin Alejandro Fumarola
Emails: maralefu@famaf.uncor.edu
maralefo@turing.fis.uncor.edu

ANNOUNCING THE SYNTHBUILDER ALPHA RELEASE TO THE INTERNET.

An Alpha release of SynthBuilder, a user-extensible, object oriented, NEXTSTEP 3.2/Music Kit application for interactive real-time design of synthesizer patches, has been released to the Internet for anonymous ftp downloading, on the CCRMA ftp server/directory:

ccrma-ftp.stanford.edu:/pub/NeXT/SynthesisTools

Please look at the Release Note, SynthBuilder.README, in this directory, which is also included below. The section entitled "How to get a demo copy of SynthBuilder" gives specifics on downloading.

SynthBuilderTM Version: Alpha30 Release notes

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Overview
==========

SynthBuilder Alpha30 is a user-extensible, object-oriented, NEXTSTEP 3.2/ Music Kit application for interactive real-time design of synthesizer patches.

SynthBuilder Patches are represented by networks of digital signal processing elements called unit generators and MIDI event processing elements called note filters and note generators. SynthBuilder evolved from Eric Jordan's GraSP application, created at Princeton University in 1992, and the NeXT Draw example application. The graphical interface enables construction of complex patches without having to write a single line of code, and the underlying Music Kit software provides support for real-time DSP synthesis and MIDI. This means there is no "compute/then listen" cycle to slow down the process of developing a patch. It can be tried out immediately on a MIDI keyboard, and unit generator and note filter parameters can be adjusted in real time while a note is still sounding. Sixteen bit stereo sound is synthesized immediately on one or more DSP56001 signal processing chips, and can be controlled from the user interface with software-simulated or physical MIDI devices.

Announcements, cont.

In addition to synthesis, the system supports configurations for sound processing via the DSP serial port which is also used for sound output to DACs and other digital I/O devices.

MIDI messages can also be mapped to unit generator object control methods, permitting high-level control of patch parameters. For example, a MIDI key number can be readily mapped into frequency, and then mapped into a delay line length via a graphically constructed lookup table. A single MIDI event can be fed to (or through)multiple note filters, each of which can modify the event stream and/or control one or more unit generator parameters.

Polyphony is handled in SynthBuilder by graphically specifying a voice allocation scheme. Optionally, a Music Kit SynthPatch can begenerated (in high-level source-code form) and used in another application.

Dynamically loadable custom "inspectors" (user interfaces) can be created for patch elements. Dynamic loading promotes easy distribution and sharing of inspector modules, and promotes a fast, efficient development cycle. The process of creating a custom inspector is facilitated by a default-inspector-generator which takes a DSP assembly macro and a signal-flow/parameter list specification as input, and creates working interface code which can then be customized.

As of this writing, SynthBuilder has more than 75 graphical custom inspectors, including an envelope editor, digital filter response curves, and a MIDI lookup table. SynthBuilder is currently being used by researchers at CCRMA to explore new synthesis techniques. SynthBuilder runs on both NeXT and Intel Pentium systems. Supported DSP cards for Intel systems include the Ariel PC56D, theTurtle Beach Multisound or Monterey, and the i*link i56.

Please look at:

http://ccrma-www.stanford.edu/CCRMA/Overview/node11.html on the World Wide Web, and ccrma-ftp.stanford.edu:/pub/NeXT/SynthesisTools for more information.

How to get a demo copy of SynthBuilder
==========

An installation package for a demo copy of SynthBuilder is available from the Internet, on the CCRMA ftp server.

ccrma.ftp.stanford.edu:/pub/NeXT/SynthesisTools/SynthBuilderAlpha30.pkg.gnutar

This demo Version of SynthBuilder, is in "fat" binary format, and may
be installed either 68k or x86, or both.

The install package is approximately 6 megabytes, and when installed it will take up approximately 15 megabytes. When you download this install package, be sure that you set up your file transfer program to transfer binary files, as the SynthBuilder install package is a binary file.

Unarchive this file with the following command from a Terminal window:
gnutar xvf
SynthBuilderAlpha30.pkg.gnutar

Then double-click on
SynthBuilderAlpha30.pkg from the Workspace to begin the installation.

The demo copy of SynthBuilder will allow you to create and play SynthBuilder patches, but you will not be able to save, print, update, write sound files, or generate code.

Licensing Information
==========

The demo copy of SynthBuilder can be enabled to be a full featured copy of SynthBuilder, by acquiring a SynthBuilder license authorization code. In addition, Stanford University is currently in the process of developing a suite of SynthBuilder documents which implement Physical Modeling Synthesis.

For a non-exclusive, royalty-free academic license or a royalty-bearing commercial license to this code and the necessary patents, contact:
Joe Koepnick
Office of Technology Licensing Stanford University
900 Welch Road Suite 350
Stanford, CA USA 94304-1850

email : sputnick@leland.stanford.edu,

phone: 415-723-0651, fax: 415-725-7295

System Requirements
==========

- Either a 68k or an x86 system running NEXTSTEP 3.2. A version that supports NEXTSTEP 3.0 will be made available soon, but we encourage you to upgrade to NEXTSTEP 3.2, as the 3.0 version may not be supportable in the future.

- At least 20 megabytes of free disk space.

- A minimum of 20 megabytes of system memory.

- If you are running on an x86 system, you will need a DSP card. Supported DSP cards for Intel systems include the Ariel PC56D, theTurtle Beach Multisound or

Monterey, and the i*link i56.

Additional optional hardware includes:
- For 68k hardware, a DSP memory expansion card to expand the DSPmemory to 192k.

- An external DSP serial port device, such as the Ariel ProPort.

- If you are running on an x86 system and want to use MIDI you will need an MPU-401-compatible MIDI card such as a Music Quest or Sound Blaster.

Installing SynthBuilder
==========

- You MUST install SynthBuilder logged in as root.

- To install SynthBuilder, download the SynthBuilder.pkg.gnutar fileas described above, unarchive it to the SynthBuilder.pkg file, and place it somewhere convenient .

- Double click on the SynthBuilder.pkg file to invoke the installation program.

- You can select either 68k, Intel or both ("fat") install SynthBuilder.

- Click on "Install" to start the installation process.

- Select a folder to install SynthBuilder (such as / or /MySBFolder). Everything SynthBuilder needs will be installed under this folder, in sub-folders named LocalApps and LocalLibrary. You also need to have previously installed the latest version of the MusicKit, which you can get from the ftp site you got SynthBuilder. The only thing you really need from the MusicKit is the preferences. A future release of SynthBuilder may bundle in these preferences.

- The Installer application will start up a small application that asksyou for a license code. For the demo version of SynthBuilder, click on"Continue", to continue with the install.

- Installer will then proceed to install SynthBuilder.

Getting Started with SynthBuilder
==========

The demo copy of SynthBuilder will allow you to create and playSynthBuilder patches, but you will not be able to save, print, update,write sound files, or generate code.

For a quick start with SynthBuilder there is a menu item on the Main menu called DEMO. Select this item, and it will bring up a panel that will let you choose from several demo patches that we have included with the release. In future releases, we will include more demos.

Special Note for Developers
==========

- If you plan on writing your own bundles in SynthBuilder you will want to pre-compile the headers, possibly for multiple architectures. For example, to pre-compile the headers for NeXT and Intel systems, do this from a Terminal:

```
cd /LocalLibrary/SynthBuilder/Headers
  /bin/cc -precomp -arch m68k -arch i386
SynthBuilder.h
  /bin/cc -precomp -arch m68k -arch i386
SynthBuilderNoteFilter.h
```

You will need to have the MusicKit headers installed in /LocalDeveloper/Headers before doing this.

Limitations / Known Problems:
==========

- The current paradigm for linking event processing and signal processing is done with the Mapper note filter which does not offer optimal visual feedback. We plan to shift to a more visually oriented scheme in a backward compatible way.

- MusicKIt SynthPatch code generation is not fully tested, but does work in many cases. In general, be prepared to do some hand editing of emitted SynthPatch class source.

- When you create a new bundle, you can only copy from an existing one (by selecting it in the main SB browser). In addition, you must not close the inspector for the element until you've created the new bundle and reloaded it.

- The documentation is not yet complete: No documentation exists for the code generation API, and some inspectors are not fully documented. - There is not currently a way to make nested groups of elements. This is planned for the next major release.

- The voicing mechanism needs work. There are inaccuracies in phrasing. This will be solved when the new grouping mechanism is created.

- DSP overflow is not detected and reported. This can be especially confusing when a filter overflows internally such that it's hard to hear.

- Sometimes there are problems copying/cutting/pasting mappers. You may see logic error warnings. If this happens, try copying/cutting/pasting one mapper at a time.

- Sometimes you may see an Internal error message. If this happens, save your work and re-launch SynthBuilder.

- Currently you need to have some kind of note generator hooked up to a patch to record to a sound file

- When using the score file writer, you can only have one note generator in the patch.

- Oscillator inspectors are not finished and have several problems. In particular, the Increment and Frequency fields are not tied together as they should be, and the Usage info is not written yet.

- There is presently no indication on the NoteFilter inspectors when normalization is "active".

Note that this is an Alpha version of the SynthBuilder application. We currently plan a Beta release in the first half of 1995, and later a production release.

We would like your feedback! As we work our way toward the production release, your feedback will help us!

Any messages about issues with SynthBuilder can be directed to the following e-mail addresses.

Nick Porcaro
(nick@ccrma.stanford.edu)

Pat Scandalis (gps@ccrma.stanford.edu)

Announcements, cont.

ELECTRONIC MUSIC FOUNDATION ANNOUNCES NEW PROGRAMS

Albany, New York. ELECTRONIC MUSIC FOUNDATION (EMF)-a new venture launched in September 1994-today announced the programs it will undertake as it begins operations.

Joel Chadabe, EMF president and founder, said: "We have created Electronic Music Foundation to disseminate important information and materials related to the history of electronic music. Our venture encompasses not only the past, but also work being done today that will be of historical importance in the future."

Electronic Music Foundation's primary activities will be focused in three areas: (1) Sale of compact discs on a worldwide basis; (2) Creation of a photographic archive; and (3) Establishment of an information dissemination center.

Chadabe established EMF last September in cooperation with founding trustees Paul Lansky and Neil Rolnick. Julie Panke is Executive Director.

The Foundation's international group of advisors and charter subscribers also includes: Jon Appleton, Larry Austin, Marc Battier, Jack Body, Warren Burt, Joseph Celli, Chris Chafe, Hugh Davies, Folkmar Hein, Gottfried-Michael Koenig, Paul Lansky, Peter Manning,Max Mathews, Pauline Oliveros, Gottfried Raes, Tom Rhea, Alistair Riddell, Jean-Claude Risset, Curtis Roads, Neil Rolnick, Carla Scaletti,Bruno Spoerri, Kazuo Uehara, Alvise Vidolin, Felix Visser, PatteWood, and Iannis Xenakis.

"The development of electronic musical instruments through the twentieth century is a fascinating and wonderful history that should be documented for now and for the future," Chadabe said. "Yet the most important work of the pioneering composers, engineers, and entrepreneurs-including recordings, photographs, and other important documents-is often difficult to find."

Through its Emusic project, the Foundation will make available compact discs of electronic music, including discs published by small companies and independent composers. Recordings will be sold worldwide via computer networks and direct mail.

"Emusic's goal is to identify everyone in the world who has an interest in electronic music," Chadabe said, "and to make CDs available to them at the best prices through mailed and electronic catalogs."

EMF has begun the process of creating an archive of photographs dealing with the history of electronic music. Documents from the archive will be made available to scholars and the general public in various formats, including photographic prints, photo-CDs, and books.

The Foundation's information and dissemination center will publish a newsletter highlighting the availability of historically important materials. The publication will inform subscribers as to the location and availability of composers' archives, and will contain informationon museums and collections of historical electronic instruments, and other historical materials and electronic music projects around the world.

Through its information center, EMF also plans to sell books and other items, organize conferences and concerts, produce historically important compact discs and other materials, and provide archival services. Archival services may include the posthumous cataloging, evaluation, placement, storage, and/or dissemination of a composer's works. (EMF is currently engaged in archiving the works of composer Ann McMillan.)

Electronic Music Foundation invites all individuals, organizations, and companies with an interest in electronic music to subscribe to its services. For further information on subscriptions, EMF may be contacted by phone at (518) 434-4110, by fax at (518) 434-0308, or by emailat EmusF@aol.com. The Foundation's mailing address is 116 NorthLake Avenue, Albany NY 12206, USA.

SEGUNDO FESTIVAL LATINOAMERICANO DE COMPOSITORES "CIUDAD DE QUITO" ECUADOR

From November 15 to 18, 1994, the Segundo Festival de Compositores Latinoamericanos "Ciudad de Quito" was held in Quito, the capital city of Ecuador. The event was organized by the composer Pablo Freire and the National Conservatory of Music from Quito and included seminars, lectures, workshops and concerts with instrumental and electroacoustic works from several Latin-American composers.

The electroacoustic pieces included in the festival (almost all for tape alone) were the following: *Una musica, un rumor, un simbolo* by Gabriel Valverde, *Karma* by Ricardo Dal Farra, *In-Movile* by Martin Alejandro Fumarola, *Zeluob Tres* by Pablo Freire, *Siglos*-for flute and tape- by Julian Ponton and *De la percepcion y sus alas*by Mesias Maiguashca.

There were two lectures concerning electroacoustic music: *Actualidaden la musica electroacustica argentina* by Martin Alejandro Fumarola and *El compositor como creador* by Patricia Ann Repar.

The next edition of the festival will be realized next year and the inclusion of more electroacoustic music is planned. All composers interested in submitting works or giving lectures or workshops should contact:

Pablo Freire
Guanguiltagua 229
Borja Yerovi-Batan Alto
Quito, ECUADOR
Fax: +593 2 564792

Reported by: Martin Alejandro Fumarola
Emails: maralefu@famaf.uncor.edu
maralefo@turing.fis.uncor.edu

SEMANA DE LOS MEDIOS Y LA MUSICA ELECTROACUSTICA '95 ARGENTINA

The Argentinian Federation of Electroacoustic Music (FArME) will organize during a whole week by the end of October 1995 a series of concerts of electroacoustic and computer music. The event will take place at the Auditorium of La Recoleta Cultural Centre in Buenos Aires.

Works composed for tape alone with stereophonic conception are preferred. However, works involving performers of acoustic or electronic instruments ("live electronics") are also accepted. The compositions must be sent in DAT format (44,1 Khz is preferred)accompanied by program notes of the work and a brief biography of the composer. All works will be presented without a previous selection.

The event is only open to Argentinean composers, living in Argentina or abroad, regardless of age, duration of the pieces and aesthetics. Argentinean composers living outside their country are especially encouraged to participate. The deadline to submit the material is September 15, 1995.

There will also be round tables discussing electroacoustic music topics and the possibility to present technical contributions. The SEMANA DE LOS MEDIOS Y LA MUSICA ELECTROACUSTICA '95 will be the11th edition since 1985 because it has been held annually. In last editions works by several ICMA members from Argentina were included: Ricardo Dal Farra, Horacio Vaggione, Martin Alejandro Fumarola, Carlos Cerana, Miguel Calzon and Fernando Lopez Lescano.

The address to submit the material is:
SEMANA DE LA MUSICA
ELECTROACUSTICA 1995
c/o LIPM
Junin 1930, Piso 1,
RA-1113 Buenos Aires
ARGENTINA
For information concerning live electronics contact:

Ricardo Dal Farra,
Azcuenaga 2764, RA-1640 Martinez,
Buenos Aires,
ARGENTINA
Phone: +54 1 5533015
Faxes: +54 1 498742 and 8270640
E-mails:
dalfarra@clacso.edu.ar
rqdalfar@arcriba.edu.ar

For all those who are from Buenos Aires, contact:
Ricardo Dal Farra (his data is provided above); or
for all those who are from the rest of the country:
Martin Alejandro Fumarola,
Estafeta 56, RA-5001, Cordoba, ARGENTINA
Phone: +54 51 242388
Faxes: +54 51 251957 and 235370
Emails:
maralefu@famaf.uncor.edu
maralefo@turing.fis.uncor.edu

CDCM

CDCM: Consortium to Distribute Computer Music announces three new compact disc releases, summer/fall, 1995, on the CDCM Computer Music Series on Centaur Records, continuing the Series from Volumes 1-19with:

Vol. 20, CDCM Computer Music Series, "Music from The University of Texas at Austin Electronic Music Studios"; Russell Pinkston, *Don't Look Now* (1991), for string quartet and electronic sounds; theSmith Quartet: Ian Humphries and Clive Hughes,violins, Nic Pendlebury, viola, Sophie Harris, violoncello; Mark Wingate, *Ode to the South-Facing Form* (1992), computer music on tape; MarkSchultz, *Earendil* (1987), for flute and computer music on tape, Karl Kraber, flute; Howard Jonathan Fredrics, *The Tragedy of The Leaves*(1991), computer music on tape; Jody Nagel, *Gandalf the Grey*(1990), for clarinet and computer music on tape; Robert Tuttle, clarinet; Karl Korte, Colloquy, for bass flute, flute, piccolo and computer music on tape; Karl Kraber, bass flute, flute, piccolo; CRC2245.

Vol. 21, CDCM Computer Music Series, "The International Computer Music Association Commission Awards—1992-93"; Horacio Vaggione, *KITAB* (1992), for bass clarinet, piano, contrabass and computer processed and controlled sounds; Pablo Furman, conductor; Andy Connell, bass clarinet; Delores Duran piano; Christy Crews, contrabass; Cort Lippe, *Music for Sextet and ISPW* (1993), for flute,bass clarinet, trombone, violin, violoncello, piano and ISPW;Tetsuji Honna, conductor; Kazushi Saito, flute; Ken Matsumoto bass-clarinet; Shinji Koga, trombone; Michi Mizutori, violin; Yohei Matsuoka, 'cello; Kazue Nakamura, piano; Takayuki Rai, *Three Inventions* (1992), for saxophone, contrabass, piano, harp, and ISPW; Shinichi Miyazaki, saxophone; Keizo Mizoiri, contrabass; Kazue Nakamura, piano; Michiyo Umezu, harp; Ira Mowitz, *Kol Aharon*(1993), for violin and computer-generated tape; Cyrus Stevens,violin; CRC 2255.

Vol. 22, CDCM Computer Music Series, "The Composer in the Computer Age—V: A Salvatore Martirano Retrospective—1963-92"; *Underworld* (1964-65), for four actors, four percussion, two string basses, tenor saxophone, and two-channel tape, commissioned by the Fromm Foundation; original 1968 recording on Polydor Records by theUniversity of Illinois Contemporary Chamber Players: William Parsons, Charles Braugham, Jon Dutton, Michael Ranta, percussionists; Thomas Fredrickson, contrabass; Peter Farrell, violoncello, Ron Dewar, tenor saxophone; David Gilbert, conductor; *SATBehind Demo* (1992), for the Kyma computer music system using theSound and Logic 80 real-time performance program; performed by Martirano, digital console; *Look at the back of my head for awhile*(1974), for the Sal-Mar Construction (1969-72), Martirano performing; recording of a live concert performance, 1974; *Electronic Dance No. 1* (1963), for tape recorder; recorded at the Taylor Street San Francisco Tape Music Center; *L's. G. A.* (1968),for gassed-masked politico, helium bomb and two-channel tape recorder; original recording released on Polydor Records in 1968; Michael Hollaway, gas-masked politico voice.

Volumes 1-19 are still available. To subscribe to the series or to purchase individual discs, or for more information, contact CDCM,P.O. box 560102, Dallas, TX 75356-0102, USA; telephone 817-591-8128;fax 817-565-2002; or electronic mail at cdcm@cube.cemi.unt.edu.ICMA members receive a 5% discount on mail-orders of compact discs(please see CDCM ad in this issue).

Announcements, cont.

SEGUNDO CICLO ACUSMATICO DEPARTMENT OF MUSIC UNIVERSITY OF THE ANDES SANTA FE DE BOGATA, COLOMBIA APRIL 17TH - 23RD, 1995

For the term starting January of 1995, the Department of Music at La Universidad de los Andes in Bogota, Colombia approved Electroacoustic Music with a focus on computer music elements to be part of the majors offered at this school. This was a signifcant achievement for the musical community since music education and research historically have not been major issues in most academic programs in the schools of the country. Los Andes is one of the most important institutes in this country with a strong curricula in the sciences and engineering, economics, law, and of course, fine arts and the humanities.

The advantage of having an interdisciplinary environment provides an interactive arena in which students from various fields and backgrounds, as well as music students, benefit from the Music Department, and are supported by the technological worlds of the College of Engineering as well as the Aesthetics, Research, and Thought of the Colleges of Fine Arts and Humanities. For the first time, this type of cooperation towards music research in the various aspects of music is being done in Colombia.

In order to commemorate the achievement of this long standing goal, Juan Reyes, Directore of Electroacoustic Studies at the University of The Andes and Mauricio Bejarano, Professor of Design and Acousmatic Arts at the National University of Colombia took on the responsibility of organizing, over a two month period, "El Segundo Ciclo Acusmatlco". As with the "El Primero Ciclo Acusmatlco" it was being part of the Contemporary Music Festival of Bogaota Colombia.

The idea of the cycle was carried around the University community by the Director of the Music Department, Gustavo Yepes, and successfully supported by the Provost of the University, Arturo Infante, as well as the Colleges of Humanities and Engineering. The Dean of Fine Arts, Maria Teresa Guerrero, took special care with this project and was able to help with the infrastructure of the cycle.

The idea of the second cycle started with experience gained from the first cycle and connections established at that time. For making this project a clear reality, the names of the wonderful electroacosutic supporters should be stated now. The organizers wish to thank them all. Allen Strange, President of ICMA, was able to help with many connections. This allowed the cycle to present an exclusive concert featuring ICMA composers. Ricardo Dal Farra and Martin Alejandro Fumarola of Argentina helped with suggestions and names for the Latin American presentation. Daniel Teruggi, with the INA-GRM Paris, provided participation from France. Folkmar Hein assisted with the inclusion of electroacoustic productions from the Eletronischen Studios de Technishe Universitat Berlin, Germany. Chris Chafe, Chair of the Music Department at Stanford guided the participation from CCRMA at the cycle. For assistance and willingness to be at the cycle, the organizers thank Stephen Travis Pope, editor of the Computer Music Journal and Dr. Arturo Parra (Colombia) from the University of Montreal for his help with the Montreal Ensemble of Composers. Final appreciations go to Camilo Rueda from IRCAM and the Universidad del Valle in Colombia and to Francisco Iovino, Columbian composer and researcher at IRCAM for his ideas suggestions and support among the European Community of composers.

During the first week of April 1995 most of the composers were contacted through INTERNET and cycle program was produced. The Department of Music of La Universidad de los Andes was honored to have as its distinguished guests, composers Francis Dhomont from the University of Montreal, John Chowning from CCRMA at Stanford University and Stephane Roy from the University of Montreal.

Columbian audiences were privileged to be able to listen to classical electroacoustic and computer pieces performed for the very first time by the composers themselves. The attendees also participated in workshops given by these composers on electroacoustic music perception, electroacoustic music composition, and spatializing or real time performance of electroacoustic tape compositions. As a conclusion to these workshops there was a historic discussion by Francis Dhomont and John Chowning on the best way to spatialize the music— the (usual) manual acousmatic way or by the computer utilizing psychoacoustic Doppler effects.

There were ten concorts with all ranges of electroacoustic music. They included, acousmatic pieces, computer music pieces, live electronics, interactive presentations and sound installations from students of the College of Fine Arts. For the events the Albeoto Lleras Auditorium of the University there was housed a sound system consisting of a twelve speaker configuration.

The Concerts at the cycle were: "New Names of Colombian Electroacoustic Composers" and "International Electroacoustic Music" on April 18th; "Traditional Colombian Electroacoustic Music" and "The Music of John Chowning" on April19th; "Music from GRM, Paris, France" and "EIectroacoustic Compositions from Quebec and Ontario", on April 20th; "Music from ICMA Composers" and "New Columbian Electroacoustic Pieces" on April 21st; "Muslc from the Manizales Colombia Studio" and "Mixed Acousmatic Music" on April 22nd.

Ther compositions, in the order in which they were performed are as follows; *ce sont des réves liquides,* Andres Rojas (Colombia), *LotéoFAGOI,* Andres Pinzón (Colombia), *Carreras de Aves y Pajaros,* Ana maria Romano (Columbia), *El designio de La Paz,* Victor Hernandez (Columbia), *Allegro ma non troppo,* Unsuk Chin (Korea). *Karma,* Ricarda dal Farro (Argintina), *Historia de Kyohirne,* Guillermo Galindo, (Mexico), *Linee Agitate* Gianantonio Pattela (Italy), *Mosaic, Sukhi Kang,* (Korea) ... *und låcheldn irh Ubel unarmem,* Wolgang Motz (Germany), *Italo Calvino takes a journey on a taxi in Berlin,* Eduardo Miranda (Brazil), *Set in Motion,* Alejandro Fumarola (Argentina), *Célula,* Rudolf

Buzicka, *Anagrams,* Juan Reyes - Mauricia Bejarano (Columbia), *Dialogos por Paz,* Juan Reyes, *Turenas, Stria, Phonê, Sabelith,* John Chowning (USA), *Estudio de Los Objetos,* Pierre Schaeffer (France), *Variations,* Michel Chion (France), *Focolaria, Terra,* Daniel Teruggi (Italy-Argentina), Fabulae, *Francoise Bayle (France), Grand Bruit,* Christian Zanêsi (France), *La Voyagear,* Mario Rodrigue (Canada), *LaVoliere,* Randall Smith (Canada), Response *impresionniste donne par josef K. a une,* Daniel Leluc (Canada), *Les corps eblouis,* Christian Calon (France), *Le vertige inconnu,* Giules Gobeil (Canada), *Traveser le grand eaux,* Daniel Leluc (Canada), *Moove I,* Ned Bouhalassa (France), *Spleen,* Robert Normandeau (Canada), *{MUTE}ation,* Brian Belet (USA), *Unknown Journey,* Kan-Biu Chan (China), *Kombination XI,* StephenTravisPope (USA), *This way out,* Eric Chasalow (USA), *The Raven's Kiss,* Howard Frederics (USA), *et ainsi de suite,* Jonty Harrison (U.K.), Gesto, Geofoína, resortes, párpado, Maurincia Bejarano (Columbia), *Boce de Barra, Boliche, Escena 25, Garabato,* Juan Reyes (Columbia), *Pieza para Oboe y Computador, Pieza para Violin y cinta magnetofónica,* Fabio Fuentes (Columbia), *Qui est la?, Foret Profond, Points de Fuite Mourir un peu,* Francis Dhomont (France), *Mimetismo, Renonances d'arabesques, Crystal Music,* Stephane Roy (Canada).

The following are installations of the works shown and performed by Columbia Fine Arts and Music students at La Universidad de Los Andes. *Play and Play* - an interactive MAX piece for different players by Ricardo Escallón, *A veces se puede soñar solo dos veces* - a vibratory soundings T.V. by Ana Maria Santos, *Cama Sonora-* a sounding bed and vibratory matress by Jorge Rodriguez, *La Fuente-* an artificial or sound fountain by Jorge Zuluaga, *Perro Eterno y Maleta Sonora-* a dried dog with a talking briefcase, also by Daniel Zualaga, *In sita-* of familiar geographies by Cesar Trujillo, *rito-instalaciôn-* traditional Columbia rites and the electronic medium by Fernando Pertuz, *El cinematófono: "sosteniendo una conversación civilzada",* a sonic multimedia presentation with a talking device by Catalina Hernandez, *Internative Mutlimedia Presentation* by Caniel Campuzano, *Escultara Sonora* by Juan Carlos Agudelo.

For further information please contact:
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Santafe de Bogatá
Columbia
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1996 International Computer Music Conference

The Hong Kong University of Science and Technology and the Hong Kong Urban Council will host the International Computer Music Conference from 19 to 24 August, 1996. The conference organizers seek installation pieces with computer taking advantage of the university's beautiful

Announcements, cont.

architecture overlooking the ocean. Artists intending to submit proposals for installation pieces are urged to submit preproposals as soon as possible to receive special information regarding the available spaces to facilitate preparation of final proposals.

DEADLINE: for Final installation proposals: 21 OCTOBER, 1995.

The conference will have the theme, "On the Edge," celebrating Hong Kong's cultural environment "on the edge" between Asia and the west. The official call for papers and scores, and submission forms, will be given out at the September, 1995 ICMC in Banff, but we would like to make this early announcement that we encourage special submissions of pieces for Chinese instruments and computer.

DEADLINE: for music and papers submissions: 21 DECEMBER, 1995. (These submissions require submission forms.)

Anyone with comments or suggestions or who would like more information should feel free to contact:

Dr. Lydia Ayers, Chair, ICMC '96
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Hong Kong University of Science and Technology
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HONG KONG
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LIVE BROADCAST OVER THE INTERNET VIA MBONE

On June 2nd, *The Slowest Train in the World,* a live broadcast on the internet via MBONE and CU-SeeMe, took place from San Jose State University. Featured were the works of ICMA member Michael Frengel, and live computer music by Gary Singh, Michael Andrade, Ryan Torchia, and the O.M.S. DOCTOR. This event was organized and presented by the Internet Arts Museum and sponsored by the Internet Umderground Music Archive and the Digital Media Institute at SJSU. The concert was a huge success and over 3700 people around the world connected in and captured images from the event. Hats go off to IUMA, who helped out by setting up an MBONE site in just two hours! Mssrs. Singh, Andrade, and Torchia took their act on the road to Las Vegas for another Internet broadcast, this time, a live collaboration over the net with the CADRE institute at SJSU, and an unknown cybercafe in Bonn, Germany. More MBONE broadcasts are planned in the future at San Jose State University. For more information on the MBONE, see: http://www.eit.com/techinfo/mbone/mbone.html

REQUEST FOR DISCUSSION

This is a request for discussion (RFD) about creating a new moderated Usenet newsgroup: comp.music.research.

CHARTER

comp.music.research is a moderated newsgroup for discussion of th uses on computers in any aspect of research into music, including composition, analysis, synthesis and sound generation. It also includes music representation systems, information retrieval systems for musical scores, music printing (but not commercial advertising) and computer-based musicology and ethnomusicology.

It is a forum to ask questions, share information, and to announce new results. It is expected that the information may be used by the Music-Research Digest for their mailing list.

RATIONALE

The news group comp.music was originally intended as a forum for Computer Music Research, but the rapid growth in availability of MIDI and multimedia personal computers, together with the number of sites who do not take rec.music.makers.synth has meant that for many months over 90% of postings within that group have related to the use of computers to make music rather than research in such subjects. This dilution has led to the research community leaving the group, and the growth in specialist mailing lists. By creating this new news group we wish to provide a publically available single resource. It will not replace the mailing lists, but complement them in a more general context.

The creation would leave comp.music as a home for general musicplaying on computers, including MIDI and synthesiser equipment.

The group needs to be moderated at least intitally to maintain the separation of topic from comp.music.

MODERATION POLICY

Jeff Harrington
<idealord@dorsai.dorsai.org>
has volunteered to be the moderator, with John Fitch, <jpff@maths.bath.ac.uk>
as backup moderator. Both are participants in many of the mailing lists mentioned above. The purpose of moderation is to maintain the focus of the group on research issues and to prevent dilution with other computers-and-music material which properly belongs elsewhere.

MUSIC AND TECHNOLOGY

Frank Pecquet
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22 rue Jacob,
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100615.1143@compuserve.com

Whichever technological choice a composer makes (digital audio equipment or computer programming in code), computer composition requires at different stages of the design logical decisions in the use of technological tools.These decisions invite the composer to explore other areas that are partly outside of his expertise, thus no longer limiting him strictly to the musical field. Even if the success of a computer musical work doesn't depend exclusively on the perfect union between esthetic and information technology, a certain rigorous method would be necessary for this type of project. Musical notation is the final stage of composing. Computer assistance no longer plays a decisive role in it. In his esthetic research, the composer initially reflects on different possibilities that this kind of assistance will provide, bringing him to clarify his musical objectives, perhaps leading him to irrational explanations. This clarification will distinguish even more clearly two distinct ways of composing: one, researching sonic and temporal structures and their translation into musical notation, typical of a traditional composition, and second, bringing theoretical form to musical thought as it is applied to the computer.

Even though the use of electronic devices in analog studios had already modified traditional norms of composing and required the composer to better understand specific electronic and acoustic principles, the information process requires a priori serious thought concerning principles for composing. The infrastructure of a computer is based on logical principles that are very different from the principles or rules of esthetic creation. A methodological reflection on the objectives of computer music composition facilitates the transition from a logical use of technological tools to the domain of the esthetic. This text clarifies in three connected axes of thought the development of music composed with computers. The first one is the concept of material, i.e. the sonic technical phenomenon or "operative technical method", second the concept of technique - compositional thought (writing and the notation) third and last, the concept of new relationships between the composer and the sound. "Deprived of intuitive representation"[1] and dedicated to a new phenomenological experimentation, the composer's work is subject to abstract theoretical conditions that he must balance with his sensibilities. These conditions bring music instead of speculation. This balance is only possible with a purely musical intuition, termed throughout this text an intuitive notion. The technological material used in contemporary works, strongly linked to the evolution of compositional thought, rejects orthodox concepts of writing and introduces diversified objectives. First part: conception/material. The relationship between intuition and reasoning dictated by new technologies, aims essentially at integrating sensibility with theoretical principles. Second part: intuition/reasoning: the challenge is in the necessary transition from musical language to its information theory. This depends closely on the use and the potential of new devices in order to respond to composers' demand. Third part: device/use.

1. Conception/Material

What is computer music ?

Computers contribute to music in different ways : "music can be composed by computer, it can be played by computer, or both at the same time, composed and played". From this emerge two variants: Composition Assisted by Computer (C.A.O) or algorithmic composition, and synthetic music or composition of sounds (timbre).

"Music composed by computers is music for which the choice of each note is specified by a sequence of numbers or by a mathematical expression. One procedure is to begin generating a sequence of numbers at random. These numbers are then filtered according to a series of arithmetical tests, themselves representing different styles of musical composition".[2] They are then accepted or rejected. "The type of tests imposed by the programmers tend to influence the style of music. The strictest tests naturally tend toward a more classical style: few rules on the contrary will give to the composition an aleatoric tendency which is characteristic of contemporary music".[3]

"Synthetic music" is specifically generated from a machine. All sound can be described by a sequence of numbers, each representing a sample of a complex wave form in time. Direct synthesis also calculates a converted signal by a numeric-analogic converter which allows it to pass from a number to a sound and back.

New means of sound creation directly generated by these two variants (C.A.O. and synthesis), and tied to the conceptual revolution underlying technical invention, go beyond the framework of classical music : henceforth the material is shaped before and after the machine.

Techniques generated from musical material (from the entire musical shape and sound) mostly grow in relation to the technological evolution, such as the usual bipolar priority of height-duration, producing a narrative representation of the music on a rhetorical background whose theme takes the place of a semantic axis punctuated by variation. Progressively, this bipolar priority moves toward a three axes polarity, the combination of height-timbre-amplitude, the height taking the place of the rhythm or of the duration of time, whichever it might be. This polarity emphasizes the complex dynamic attributes of sound, where "technological sound is being thought of as its own particular form of energy"[4], as well as indicating a radical change in understanding, integrating, perceiving and representing music. New technologies require going beyond conventional rules of writing and compels one to introduce new rules or laws to adapt to shapes and sounds that are being created. Today's composition integrates real concept of sounds: forms that shape them and forces that activate them. Because the

operative computer code does not translate literally into musical code— at the heart of the challenge of the material found in contemporary music— it is necessary to find an equilibrium between information theory and musical law in order to re-establish the natural bond between the two. On the one hand, the C.A.O. calculates ways that create new structures of sonic sequence or development, and on the other hand, that analyze artificial acoustic structures and restore them by a final "discretisation" of the sonic matter. The synthesis (and the processing) understood as a simulating method generates new sounds that will need to be "systematized in a strategic matter".[5] In both instances, the digital representation implies a "re-conceptualization of the human activity in measured and defined degrees."[6] This "re-conceptualization" can precisely be found before the writing or as a pre-writing of the score. The writing itself is justified by the transition from the computer theory found before, to the musical mode found after the machine. Both ways of thinking, the logical system and the musical conception, have a distinct symbolic function that requires different objectives: one is the operative which stimulates coded information, the other is the informational which transmits musical meaning. Thus, the "digital" stage upsets the traditional relationship between musical conception and material, while establishing an objective perception of sonic phenomenon that are detached from their auditory support. We could call this perception an "abstract sensibility" which positions the musical reflection as far as the computer apparatus, thus marking a first level of abstraction within computer composition.[7] In the same line of thought, given that the standard rate for a sampling of an accurate digital auditory representation is 44,100 samples per second, we must agree that the accrued perception of the microcosm goes much beyond the classic macroscopic format. However, if the analytical thought necessary for computer formalism is effective when applied to short sonic phenomenon (in the area of sound or to a sequence of sounds), it shortens its resistance to a duration that is larger or that would integrate the whole work, which is of a macroscopic dimension. There is an inherent logic within the mental choices of the user that cannot totally cover the subjective risks that emerge during a creative process.

Transition between computer theory and writing: the concept of solution.

A sensibility that is different for the sounds and the structures which shape them implies that composers have a distinct perception of the relationship between the intelligible world and the sensible world. It is evident that theoretical research undertaken by Webern, who died in 1945, illustrates that the intelligible world complements the sensible world. The true challenge raised by new technologies is seen by composers in the mastering of new tools that will allow them to structure this sensible and intelligible order. Integrating operative functions (mathematical laws) with sonic transformation processes (musical laws) and with the development representative of the solution (esthetic choices), proves that there is on an information theory level (in itself attesting to an objective reflection of a scientific tendency), a musical implication beyond the solution. In this context, solutions or tests generated by the machines have a determining significance: subject to a user's musical choice dictated by the computer, these solutions were conceived on a strict objective and scientific level. As a result, an intuitive know-how, originating from one's own sensibility, will determine the musical possibilities that exist. This subjective control of technological data provided by the machine, allows one to reintegrate the mental participation, the musical subjectivity necessary to the transformation of any concrete solutions in music. Even in C.A.O., the initial information theory develops a material without any definite musical trajectory. As a general rule, it is the selective process (subjective in itself) which determines the musical possibilities carried out in the solution provided by the machine, and not the solution in itself. At this stage, before any programmed computer calculations, the sensibility or intuitive representation of sonic phenomenon, corresponds to esthetic criteria which have no explicit connection to the technological experience. This re-conceptualization stage shows the separation of "abstract sensibility" from "concrete intelligibility", and the transition from science and esthetic, to objective and subjective. The second stage, transition from computer to musical writing, transfers concrete intelligibility (known as formalism or computer theory) into abstract intelligibility (known as esthetic conceptions), thus giving form to the sensible by way of the musical concept. The electronic musical material is endlessly extensible and might even seem purely excessive. In order to limit its size, the composer is responsible for managing both: the compelling logics dictated by the machine as if they were proceedings in composing and, in keeping with his esthetic intentions, the technological response to his choices. As we can see, there exists a deontological contradiction: in order to develop musical possibilities, the theory (by way of logical formalism) provides the solution, is subject to an esthetic arbitration in the selective phase which is attributed to the solution.

Computer technique and musical thought

It is not impossible that an approximate or improvised use of the machine can be enough for creating a good musical work. Intuition will guide entirely the process of researching. We see it not as integrating theoretical intentions to the computer language, but rather as using technological tools as if they were a sonic instrument of spontaneous production. Although this practice is completely legitimate, it is beyond the scope of this presentation since the question of formalism necessary to the C.A.O. and to the synthesis is no longer asked under the same terms. This practice demonstrates that the levels of computer use are not unique and that the theoretical ways to codify them are in themselves very diversified. According to composers, the introspective computerized level vary: some of them prefer to ideally respect the logic of theoretical processes of information, whereas others reject them. The difference between two musical research schools that abide to new technologies and to an untraditional artistic tendency, is convincing enough on this subject: the G.R.M. (Musical Research Group) favors works that respond first of all to the demands of sensitive ears,[8] and I.R.C.A.M. (Institute of Research, Coordination, Acoustic Music, Ircam) under the leadership of its longtime director, Pierre Boulez, unites the conception of material with the compositional

thought.

In research, apprenticeship and creation are unified: apprenticeship becomes the first level of sensitive integration of material. To use these new tools, it is necessary to obviously know the language and the internal structure, at times complicated. The development of the material goes through a necessary phase of apprenticeship connected to the creative process. Composers learn to experience how to use the machine and to think analytically about the objectives of creation. In itself, it is a whole program since creativity does not always comply to explicit needs. As a tool of intellectual speculation, the user has to reason in a particular way rather than as an instrument of musical practice, henceforth, the computer becomes much more an intermediary between conception and production. In this strange and unguarded realm connections emerge between ideas and production performed according to a sacred ritual of meditation between the pencil, the paper and the musical instrument. The acoustic instrument has disappeared, and unless the composer uses the score editor, the pencil and the paper are still mediators between research and rendition of the final choices. This traditional proceeding materializing after a period of experimentation, plays a fundamental role in the creation of sounds and sequences. This proceeding consists of two types of solution: silent tests - numbered output, or sonic tests -playback. Computer programming requires as well an intellectual practice of rationalization which may possibly alter the esthetic experience due to the theoretical rigidity that it implicates. In composing, it is never a matter of proving theoretical principles but of producing sonic sequences where coherence can only be measured by its intuitive representation. The distinction between research and creation is obviously limited in this case. The integration of the technological process with invention does not necessarily mean that the elaborated theoretical research for a given work is the conclusion of computer composition. Music remains the main objective. The project integrated with the esthetic creation and also added to a scientific research project (such as psycho acoustic and cybernetic) invariably and ideally still aims at the structure of the material. The purpose of this structure is to offer composers infinite possibilities in musical production. It is here that the concept of musical research becomes evident and at which computer composition aims, for the theoretical phase of composing has become a scientific cognitive act surpassing esthetic framework.

Differences between two technical conceptions: information technology and composition

Even though creation does not necessarily have a direct relationship between idea and production, after research certain choices are still unexplainable, if not irrational. Computer practice requires a precise definition of requisites and goals; it necessitates the rational to be directly implicated in the composition as if it were a conscious act. Algorithmic thought serves this purpose and arises by calculation, to a logical codification of a given problem's solution(s). In musical computer science, formalization does not always respond to the concrete musical and becomes an unavoidable step in rationalizing musical principles within codes that utilize abstract logic.[9] In order to link together idea, procedure and production, abstraction found in computer language only about ten years ago, used to be harmful to the cohesion of practices and savoir-faire. Today, luckily, this harm seems to have lessened, thus facilitating the transition from conception to production of the material. From a writing point of view, composers find themselves in a delicate situation between scientific objectivity and esthetic subjectivity; a situation comparable to the one found between conception of a score, where the composer is guided by a precise musical thought (the esthetic research in question), and between production, the accomplishment of this thought as expressed in the transition from writing to notation. If the computer has a superior intelligence, conscious of its functions, then it can only respond to its own properties when being assisted in its objectives. Therefore in order to establish the relationship, it is the composer who assists the computer rather than the computer who assists the composer (unless he is supervised by an expert). The translation of solutions within musical language remains the pride of human spirit which can only interpret anew, a posteriori and according to its own uniqueness, the technological consequences of artificial intelligence. Staying within the strict limit of solutions generated by the computer, even if these latter are guided by a discerning analytical thought, does not guarantee the attainability of the musical level which is obviously generated by the adjustment of the sensible with the intelligible.

2. Intuition/Reasoning

Because the composer oscillates invariably between logical calculation and the expression of his sensibility, there is between intuition and reasoning, a chronological break down of the musical operation, rather than an opposition to his nature. The relationship between intuition and reasoning is reciprocal. On the one hand, it represents the transition from compositional thought to computer practice; on the other, the transition from computer thought to compositional practice. Intuition is responsible for bringing us back to sensibility which is precisely what motivates us to make certain choices and to operate them. It provokes processes that are irrational since they depend on musical concerns not encountered by definition in information technology.[10] This intuition immanent to the esthetic creation comes close to Kant's "empirical intuition", described as an aposteriori knowledge arising from a received sensation. This kind of intuition rejects determinism and formalism determined by logical thought (in scientific term), and bases its acknowledgement on empirical phenomenon that governs immediate cognition, such as, sensations, feelings, emotions, and integrating as well the socio-cultural dimension. In line with this expose, this intuition paradoxically represents everything that tends to reject the rational logic required by any computer system, especially in the programming stage.

Thinking modes in composition are different from thinking modes in information technology

Cognitive mechanisms that play a role in the relationship between computer thought and compositional practice, put a dualistic tension in the methods of reasoning. Two kinds of antagonistic thoughts stand out: mental processes devoid of objectives (in logic term) which are defined in cognitive sciences as "reveries", and mental processes of a determinist type, having a precise objective and defined as " calculations".[11] In this taxinomy of thought, some modes characterize creation, others formal logic. In cognitive science, inductive processes are distinguished from deductive

processes as if they were mental processes of a specific semantic information. - Some (by induction) substitute intermediary conjunctive informations until adopting the disjunction process as a solution, and adding more information: i.e. taking intermediary steps in problem solving, different ways to go, for example from point A to point B; - Others (by deduction) proceed by a mutual process of elimination of incompatible propositions and only retain what conforms to them: by excluding compared inadequate solutions according to a preelected agreement; the point is to conform to the logic clarifyied in the program. When excluding intermediary situations, the transition from compositional thought to computer practice favors deductive mental processes. The decision connecting each mode of thought, composition and information technology, is made by going from one to the other: from an intuitive, representation of material, infered from a sensible knowledge of technically sonic phenomenon (subjectivity), to a disensibilisation or objectivity within computer code. In information technology, to introduce certain pitch in a given sequence for example, does not imply that one must solely indicate maximum and minimum ambitus, nor show a filtering mode, or interpolated curb between values, etc...; but also to deduce their consequences on perception by reducing to the maximum all intermediary situations. In other words, it is a matter of clarifying all implication in the composer's "reverie" in order to optimize the computer's job. "A program must reduce to the minimum the amount of time necessary for determining the validity of an inference, the longer the time, the more difficult it is to know if a program will lead to a decision or if it will continue endlessly".[12] Whereas the transition from computer thought to compositional practice seems to favor the inductive mental processes, choices extend beyond the determinist framework of solutions that the machine proposes. In this case, it is a matter of establishing the subjectivity in the material by way of an auditive experimentation of the solutions. In composition, the deductive and essentially non determinist process is always the subjective issue in regards to solutions, earmarking the integration of calculation for a rational explaination, thus expressing in an often not very coherent way the analytical interpretations of the work. This explains why the best programs are those that allow a simulation of arbitrary choices all the way to their structures, thus making it possible for the user to intervene and to modify both the operative orientation (the operations for calculation) and their parameters. Because the decisions are made equally and almost independently in favor of formal logic, as if they were desired expressions connected to specific extra-logic requisites, in certain compositions, some ideas have a more intellectual nature than others. They will encourage the composer to respond to a distinct complex problem by developing a theoretical system as paradigm of a given phenomenon. In other compositions on the contrary, it will be a question of staying closer to the emotional sensibility by favoring the associations of intuitive thought that are independent of a formal theory. The types or instrumental groups express this idea, as well as to equally reveal these requisites: requiem and opera obviously do not have the same compositional objectives.

From rhetoric code to mathematical code

Thus the transition to information technology requires the composer to describe at first, logical principles while situating them respectively in a musical application. The uniqueness of the processes will depend inevitably on specific orientations that the computer takes: both the choice of theoretical devices (for example softwares) and mathematical functions (computation and rules). It is therefore formalization which becomes the composing method that can connect thought to execution, and idea to its creation. If composition brings about a speculative type logic which is dictated precisely by organized rules of any writing system, one must therefore distinguish it from the logic that information practice dictates, i.e. operational logic rather than cognitive logic. In information technology, logic has first of all, to acccomplish precisely what it is being asked to do. It must describe exactly the steps leading to the solution, by calculating and reasoning that contribute to the efficacy of operations. The definition of sounds and structures that give them life is set and found in the descriptive stage.[13] In this area, mathematics becomes the essential metaphor in explaining the sonic phenomenon, precisely because, still today, communication with computers is almost impossible other than with operational languages. Thus, in information technology, the reasoning logic requires the user to describe relations or processes that must imply knowledge of mechanical principles that operate objects or bring about conditions. Thus, in information technology certain operations are of prime necessity and the recursive definition is fundamental. There are two different kinds of practice : The conceptual representation of musical ideas with language, which allows the sensible integration of objects by recognizing their identity; and the functional or operative representation of sonic phenomenon with mathematics. As far as the founding principle of form is concerned, today the musical idea inspired from the rhetorical code (theme, motto, sequence...) becomes obliterated. Instead, the process inspired from logical formalism, though inconstant, is the way to the future. From this evolves the teleologic transition that I mentioned above, from a syntactic area to a dynamic area. There is therefore a difference between the presentation of relations between object, mathematical operations, theory of numbers regarding the equivalence between objects and actions; and the representation of objects, known as conceptualism. On the one hand, semiologic operation shows the difference between concept and object by proposing an empirical interpretation of phenomenon; and on the other hand, mathematical operation shows their unique cohesion in the operative optic which makes them easily perceived. Fundamentally, the one and the other do not seem foreign to music.

Scientific logic and musical logic

Even if the description of dynamic processes in artificial intelligence requires a specific level of knowledge, it has however no direct relationship with music. Music's logic, which is subordinated to the esthetic function as well as to diverse phenomenon of sensible integration, is essentially concerned with the creation of sensibility rather than a strict operative representation of sonic phenomenon. In musical composition, the choices that we have do not have the same intentions as in information technology, precisely because esthetic research

suppresses logical reasoning. It integrates at each step of the inventive process a subjective imprint of empirical knowledge. However, computer composition at different stages, according to techniques used, uses the logic of information systems and abstract languages which have no direct connection to music, for reasons explained beforehand. These languages, acting at an intermediary level between thought and creation, bring about the intuition as if it were a sensible and corrective control of abstractions. This is the final stage of a sensible usage of material. In order to reduce this delicate break between intuition and logical reasoning, it is therefore neccesary to formalize mental data that are connected to different musical concerns, other than the composition of sound and structures. This latter composition is easily "digitalized", the former being more rebellious to formalism and to the affective operation that occurs during the intelligible representation of semantic phenomenon encountered in the sensible. For the composer, musical idea which is already at the transition stage from writing to notation, directly defers to intuitive knowledge which demands an apriori representation of the sought after object or of the desired process. Intuitive knowledge often comes to mind spontaneously when it is not provoked by methodological mechanisms of musical writing, such as the drawing up of a form, organization of parameters, scale of value, etc. On its own, computer practice requires an a posteriori knowledge of the object or of the process as well as a defined description. It is limited by its abilities and demonstrates the challenging ambivalence encountered in computer composition as it faces the hazards of creation.

What are the limitations of computer program faced with musical ideas?

The act of creating, all spontaneous processes occur in a certain constructive, methodological measurement to satisfy the needs of esthetic coherence. This type of measure often becomes an abstract paragon, where rules and further developments must rightfully conform to it. In traditional composition, no element is defined ahead of time, except when it is discernible (which is limited to its sensible representation). By contrast, in information technology the perfectibility of the material shifts the conceptual objective to other possibilities, i.e. operational coherence that will lead to the objective cohesion and to the solution. It might be far fetched to believe that a unique program (the perfect automaton) would include in the same composition all the different given cases, i.e. operations that would produce melodic, harmonic sequences, rhythms, durations and forms, etc... A limitation of this kind has its own purpose in that it produces a certain homogeneousness in regards to the usage of functions and at the same time is part of a unique algorithm. This unique program which has been often tested by repetitive use, reassures the user by anticipating the scope of uncertainty vis-a-vis the entire cohesion and by limiting the dispersing apprenticeship of other programs. The ideal program would include the user's own style by a "creative model of the musical experience"[14]. A program expresses a manner of thinking. In its elementary structure, it answers precise objectives and integrates procedures that add a large flexibility to its basic operation. While composing, this flexibility allows the system to evolve. The compositional needs are many and are unexpected. They cannot be anticipated beforehand and require the composers to refer back and forth beween score and machine. For example, one day a digital sequence is constructed at the scale of an intermediary level to place intervals at a specific duration. Another day, a process of rhythmic agogical addition is transformed in order to change a rhythmic structure that might be too homogeneous, etc... In summary, there is a contradiction in the objectives between research and creation since there is no program that by definition includes everything that will be input.

Representing attitudes in computer composition

The idiosyncratic nature obviously shows through in the structure of programs that are developed by and for composers. In as far as they are complex systems that include varied levels of intervention, such as programs, under-programs, functions, etc... these programs in themselves convey the spirit of their creator with their specific approach to composition. For example, the library "Esquisse" created by Tristan Murail, composer and head of "the spectral school", based on complex and dynamic sonic properties: Conceived in "LisP" language (List Processor) and programmed on"PatchWork" (visual interface), this library includes models (or operative functions) that mainly respond to the demands of spectral composers or to other non-spectral composers, (since the spectrum is an integral part of sound). This library comprehends the following: a sub-library of harmonic sequences, programmed calculation of specific parts in a basic given sound, a model than can draw out parts according to a given order, the match for inferior harmonics, etc... Another sub-library for modulations, frequency modulation, modulation in links, etc...; a sub-library for processing harmonics as well as their analysis. Henceforth, certain models such as the "fundamental virtual", based on the algorithm of Terhardt, have a direct musical impact that can influence the writing due to their response to pertinent harmonic criteria. This model allows one to reconstruct on a sonic aggregate a fundamental virtual, using analytical criteria that ascribe a perceptive importance to each part of the harmonic sequence.[15] At the same time, it seems that a developing technique is perfectly repre-

sented in the machine when analysing the models of the "Combine" sub-library that were developed in the same language found in "Esquisse" by Mikhael Malt for composer Brian Ferneyhough (the latter known for his leadership in "complex" music). This developing technique, founded on combinative calculations, is used in Ferneyhough's complex piece. Using the functions that were developed in "Combine" allows for an apparently close reproduction of solutions similar to those ecountered in complex matrix of calculations that the composer uses. Such programs exemplify the cohesion of a system and of an idea, of a composer's style and personality. They indicate as well that the differences between intuition and reasoning can be sensibly lessened when the program responds exactly to the composer's mode of thinking.

3. The Tool and its Usage

Computer: Is it a tool or an instrument?

For a long time, two levels of mastering the tool have been esssential: 1. the composition of algorithm in abstract code, 2. computer programming and the choice of input parameters. Today, these levels blend into one: a simplified program that includes musical components and composition, obviously lessening "the lack of sensible causality in computer material"[16]. These two levels are today accessible and complement themselves in the practice. In the programs, visual interface and graphics, the code acts as an intermediary, representing program and traditional notations. The first (the composition of algorithm) is homogeneous and only has an indirect relationship to music. It practically does not influence the musical sensibility, other than in its austere and distant presentation of a symbolic musical representation. This composition requires the user to remain at a constant level of abstraction and guarantees a certain integrity in logical thought vis-a-vis esthetic research. If the principle of visual connnections between different "operational units", which is a typical principle in graphic programming, is to secure a wider empirical freedom, it can also confuse the interior logic of thought during the programming phase in coding. Because with "play back", it is possible to correct the listening, this principle can therefore challenge the existence of certain musical principles known in the programming phase and denied to the hearing by a sensible correction of the ear. But, is this not a justified contradiction since it assists musical reason? For the purists, graphic programming is a short cut compared to programming in code, and it fails the mastery of logic that is required by the information system. This does not prove anything musically speaking, even if we must admit that this attitude leads to an arbitrary and approximate situation, most likely conflicting with theoretical work found before the solutions. However, the adequacy of scientific and artistic research is fortunately not the ideal belief of computer composition. It is not a matter of writing an instrumental piece by being satisfied to just unconsciously assign to instrumentalists logical instructions. The complete control of information logic does not mean mastering the emotions and thus creates this ambiguity. From one universe to another there is always an objective and subjective stake which can only be resolved by composers and only by means of an esthetic experience. What composers prefer best is to reduce the machine to only an instrument of music. However with caution, the delicate borders betwee intuition and reasoning disappear as soo as the machine goes beyond the functiona role and the determining logic has a chanc to regain its rights.

Programming according to composition

The same way a specific tool produces given solution, a specific synthesis create its own type of sound. The difficulty i integrating strategies of writing in the ma chine comes from the questionable rela tionship between two kinds of thought a mentioned above: calculation and creatio or theoretical speculation and estheti choice. In creation, the imaginative abili ties, expressed by the transition and th translation of ideas to their completion, ar encouraged by multiple causes which ar often external or foreign to all determinin principle. In addition, the auditive repre sentation of technically sonic phenomeno (of material) resists the fact that a com poser often does not have the technica control of his tools. To him, the technologi cal tool seems often disagreeable becaus of its internal determining function mode In spite of the incompatibility between for malism which is dictated by the technologi cal instrument, and the organizational sens that is required for compositional thought there is an inevitable confrontation betwee one's own thought and the determinin logic of the tool (use of a given machine studying the manual or program training) As a consequence, the composer finall compromises between two connected atti tudes in order to balance the implicit an explicit part of the relationship, to think i order to formalize, formalize in order t rethink and to validate his choices. Practic ing the material has little in common wit training on a given machine. In informatio language, mastering the programming mus not exceed mastering compositional tech nique, since it might unbalance the rela

tionship between intuition and reasoning and might increase the speculative work rather than creation. There is therefore a limit on how much to tolerate in this relationship between compositional thought and logical formalism. This limit changes the codification of music intelligible in object and the "decodification of the object into music It takes the course previously discussed between user and information tool. Programming embodies the abstract construction of the tool, the instrument in the machine. It simulates a compositional system without using continuous automatic inputs, dictated by the user. A simple operation which responds to a precise algorithm can amount to a unique command. Integrated to other algorithmic functions done in sequence, this operation is enough to produce ultra-sophisticated solutions. This is not a matter of compositional short-cuts (as it is with truncated writing), rather it is about controling rules determined before the composition and applied automatically as if they were esthetic conditions given by the user. These "short-cuts" have obvious esthetic implications. Making certain steps automatic when composing, certain motions are inhibited, sensibly neutralized and others exacerbated. Very few softwares conceived by composers can meet compositional requirements. The large multi-functions model "Situation", conceived in the PatchWork-LisP language by Camillo Rueda for composer Antoine Bonnet, is an example indicating that the more a program meets the specific requirements of the composer, the more it will only interest a small number of users, though it is a bigger satisfaction for the conceiver. Adapting foreign programs restricts composers to acccept some programming rules that do not necessarily correspond to their needs, nor agree with a logical system.

Instead of a conclusion

The independent computer musical position is a positive concept which gives the composer his independence and provides him with a sonic craftsman status; not only as a conceiver but also as a sound technician, editor and interpreter....This concept simplifies the interaction between user and softwares, facilitates the operation of tools and stimulates creativity. It is available to all composers and becomes the new musical instrument from where other new composing concepts emerge. This new pluridisciplinary tool leads to a personalized use of information and as a result guarantees the freedom of concepts to be created and the emergence of new products that do not need institutional intermediary. Thus, electronic music becomes autonomous.[17] Research can only lead to creation by submitting implicitly and quietly to scientific objectives where its existence has been recognized. Creation is only the product of research and a further theory of found solutions. The idea of recognizing the sensible in each discipline, music and technology, allows the truth to reveal itself when those disciplines cross each other's path.

FOOTNOTES

1. This expression was taken from Marie-Elisabeth Duchez in her article L'evolution scientifique de la notion de materiau musical , published in Le Timbre Metaphore pour la Composition, presented by Jean Baptiste Barriere, edited by Christian Bourgeois, I.R.C.A.M., Paris: 1991, P. 67.
2. Variation that lies not only on proposed operations, but also on the user's attitude. Where do the choices begin and what are the esthetic principles that guide them? Two further questions to ask ourselves.
3. Thomas D. Rossing, The Science of Sound, Addison-Wesley Publishing Company; Northern Illinois University: 1981, p. 523.
3. Rossing: 523.
4. Duchez 1986:72
5. Duchez 1986: 78. She writes: "The material of computer electronic music is not only the sound result that emerges during the operation, but is also its basic technological means of production and organization".
6. Evan K. Chambers, "The Computer Music World View: Sketch of an Ethnomusicological and Aesthetic Approach" published in Proceedings of the 1994 International Computer Music Conference, Aarhus, Dannemark, PP.19-22.
7. An order of concrete sensibility corresponds to an acoustic sound represented in the notation. This sound is neither synthesised nor processed (the pure instrumental sound or the note). But an order of abstract sensibility corresponds to a synthetic or processed sound which is a priori only a game of numbers or operations that have no precise psychic animation,.nor is identifiable as is the mi3 pianissimo of a violin.
8. Francois Bayle: on the acousmatic concept: "music without a source of visible production", in his work Musique Acousmatique, Propositions... ...Positions, INA-GRM, edited by Buchet/Chastel, Paris: 1993.
9. Formalization deals with mathematical axiom as much as with models of given acoustic examples.
10. The intuition of logical phenomenon that influence the analytical thought is real. However, discussing it goes beyond the framework of this text. I will only speak of the opposition between sensible intuition and logical reasoning.
11. Philip N. Johnson-Laird, L'ordinateur et l'esprit. Published by Odile Jacob, translated from the English by Jacqueline Henry, Paris: 1994, pp. 231-248.
12. Philip N. Johnson-Laird: p.237
13. Actually, synthetic models can also help to create musical structures.
14. Agostino Di Scipio, "Formal Processes of Timbre Composition Challenging the Dualistic Paradigm of Computer Music" published in Proceedings of the 1994 International Computer Music Conference, Aarhus, Dannemark, PP. 202-209
15. Ernst Terhard, Gerhard Stoll, and Mnfred Seewann, "Algorithm for extraction of pitch and pitch salience from tonal signals", Journal of Acoustic Society of America 71 (3), March 1982.
16. Duchez 1986: 69
17. Some institutions, such as Ircam for example, try to bring together different areas of musical information technology to a similar operational tool. The models of different procedures of a given process become accessible and interactive with such tool when they do not work continuously together to bear fruit (as is the case now between G.R.M. and Ircam who work together on the same platform and between different research centers). Ircam's group is a typical example of this obvious congruence of softwares and their users. Thus, PatchWork-Lisp, a software developed by Ircam, incorporates in its structure different libraries of given processes. Such as synthesis and analysis, as well as mathematical and statistical functions that are useful for composition. The advantage of such philosophy as we have mentioned is not only the interaction of the tools which give more flexibility to writing strategies, but also the wider malleability of tools for the user. It is always about working on an identical application and to code our messages in a similar language.

Frank Pecquet

Some Thoughts Concerning the ICMC

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As ICMA Vice-President for Conferences, I have been asked to explain little of the background to the current position regarding the organization of the International Computer Music Conference.

I wrote something on this back in 1992, to explain, among other things, the rationale for developing Asian conference sites and to go overaspects of the financial dynamics of the conference. It looks as though it is time to go over this again, although on this occasion I will skip going over the remote history of the ICMC and concentrate on the financial aspects, so that ICMA members can understand what the costs are and why delegate fees are set as they are.

The aim of the conference is to provide an international platform for the presentation of music and research in the field of computer music. The specific objectives include selection of the best of work submitted to the conference organizers, the provision of the best possible conditions for the presentation of this work, and the dissemination of the selected conference materials via the Proceedings and the conference CD.

The success of the ICMC can be measured by the number of submissions it receives (the Aarhus conference, for example, received around 700 submissions) and the number and provenance of attending delegates (typically around 400 from 25 countries). The feedback we get from people who attend is overwhelmingly favorable, but there has been some concern expressed over the cost to delegates and also over "profits" being made from the event.

The character of the ICMC is defined mainly by the people who attend and the work presented. But the venues themselves are of enormous importance in this regard: not only have we been fortunate to end up in fascinating, stimulating cities, but we have, by expanding the geographical options, been able to improve our service to the worldwide membership. This is an important consideration since the membership is split geographically into three significant groups: the American continent (300 approx.), Europe (230 approx.) and Oceania (75 approx.). Attendance at the ICMC does not, of course, consist only of ICMA members. The regional breakdown is quite revealing. In 1994, when the conference was held in Aarhus, Denmark, there were 226 European delegates, 96 from the American continent and 32 from Oceania. In 1993, when the conference was held in Tokyo, there were 278 from Oceania, 64 from America and 60 from Europe. These figures demonstrate how important it is that the conference moves over a wide geographical range, so that it can live up to its "international" status by providing all interested parties with periodic opportunities to attend an ICMC based in their region.

Following this policy has helped develop membership. European membership of ICMA has built up to some extent as a consequence of the policy of siting the ICMC in Europe on a regular basis. We have now seen the beginnings of a similar process in the Oceania region.

A consequence of such geographical rotation is that would-be delegates are faced with long and probably expensive journeys in two years out of every three. One should however contrast this situation with that which pertained in the early days of the ICMC, when Europeans and Oceanians had to travel every year to North America, with all the trouble and expense in which that involved them. I hope at least some attending ICMCs far from their homes agree with me that it has its good side: I trust they find it as stimulating as I do to gain some experience, however circumscribed, of countries, climates and cultures quite different from what they normally encounter.

The two other major areas of expense which fall on delegates (or their sponsors) are the registration fee and the cost of accommodation. In the latter case, the ICMA tries to ensure that a range of options is available to delegates, including whenever possible, student-grade or other low-cost accommodation. In Banff this year, it will be possible for delegates to make use of the many inexpensive campsites in the area, while next year, in Hong Kong, student rooms will be available for a small fraction of the cost of a hotel.

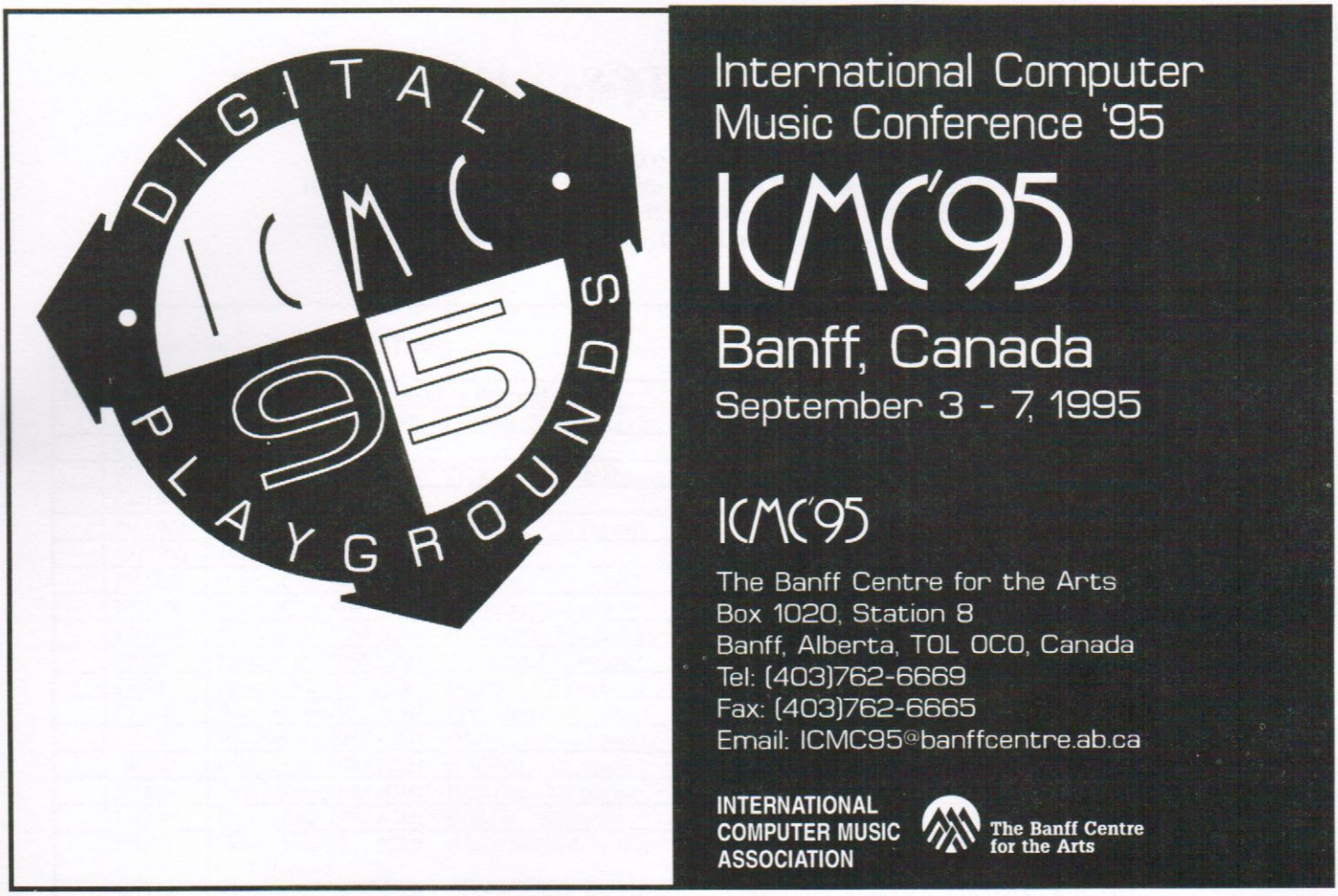
The delegate registration fee provides the organizer with an extremely important percentage of the conference costs. There have been comments in these pages concerning the apparent inflation of the fee, but it is a matter where merely gazing at the figures does not permit perception of the whole picture.

Firstly, local circumstances can vary considerably. Recent years have seen substantial variations in exchange rates, clearly beyond the control of the ICMA or the local organizer, which are bound to affect some part of our community worse than others.

Another factor is that not all hosts can "lose" costs in the bosom of a large institution. In Europe, for example, it is normal for just about everything to be paid for. Secondly, the delegate fees have never, to my knowledge, come near to covering the real costs involved in staging the ICMC, especially where the accounts presented include all costs involved. Typically, the ratio of delegate fee income to total costs is 1:3, although it has been as high as 2:3, but as low as 1:5. Whatever the exact proportion, members and delegates can be sure that the are getting a good deal, since they are not themselves bearing the true cost of their being part of the conference.

How do organizers manage to operate on such a basis? The answer is that they have proved adept at raising the additional finance by applying for grants and winning sponsorship. In most instances from 1990, organizers have succeeded in balancing the budgets. On two occasions, surpluses have been produced which have been used to support students and to provide seed money for the establishment of a regional ICMA, the latter being a project still in development.

In this context, it is difficult to sustain the view that delegate fees are too high, or that a "profit" has been made which is enriching



the organizers. The other measure on costs that is worth considering is the comparison with other conferences, not many of which offer such a sustained and varied range of activity, yet very frequently charge their delegates more than the ICMC does.

The only way to get delegate costs down on a permanent basis would be(1) reduce overall costs, or (2) greatly increase the numbers attending. The easiest way, and probably the only practical way, to achieve the former would be to give up the music-festival aspect of the ICMC and axe the concerts. If this were done, the conference would be financially viable, provided that it did not lose attendance as a consequence. Considering the latter strategy, financial viability could also be achieved by quadrupling the number of delegates. Of the two options, I would prefer increasing the size of the conference, but it is far from clear how that could be achieved. In either case, the ICMC would be greatly changed. I have heard many delegates say that the mix of music, papers and demos is excellent, and that the conference's present size is about right. That suggests that organizers will have to keep on fund-raising for delegates for years to come! My personal view, for what it is worth, is that the conference would be seriously devalued by giving up on the concerts, but that an increase in numbers attending would be very welcome, even if the quantity of papers and presentations were increased (this implies more parallel layers in the organization, which is not popular with everyone.) I know for certain that every ICMC organizer would get several additional hours sleep every night if s/he knew for certain there were 600 paying delegates rather than the attendance of circa 400 as at present!

There are a number of things which ICMA members and ICMC delegates can do to help ease the exigencies of these circumstances. If you are working with students, graduate or undergraduate, make sure that they join the ICMA - it's still only US $15 per annum. Encourage them to attend the conference, preferably by helping arrange financial assistance. The ICMA student member's registration fee is always staggeringly good value. While ICMA and ICMC fees to students are deliberately kept very low, and therefore will not do much in the short-term to help the financial dynamics of either the ICMA or the ICMC, it is very important to build up the successor generations, not only because they will be paying later, but for the general good health of our area of interest.

You can also encourage professional colleague to join up. A comparison of the membership lists and the ICMC delegate list shows that there are a good number of interested parties who could be recruited. Just think: if every ICMA member could recruit two others, the total membership would triple. The knock-on benefit to the ICMC in terms of additional attendance would be substantial, while the affairs of the ICMA itself would be transformed.

I would be very happy to debate any of these points further, in public or in private. And, as ever, I would be delighted to hear from people who would be interested to take on the organization of an ICMC.

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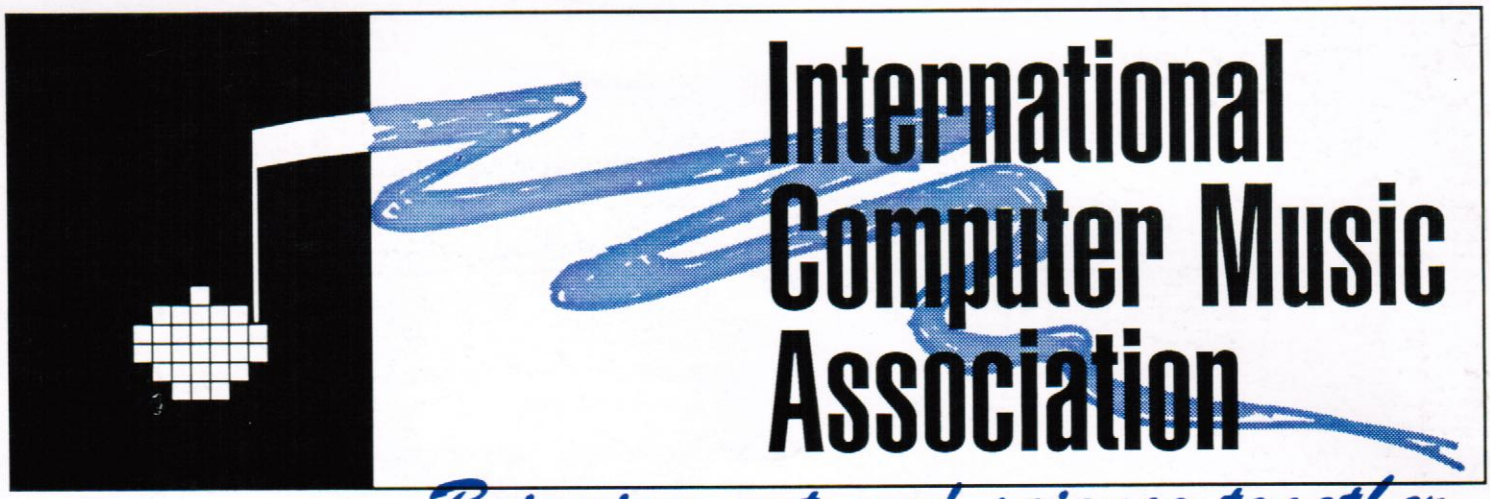

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