

Computer Music Association Newsletter  
Vol. 2, No. 2 \*  
April, 1980

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\* New Members of the Computer Music Association \*  
\* April, 1981 \*  
\*\*\*\*\*  
Duessenberry, John F., Allston, Massachusetts, USA

- Garneau, Andre, Stony Brook, New York, USA
- Harris, J., Wales, UNITED KINGDOM
- Haus, Goffredo, Milan, ITALY
- Lavelle, Mike, San Jose, California, USA
- Lowe, William W., Ft. Collins, Colorado, USA
- Lowery, Timothy, Redondo Beach, California, USA
- Piche, Jean, Vancouver, British Columbia, CANADA
- Russell, Roberta, Eugene, Oregon, USA
- Saginario, Alfred, Elmura, New York, USA
- Scaletti, Carla, Urbana, Illinois, USA
- Smith, Chris A., Berkeley, California, USA
- Turrietta, Anthony and Cheryl, Portland, Oregon, USA
- Valente, John, Marlboro, Vermont, USA
- Warner, Daniel, Princeton, New Jersey, USA
- Whittle, Robin, Balwyn, AUSTRALIA
- Wiedhoff, Hana, Palo Alto, California, USA
- Wiggins, John, Northport, New York, USA

Winter, Keith, Victoria, AUSTRALIA  
\*\*\*\*\*  
\* Computer Music Association -- Board of Directors and Officers \*  
\*\*\*\*\*  
Battier, Marc, FRANCE                      Gross, Dorothy, USA - Secretary  
Beauchamp, James, USA                      Howe, Hubert, USA  
Blum, Thomas, USA - Pres.,                  Roads, Curtis, USA - Co-founder  
Co-founder  
Byrd, Donald, USA                              Snell, John, USA  
Dashow, James, ITALY - V.Pres.              Strawn, John, USA - Treas., Co-founder

This issue of CMANewsletter includes a variety of announcements for upcoming conferences and courses, calls for papers, a studio report on the Tri-College Group by Wesley Fuller, etc. The next issue, Volume 2, Number 3, will be assembled in late June and go out to members in July, 1981. We invite you to send us announcements (e.g., of concerts, lectures, courses, conferences), reviews, original papers on computer music related topics, studio reports, and CMA Bulletin Board items by June 28, 1981. This deadline will permit us to get the Newsletter out on time and with a minimum of last second surgery often required when we receive date-critical material late. Thanks for your cooperation.

-Thom Blum, CMAN Coordinator

\* We at CMA would like to thank Indiana University's Wruble Computer Center, and Don Byrd for volunteering their services to photocopy the last issue of CMAN, Vol. 2, No. 1.

Orders for the 1980 International Computer Music Conference Proceedings are currently being accepted by CMA. The single volume includes papers which were delivered at or submitted to the 1980 Conference held at Queens College, New York and directed by Hubert Howe. The price of the Proceedings is US\$42.00 for CMA members, \$45.00 for non-members, and \$50.00 for institutions (including postage). Make checks payable to The Computer Music Association, Inc. Please allow 6-8 weeks for delivery.

Proceedings of the 1980 International Computer Music Conference  
Published by the Computer Music Association

## Order Form

Over 800 pages, bound

\$42.00 (CMA member rate - 4th class postage)

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All orders must be prepaid. Send check drawn on U.S. bank to:

Computer Music Association, Inc.

P.O. Box 1634

San Francisco, California 94101

USA

Attn: 1980 Proceedings

## WANTS TO OFFER

All works listed below are available directly from the author. (The Computer Music Association is not liable for exchanges between its members or members and the public).

The following are available from:

Otto Laske, 926 Greendale Ave., Needham, MA 02192, USA

## Tapes

1. STRUCTURE IV, half-track stereo, 15 ips, 17.5 min, 1973.
2. STRUCTURE VIII, 14.5 min, 1975, revised 1981.
3. STRUCTURE IX, 12.5 min, 1975, revised 1981.
4. TERPSICHORE, 13.5 min, 1980
5. MEDIATIONS, 12 min, 1981.

All tapes are half-track stereo, 15 ips.

Condition: US\$10.00 per tape - or free for an exchange tape.

## Scores

6. CANTUS, for violin solo (Koenig's Project One), 1980, revised 1977, 11 min.
7. QUATRE FASCINANTS, for 3 altos & 3 tenors a cappella (Koenig's Project Two), 1972, revised 1981, 7 min.
8. PERTURBATIONS, for fl., cl., vla., vl., vc., perc., piano, 1981, 11 min.

All scores, above, are computer generated.

Condition: US\$5.00 - (first two), US\$10.00 - (last)

## Books

9. MUSIC AND MIND: AN ARTIFICIAL INTELLIGENCE PERSPECTIVE, published papers and essays, 1971-1981, 500 pp., US\$40.00 - (bound)
10. SONOLOGICAL REPORT NO. 1, 1975 reprint of On Problems of a Performance Model for Music (1972) and Introduction to a Generative Theory of Music (1973), 250 pp., US\$25.00 - (bound)

The following is available from:

Robin Whittle, 42 Yeneda St., North Balwyn 3106, AUSTRALIA

## Papers

HOW TO GET TWENTY-FIVE VOICES FROM YOUR CASIOTON M-10, 1980

Condition: US\$3.00

## WANTS TO RECEIVE

Send to: James R. Williamson, 874 West Bonita apt. 128, Claremont, CA 91711

## Designs

Would like to receive detailed design plans for a "simple" 8 or 12 bit D/A converter to be used on a CDC 174 mainframe.

CMA Bulletin Board is a quarterly feature of CMAN intended to give our members the opportunity to directly exchange, offer and receive computer music artifacts from other CMA members. If you have works that you want to make available, send us a list. Be sure to include the medium of the work(s) and your conditions of exchange or offer.



Feb. 12, 1981, Denton, Texas

The 1981 International Computer Music Conference  
at North Texas State University

The 1981 International Computer Music Conference will be held at North Texas State University, Denton, Texas, November 5-8, 1981. Professor Larry Austin of the NTSU School of Music composition faculty will serve as conference director and host. The ICMC is the principle annual meeting for composers, theorists, scholars and scientists active in the growing field of computer music. Plans for the 1981 ICMC center on concerts of computer music, presentation of papers, workshops, panel discussions, demonstrations, exhibits, and meetings of special interest groups. The extensive facilities and musical resources of the NTSU School of Music will be made available for the conference.

Submission of proposals to the conference for presentation of papers and the performance of computer music on tape or with real-time digital synthesis systems must be received by the conference director no later than September 1, 1981. Compositions calling for instrumental/vocal soloists or ensembles must be received by July 1, 1981, to facilitate programming and preparation. Such instrumental/vocal works, to-be considered, should involve computer-assisted compositional processes or be combined with computer music on tape or with real-time digital synthesis systems. An advisory panel of representative practitioners in the field will be formed to assist the conference director with conference programming.

An official announcement, call for papers and music, and pre-registration form will appear in early spring, 1981. Meanwhile, further information about and suggestions for the conference can be obtained and directed to:

Larry Austin, Conference Director, ICMC  
School of Music, North Texas State University  
Denton, Texas, 76203



North Texas  
State  
University  
Denton, Texas  
76203

School  
of  
Music

announcing. . .

## 1981 International Computer Music Conference

November 5-8, 1981  
School of Music—North Texas State University  
Denton, Texas

*... the principle annual meeting for composers, researchers, theorists, scientists, educators and scholars active in the growing field of computer music...*

*... presenting concerts, papers, studio reports, panels, demonstrations, tutorials, workshops, exhibits and meetings of special interest groups...*

*... sessions on computer composition, synthesis software, sound analysis, musical data structures and input languages, synthesis hardware, system overviews, studio reports, acoustics and psychoacoustics, musical analysis, computer-assisted instruction in music, use of computers in musicology...*

*... hosted and presented by the School of Music, North Texas State University, Denton, Texas, thirty minutes from Dallas/Ft. Worth International Airport...*

Submission of proposals to the ICMC for presentation of papers and the performance of computer music on tape or with real-time digital synthesis systems must be received by the conference director no later than September 1, 1981, to be considered. Compositions calling for instrumental/vocal soloists or ensembles must be received by July 1, 1981, to facilitate programming and preparation. Such instrumental/vocal works, to be considered, should involve computer-assisted compositional processes or be combined with computer music on tape or with real-time digital synthesis systems. An advisory panel of representative practitioners in the field will be formed to assist the conference director with conference programming.

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Larry Austin  
ICMC Director  
School of Music  
North Texas State University  
Denton, Texas 76203

## Call for Papers

Computer Music Journal announces a special issue devoted to DIGITAL AUDIO. Volume 6 Number 1 [Spring 1982] will concentrate on the most advanced aspects of digital and computer techniques applied to musical sound. Topics to be included are:

- \* Digital Audio Processing
- \* Intelligent Sound Analysis
- \* Digital Reverberation
- \* Digital Recording, Mixing, and Editing
- \* Machines for Digital Audio Processing
- \* Digital Audio Disks
- \* Digital Noise Reduction

Typed, double-spaced manuscripts should be submitted in triplicate to: C. Roads, Editor, Computer Music Journal, Room 20B-229, M.I.T., Cambridge, Massachusetts 02139 USA (telephone 617-253-4093). The deadline is 1 September 1981. All articles are refereed.

For advertising space, contact Julie Zuckman at 617-253-2889.

## Call for Papers

Computer Music Journal announces a special issue devoted to COMPUTER MUSIC COMPOSITION. Volume 5, Number 4 [Winter 1981] will focus on aspects of compositional theory and practice in conjunction with computers. Topics to be included are:

- \* Composition Reports
- \* Composition Theory
- \* Microsound Composition
- \* Algorithmic Composition
- \* Computer-assisted Composition
- \* Real-time Improvisation
- \* Sound Synthesis and Composition

Typed, double-spaced manuscripts should be submitted in triplicate to: C. Roads, Editor, Computer Music Journal, Room 20B-229, M.I.T., Cambridge, Massachusetts 02139 USA (telephone 617-253-4093). The deadline is 1 July 1981. All articles are refereed.

For advertising space, contact Julie Zuckman at 617-253-2889.

ANNOUNCING THE INTERNATIONAL FESTIVAL OF ELECTRONIC MUSIC  
AND ART/SCIENCE

During October '80, the Omega Alfa Arts Ensemble, Brussels, organized a First Festival of Electronic Music and Technological Arts on a national basis. In collaboration with various national and foreign cultural organizations, the Omega Alfa Arts Ensemble and INEAC (Interdisciplinary Experimental Art Centre, Brussels) is at present organizing a second festival, inviting artists/composers/researchers from all over the world. This festival will take place during October/november 1981 with its activities distributed over 3 Belgian cities: Ghent, Brussels and Liège.

The festival includes the following events:

- An international exhibition of computer art
- A series of concerts of both live electronic music and tape music
- A video art show, to be held in Liège, incorporating tape viewings as well as video installations

Electronic Music:

Invitation to composers active in the field of electronic music:

In the programming of the festival, there is a certain focus on live electronic music. We are especially interested in multi media pieces of any kind. Works involving the simultaneous use of various media are very welcome. A local technical infrastructure will provide an 8 channel PA system, tape recorders (2-4-8 track), film and slide projectors and a theatre lightning facility. Three or four concerts of tape music will be organized as well. Composers are invited to send tapes, including a short program note on the proposed work(s). Tapes can be: 7½ IPS or 15 IPS, ¼ inch, 2 or 4 track. Composers whose work is selected for performance will be informed personally.

Exhibition of computer art:

An international exhibition of computer art is being organized as integral part of the festival: in a collaborative effort of ICSAC (International Centre for Structure-Analysis and Constructivism, Brussels) and INEAC.

The exhibition aims to give an international survey of work being done in the field of computer art, including: computer graphics, computer assisted painting,

::::/::::

3 dimensional work, computer animated films - video, computer generated slides - poetry, computer assisted choreography /performance and multi-sensory environments with computer control of events in time and space. In fact, the exhibition features a threefold activity:

- the actual exhibition itself
- the edition of a book/catalog on computer art
- 3 concerts of computer music

The actual exhibition will be restricted to two dimensional work mainly. This because of various reasons, financial and practical in nature. However, a large portion of the exhibition will consist in a display of documents, illustrating and/or describing work being done in this and other disciplines using computers, as listed above.

Please send photographs or any other visual material documenting your work. A permanent slide show will be part of the exhibition too. Artists are invited to send a few slides, representing the kind of work they are involved in. These slides will be used for further reference, becoming part of the INEAC-international slide archive.

Actual works of art should be sent, by registered mail, to the ICSAC- address as listed below. The organizers take the responsibility to return original works of art by registered mail when the exhibition is over.

A book/catalog on computer art will be published during Fall 1981.

This book aims to offer a representative international overview of work being done in the field of computer art. Artists are invited to send illustrative material on their work, reproductions, etc.

A description of your work, attitudes towards the computer (medium/tool), the technology and equipment you're using should not exceed 2 pages DIN A4. It is suggested that contributed texts do not exclusively focus on technical matters. A special interest exists towards written material describing personal attitudes, tackling the problems of advanced technology in the arts from an aesthetic/artistic point of view rather than a technical/scientific one.

- 3 concerts of computer music will be organized within the context of the exhibition. Computer pieces produced using hybrid systems, full digital synthesis techniques or mixed digital systems will be included in the program. Composers are invited to send tapes with accompanying explanatory notes to the address listed below.

::::/::::

Visual and written material, tapes or any other information should be sent to:

**Omegalfa Arts Ensemble/INEAC**  
atn: Mr Peter Beyls  
Borgval, 16  
B 1000 Brussels Belgium  
Phone: 02/ 512 81 36

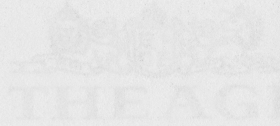
Art works should be sent to:

**ICSAC - International Centre for Structure-analysis and Constructivism**  
atn: Mrs Phil Mertens  
Regentschapstraat, 1  
B 1000 Brussels Belgium  
Phone: 02/ 513 96 30

Video art events

Artists active in the field of video art wishing to contribute material should contact:

**Mr J.P. Trèsois**  
RTBF - Belgian Radio and Television F  
Palais des Congrès  
4020 Liège Belgium



REGISTRATION FORM to be submitted by July 24th, 1981.

Name to attend the International Music and Technology Conference: \_\_\_\_\_

My country is: \_\_\_\_\_

\_\_\_\_\_ AS20.00

will be covered by the job  Unemployed

An additional charge of \$10.00 will be imposed for late registration.

Female  Male

\_\_\_\_\_

Double book  Two books  3

1st book  2nd book

3rd book  4th book

5th book  6th book

7th book  8th book

9th book  10th book

additional agreement (travel supply printed for presentation)

Travel and accommodation: \_\_\_\_\_

YES \_\_\_\_\_ NO \_\_\_\_\_

Please list \_\_\_\_\_

a deposit of \$425

full payment now is indicated

please find \$5 \_\_\_\_\_ in this payment

registration and accommodation \_\_\_\_\_

MAIL TO Gary Conyngham, IMT, c/o \_\_\_\_\_  
Geneva, PO box 2400, \_\_\_\_\_



## THE CONFERENCE:

will involve a varied series of activities including formal papers, discussion sessions, demonstration periods and concerts.

## THE THEMES:

will include: —  
current computer and digital music generating systems;  
current analog music systems;  
the impact of technology on music within society;  
technology, the community, and music education;  
the future for technology and music.

## THE PARTICIPANTS:

will be a number of International and Australian composers, researchers and performers.  
Participation is also sought from members of the musical, educational scientific and commercial communities as well as the general public.

## KEY SPEAKERS:

will include:

William Stram Cary	University of Adelaide, Australia
Robert Chadabe	State University of New York, Albany, USA
John Chowning	Stanford University, California, USA.
Walter Vogel	Fairlight, Sydney, Australia.
Jean Claude Rissa:	Marseille, France.

## SPECIAL FEATURES:

will include:  
It is expected that a number of commercial firms will be exhibiting equipment during the conference;  
A series of workshops and demonstrations specifically designed for teachers showing possible uses of music technology in education.

## PAPERS:

Abstracts of papers in any area relevant to the themes stated above should be submitted by April 15th, 1981; notification of acceptance will be made by May 1st, and complete text of accepted papers must be submitted by July 31st.

## COMPOSITIONS:

may be submitted in any of the following areas:  
Computer music, analog music, musique concrete, music made on electro-acoustic devices, together with live performers. Material sent must enable the concert organisers to access the programme potential of the work, and must be received by May 1st. Notification of acceptance will be made no later than June 1st.

## ACCOMMODATION:

will be provided at Queen's College, University of Melbourne, at a cost of \$23.00 per day, dinner, bed and breakfast. The University is conveniently located near the suburb of Carlton, the heart of Melbourne's restaurant and theatre district.

## REGISTRATION:

A\$50.00  
A\$20.00 for students  
A\$5.00 per session casual attendance.

Concerts will cost \$5.00 each (\$2.00 for usual concessions, free to delegates).  
The conference is happening under the auspices of Music '81, a year-long project sponsored by the Ministry for the Arts and proudly supported by



## REGISTRATION FORM to be submitted by July 6th, 1981.

I wish to attend the International Music and Technology Conference in Melbourne from 24th to 28th August, 1981.

My registration fee of

A\$50.00

A\$20.00

will be forwarded by 6th July

Is enclosed

An additional fee of A\$10.00 will be imposed for late registration.

I intend to submit a

paper

composition

which requires

cassette tape

two track

D.B.X.

¼" tape

four track

½" tape

eight track

1" tape

live performers (please supply details)

additional equipment (please supply details) for presentation

I would like accommodation

YES

NO

Please find

a deposit of A\$25

full payment from \_\_\_\_\_ to \_\_\_\_\_ is enclosed.

please find A\$ \_\_\_\_\_ as total payment for registration and accommodation.

MAIL TO Barry Conyngham,  
Convenor.

I.M.T.C.  
PO Box 2461V  
Melbourne, 3001

# IRCAM cours / conférences 80/81

pour beaucoup l'IRCAM est déjà un lieu d'accueil  
ensemble de la diversité de l'improvisation et du travail  
tout simplement, se rencontrent de leur  
passage à Paris, des horizons  
et musiciens de tous les horizons  
Ce rassemblement offre de  
du temps, presque jamais, à la recherche des chercheurs  
stagiaires et un potentiel de nouvelles et à la disponibilité  
il nous a permis de nous associer plus  
largement les musiciens et chercheurs de l'extérieur  
D'ouces et nouvelles propositions nous avons  
pressentir il pourra sans doute être élargi et approfondi  
dans des locaux plus vastes.

Paris, France

Centre Georges Pompidou

## conférences scientifiques

les mardis de 20 h 30 à 22 h 30

2 décembre	Jean Kott Responsable du traitement numérique du signal à l'IRCAM	Numérabilité, calculabilité, décidabilité
9 décembre	Gabriel Weinreich Professeur de physique à l'Université de Michigan	Piano Tones from First Principles
16 décembre	Xavier Rodef Professeur à l'Université de Paris VII, chercheur à l'IRCAM	Synthèse de la voix : application à la création musicale
13 janvier	Peppino Di Giugno Président du comité scientifique de l'IRCAM	Les applications non musicales de l'analyse et la synthèse de Fourier
27 janvier	Maurice Gross Directeur du LADL	La syntaxe et l'interprétation des phrases simples du français
3 février	Patrick Greussay Professeur à l'Université de Paris VIII	Représentations de connaissances
24 février	Marvin Minsky Professeur à MIT	A Framework for Representing Knowledge
3 mars	Claude Cadoz Directeur de l'ACROE, Grenoble	Contrôle gestuel rétroactif
10 mars	Stanley Haynes Tuteur en pédagogie, IRCAM	L'interface musicien/ordinateur en synthèse numérique des sons
17 mars	Adrien Douady Professeur à l'Université de Paris Sud	Mesures et dimensions d'ensembles biscornus
24 mars	Steven Small Chargé de Cours à l'Université de Paris VIII	Artificial Intelligence and Cognitive Mechanisms
31 mars	Marcel P. Shutzenberger Professeur à l'Université de Paris VIII	Quelques réflexions sur l'application de l'informatique théorique
28 avril	Ernst Terhardt Professeur à l'Université technique de Munich	Psychoacoustic Evaluation of Musical Sounds
5 mai	Yves Leclerf Professeur à l'Université de Paris VIII	Des automates conteurs de mythes
19 mai	Diana Deutsch Professeur à l'Université de Californie, San Diego	Organizational Processes in Music
26 mai	David Wessel Responsable de la pédagogie à l'IRCAM	La représentation de la structure perceptuelle dans les matériaux musicaux
2 juin	Stephen Mc Adams Assistant de recherche à l'Université de Stanford	Spectral and Temporal Functions in the Creation of Auditory Images
9 juin	Manfred Schroeder Professeur à l'Université de Göttingen	Recent Progress in Architectural Acoustics

Yves Marie Pasquet  
Compositeur, enseignant à l'Ecole Polytechnique et à l'Université de Paris IV Sorbonne

Analyse de la dimension contrapuntique  
dans l'espace musical du XIX<sup>e</sup> siècle.

27 novembre	Kontrapunkte de Stockhausen
4 décembre	Kontrapunkte de Stockhausen
11 décembre	Kontrapunkte de Stockhausen
18 décembre	Kontrapunkte de Stockhausen
8 janvier	Kontrapunkte de Stockhausen
15 janvier	Kontrapunkte de Stockhausen
29 janvier	Symphonie opus 21 de Webern
5 février	Symphonie opus 21 de Webern
12 février	Kammerkonzert de Ligeti
26 février	Kammerkonzert de Ligeti

Robert Plencikowski  
Compositeur, musicologue

Complexes de sons et relativité formelle dans l'œuvre de Pierre Boulez :  
Structures pour deux pianos, Livres I et II.

5 mars	Structures pour deux pianos de Boulez, Livre I a
12 mars	Structures pour deux pianos de Boulez, Livre I b
19 mars	Structures pour deux pianos de Boulez, Livre I c
26 mars	Structures pour deux pianos de Boulez, Livre II
2 avril	Structures pour deux pianos de Boulez, Livre II
23 avril	Structures pour deux pianos de Boulez, Livre II
30 avril	Structures pour deux pianos de Boulez, Livre II
7 mai	Structures pour deux pianos de Boulez, Livre II
14 mai	Structures pour deux pianos de Boulez, Livre II
21 mai	Structures pour deux pianos de Boulez, Livre II



Lieu des cours / conférences : IRCAM  
Salle de réunion  
31, rue St Merri  
75004 Paris  
(Métro : Châtelet ou Hôtel de Ville)

Entrée libre dans la limite des places disponibles.  
Compte tenu de la faible jauge de la salle,  
il est conseillé de s'inscrire par téléphone (278 39 42)  
Les places ainsi retenues seront réservées jusqu'à 20 h 20.

Rappel : Séminaires de Pierre Boulez dans le cadre du Collège de France.

\* Timbres naturels et artificiels \*

Samedi 17 janvier 17 h et 18 h à l'IRCAM
Samedi 24 janvier 17 h et 18 h à l'IRCAM
Samedi 31 janvier 17 h et 18 h à l'IRCAM
Samedi 7 février 17 h et 18 h à l'IRCAM
Samedi 14 février 17 h et 18 h à l'IRCAM

.....  
: :  
: IRCAM CONFERENCE HELD:  
.....

IRCAM in conjunction with l'Ensemble InterContemporain put on a conference entitled Le Compositeur et l'Ordinateur in the middle of February, 1981. On Feb. 17, 18, 19, and 20 two concerts were held in l'Espace de Projection, Panorama des Studios Européens et Américains featured works by over 20 current composers, representing over 12 different studios. Atelier IRCAM was a presentation by l'Ensemble InterContemporain under the direction of Fabrice Pierr with Jane Manning, soprano. Works by Hauksson, Harvey, and Pasquet were performed, each of which included computer generated or treated sound. On Feb. 21 at the Georges Pomidou, Grande Salle a concert, Concert de Cloture, presented works by Chowning, Xenakis, Ferneyhough, and Machover. This was followed by a public debate/discussion entitled LE Projet Artistique face a l'Ordinateur with Bayle, Boulez, Chowning, Dufourt, Ferneyhough, Machover, Minsky, and Xenakis.

COMPUTER STUDIO REPORT

TRI-COLLEGE GROUP FOR ELECTRONIC MUSIC & RELATED RESEARCH

WORCESTER, MASSACHUSETTS

Wesley Fuller

1980 International Computer Music Conference

Queens College of the City University of New York

November 13-15, 1980

Clark University

Wesley Fuller, composer

College of the Holy Cross

Shirish Korde, composer

Worcester Polytechnic Institute

Stephen Jaspersen, physicist

Affiliate Members

Ian Macleod, programmer

Computer Music Project

Joseph Tomkowitz, programmer

Jim Winkleman, programmer & composer



The Tri-College Group for Electronic Music and Related Research has recently brought into operational state a Computer Music Studio based on the Clark University PDP-11/70. Music is now being created on the system; research projects in acoustics, synthesis software and hardware are underway. These activities involve members of the group, students from the various institutions and guests.

This report will give background about the forming and funding of the group, describe the features of our computer music system and the steps taken to bring it into its present phase of operation, and briefly outline some future activities and goals.

It is our hope that this may be of some help to persons planning or now developing a similar project with somewhat similar resources and constraints; conversely, by letting people know of our successes, problems and goals, we hope to receive further help. We say further help because when you decide in the waning days of 1977 that you are going to put up a compositionally feasible music system on a PDP 11/70 with pre-existent synthesis technology and score input programs, you soon find out that that there is no completed map, and a good deal of help is what you need. We made many calls, asked many questions, made numerous trips. And, we received considerable assistance from people in the field willing to share ideas, software and time, in a few cases for rather nominal recompense, in most cases for no recompense at all. We are gratified, then, that we have already been able to

assist some persons in the process of setting up systems on ILLS. We know that this tradition of sharing is vital to us, we believe it essential to the continued growth of the art, and we are devoted to its continuation.

The Tri-College Group for Electronic Music and Related Research, hereafter referred to as GEM, was the result of a confluence of interests of composer Shirish Korde of Holy Cross College, Physicist Stephen Jasperson of Worcester Polytechnic Institute and myself, Wesley Fuller, a composer from Clark University.

Our three Institutions are located within 4 miles of each other in Worcester, Massachusetts, which city is 43 miles west of Boston, some 200 miles north of New York City, and is situated on the Blackstone River which runs predominantly underground. Worcester is an interesting mix of many elements, but in particular of educational institutions and industries. One of its factory complexes was designated a prime target by the axis powers in the second world war due to its prolific forging of airplane parts. That item and this talk are connected by the fact that the initial grant which allowed us to form GEM and the computer music studio came from a foundation set up by one of the first officers of that company.

Clark, Holy Cross and WPI have a combined student population of about 7000, with a small number of graduate students in selective fields. The programs of the colleges run from the predominantly liberal arts nature of the first two, to the Science and Engineering thrust of WPI. Clark has a small music program

with an average of 10 majors each year, three full time faculty and 9 affiliate faculty members. Holy Cross has a music program of similar size and is considering the offering of a major. WPI offers music theory and history courses as part of its humanities program.

In the summer of 1977, the three founding members asked for and received a small stipend from our institutions to undertake a study of the various programmatic and financial implications of establishing a tri-college approach to a program in electronic music. This funding came from a previously awarded grant to the three colleges for the purpose of encouraging tri-college cooperation and interaction. We made use of this fund through the present year.

The concept of electronic music was not new to the colleges, as a small Buchla oriented analog studio was founded at Clark in 1968, and WPI had considerable ARP equipment, donated by an alumnus, Alan R. Pearlman.

In November of 1977, we submitted a proposal for the establishment of a Tri-College Group for Electronic Music and Related Research to our three Presidents. Beginning with a statement about the importance and vitality of this field of inquiry and creativity, the needed collaboration of composers and scientists, and the practical advantage of pooling our resources, thus avoiding duplication of effort, we specifically proposed these activity components.

- (1) a course in Introduction to Electronic Music with a studio analog component for a limited number of students from each college, taught by the three of us, and with no set prerequisite.

- (2) directed studies and projects (for individual students and student teams) in areas of composition, software or hardware research and development, and psycho-acoustics.
- (3) faculty composition and research, and eventually guest composers and researchers.
- (4) enlightenment, education, and entertainment of the public through concerts, seminars, demonstrations.
- (5) continuing search for outside financial support to allow for continued development.

We submitted a detailed budget which included a request for a small yearly running budget, but the main requests were for funds to establish a computer music system on Clark's newly installed PDP 11/70, and a new analog studio at Holy Cross.

The proposal was received with interest, and shortly thereafter, it was decided to submit the request to the local foundation described earlier. Just before Christmas, 1977, the grant request was approved and the easy part was over.

Our most difficult decisions were obviously the specifics of the Computer Music System. The decision to locate on the Clark 11/70 was not quickly arrived at. From 1975 to 1977 Jaspersen and I had been knocking on the doors of the WPI Center which at that time housed a PDP-10. Our hope was to put up the Stanford Music 10 system including the SCORE program. Leland Smith shared the programs with us via Dexter Morrill who came to WPI early in 1976 and soon had the programs running smoothly, with, however, no sound. There was no money at this point. But the basic problem was the very heavy load already on the 10 at WPI, and it was not considered feasible to set up shop there. At that time, Clark had a XEROX 530 and Holy Cross an IBM 370. When Clark installed its PDP-11/70, at

the same time we were finishing our proposal in 1977, we talked with the Director of the Clark Center, and proceeded to state in the proposal that we wished to tie in with that computer. Even then, however, and after receiving the grant, we studied other options including the only viable digital oscillator system commercially available. After much discussion, we agreed to go with the larger computer on a completely digital basis. We hoped to set up the Stanford software tailored for the 11, knowing that Leland Smith had been working on that adaptation.

This seems a reasonable place to point out that there was a definite underlying principle at work during our planning for the computer music system. Recognizing that all systems and programs had some limitations and that development was constantly happening in many areas, we proceeded with a firm belief that there was available technology -- hardware and software -- of sufficient sophistication and flexibility so that composers could and should be at work. Believing this, and knowing that at that time we had no computer software or hardware persons assigned to us, we intended to set up a compositionally functioning studio (what even then might have been called a "classical" digital studio), let the composers get to work, and then set our sights on further development and different approaches. We were after all, two composers and a physicist who, between us, had some compositional experience with computers, some experience in analog synthesis, but a very minimal awareness of the problems involved in setting up a system in a given environment with programs designed for a different environment, a different machine, and different operating system.

At this point we began to realize the implications of the operating system RSTS which was being used at Clark. It was clear, after several conversations with the director of the center and with DEC, that RSTS would not allow for sound conversion within its time sharing environment without fundamental alterations, which alterations were ruled out as a possibility. We then began to study other real time oriented operating systems and develop plans whereby we could create and edit scores under RSTS and have our own special sound conversion times under our own operating system. It was probably advantageous that, at that time, no one of the three of us understood everything quite well enough to allow for any significant sense of discouragement to set in. We just kept going.

Now well into 1979, we took three fairly confident steps. First, we designed and instigated the construction of the physical studio itself. This was budgeted in the grant. There was no room or office in the center that could be used, so we carved out a rather secure and satisfying studio from excess hall space and construction began. As an aside here, it has always been a source of pleasure to me that we are located in the basement of the Robert Goddard Library, directly under the Goddard Archives Room which contains a photo of the father of modern rocketry seated next to the piano he frequently played. The building is a joyful, affirmative structure designed by architect John Johansen. Goddard taught at Clark and fired his first liquid propellant rocket in a field not far away. Just outside the

entrance to the computer center is the National Goddard Memorial Sculpture, the work of sculptor David von Schlegell. At the dedication of the memorial, Dexter Morrill's Studies for Trumpet and Computer were played with speakers on the trees; the live sounds of the trumpet and the vibrant sounds of the computer tape reverberated between the buildings and across the mall, with one set of speakers alarmingly close to the group of trustees and visiting dignitaries from Washington and elsewhere. The reactions were varied, but it was a heartening moment for us. The GEM computer music project was now intricately meshed with airplane parts and rockets.

Second, we managed to convince Leland Smith that a trip to Worcester should definitely be one of the next events in his life. Combining work at Colgate, he came and worked several days and nights and began to call the adaptation of the programs the Stanford-Ircam-Clark project which made us feel alive and well and living in the world. Leland produced some impressive graphs of wave shapes with the programs and we were considerably cheered.

Third, we ordered our first Digital to Analog converter from Three Rivers Corporation in Pittsburgh. We had considered trying to have the DACS built internally, but there was really no way to obtain such a commitment of time. We also considered contracting with an outside firm or person, but finally and probably due to the fact that time was stretching on, we chose the commercially available 16 bit DACS from Three Rivers which had been highly recommended.

Two good things for the project were happening at this time: in the Fall of 78, sitting in the first Introduction to Electronic

Music course was a WPI student named Ian Macleod, and new to the Clark Computer Center was a systems programmer named Joe Tomkowicz. Ian, while having some trouble with Stockhausen, became fascinated with the computer music project, and Joe came to Clark partly because he heard that we would be doing computer sound synthesis. The director of the Clark Center asked Joe to work with us, which really meant that he would end up giving hundreds of man hours on his own time, without pay, on our principle work times, Friday evenings and Sunday mornings. Ian Macleod would soon be working full time as a programmer with a firm near Boston, and also putting in hundreds of over-time hours.

At this point we decided to obtain UNIX Version 6 from Bell Labs. We had become aware that the MIT Music 11 programs would be available before long, and would run under UNIX. We also needed to take advantage of the special low cost of UNIX offered by Bell Labs to educational institutions.

So, as 1979 began, we had a viable if unpaid computer music group, the beginnings of an adapted Stanford Music 10 program (now called MUS 11), we had the SCORE program running, a Digital to Analog Converter on its way, and a well put together studio.

I will now go briefly through the steps we took to actual sound conversion and compositional capacity. All of the programs here mentioned have been developed by Ian Macleod. He has prepared an addendum to this report which describes these programs in more technical detail, and anyone interested is



welcome to a copy of that addenda. We will also be glad to arrange the sharing of any of these items.

Step 1 was to verify the DAC operation through the development of a stand alone test with no operating system, repeatedly playing a fixed table to the DAC. Thus, on April 30, 1979 we heard our first sine-waves and they were exceedingly pure, sweet and welcome.

Step 2 was the writing of a tape to DAC stand alone program. We used this to check the sound created with the MUS 11 and SCORE programs. Some table size problems were resolved as a result of this testing. In the meantime, Leland Smith returned to Clark and continued work on the adaptation of the Stanford programs, adding more of the SCORE features. We were now able to create scores and compile the samples under RSTS. We would then take the samples to MAG tape and convert to sound under UNIX. There are still some problems needing work with MUS 11 all having to do with the programs existing on the smaller computer. We hope to have a clean version of these programs running under UNIX before long. Once we have these working under UNIX we will be happy to make them available.

Step 3: Ian developed a program that enabled us to generate sine tones in real time and change the table sizes to calculate the effects of the various table sizes. This was valuable as a stand alone test for both software and hardware debugging.

Step 4: We received the UNIX Version 6 operating system which necessitated the development of a DAC Driver.

Towards the end of 1979 we obtained the MIT MUSIC 11 program. Not only did this give us a second music program, it also gave us

a basis for comparison of the sound from the two programs which could assist us in separating problems of software from possible problems of hardware. It should be said here that the Three Rivers Hardware has proved to be of extremely high quality.

Step 5 was the writing of a Play Program to take sound files, made under MUSIC 11 under UNIX, and fire them to the DAC. This was still under UNIX version 6.

We then acquired UNIX Version 7, and this necessitated Step 6 which was the development of a new DAC Driver and a new PLAY PROGRAM for use with MUSIC 11.

This, essentially, had us in the business of making music with MUSIC 11, under UNIX, in a monaural mode. The second DAC arrived and Step 7 was the modification of the Three Rivers Hardware to achieve an interleaving approach for Stereo as required by the MUSIC 11 program.

We also knew that it was indispensable to our configuration that we would be able to create files using MUSIC 11 under RSTS. We obtained the RT-11 version of MUSIC 11 and with some modifications it became possible to prepare the scores, test them, put them on tape and during sound conversion periods, transfer them over to UNIX for playing.

We were now able to work on scores and debug them 24 hours a day. Our sound conversion hours under UNIX were worked out to be 2 hours on Tuesday and 2 hours on Thursday for instructional purposes, plus 8 hours on Friday, and 5 hours on Sunday. Using RSTS for instrument and score creating without sound is a definite limitation. On the other hand, we are not a real time operation and

much of the compositional sophistication, particularly with the power of the MUSIC 11 instruments, is well done without constant sound. An eight hour sound stretch in which to test, edit, etc. can well prove to be more time than is needed. As a matter of fact, this particular arrangement is proving quite reasonable for the serious composition of music, and in some ways it is valuable for a certain kind of compositional discipline. That is not to say that we are not projecting ways of having sound 24 hours a day.

We also have a program which allows us to create score input with Leland Smith's SCORE program so that the score is readable by the MUSIC 11 (MIT) instruments. This program -- undoubtedly exotic and of use only to us -- is called LECO and was developed by a graduate student named Jim Winkleman, an affiliate member of our group. Jim started doing Computer music while a graduate comparative literature student, and has just started a new job -- less than a year later -- as a programmer with a computer software outfit outside of Boston. We also assigned Jim the task of writing a tutorial manual to the MUSIC 11 program. We would be pleased to share this. It provides a fine approach to the richness of the MIT program, particularly for those with little or no experience with computers.

Ian has also enhanced the Three Rivers Hardware to allow the changing of filters and speed settings, independent of the DAC, at a terminal.

And thus we have reached our first goal in the Computer Music Project: a compositional studio within our present and particular

possibilities and constraints. We have two composers finishing pieces at the present time, one from the group, the other our first guest composer. This coming semester we will be offering our first seminar in computer generated sound, two public concerts, three colloquia, and, in January, a four day workshop with increased sound conversion hours for a small group of invited composers. We are developing with a video production team an Introduction To Computer Music for use before concerts, at demonstrations, for potential fund-raising purposes, etc. We have three grant proposals being written which we hope, for one thing, will get us into graphics. We have begun to do some serious work on digital oscillators. The student projects this past year have ranged from composition to the design and building of a digital oscillator.

Finally, let us repeat that we will be very pleased to share anything that we can which might be of help.

Wesley Fuller  
GEM Computer Music Studio  
Clark University  
Worcester, MA 01609

November 13, 1980

- dz.c This is a cleaned-up version of the DZ-11 Terminal driver for UNIX Version 7. The one supplied with UNIX didn't work with local lines, since a DZ-11 without modem support forces its carrier detect bits low. We also have a DZ-11 driver for UNIX Version 6. These require a UNIX license.
- da.c This is our DAC driver for UNIX Version 7 (we also have one for UNIX Version 6). Our DAC's are based on a DR-11B parallel DMA interface. If yours are based on a DR-11B, then this should make some kind of sense. There is some code specific to the 11/70's handling of the UNIBUS. The 11/70 has a 22-bit memory bus and a plain-old 18-bit UNIBUS. The UNIBUS map registers map 18-bit UNIBUS DMA requests onto the 22-bit memory bus. This section of the driver will not be applicable to smaller machines.
- dm.c This is a trivial UNIX Version 7 driver for our DR-11M 2-word parallel output port. We use the output bits from the DR-11M to control the speed, stereo/mono, and filter select bits on our DAC.
- play.c This is our 'play' program. It reads a sound file (as produced by MUSIC 11), writes it contiguously to our dedicated raw disk, sets up the DAC control bits, then fires the file to the DAC using an asynchronous quad-buffering scheme. It leaves some information around in a file called '/usr/play/ondisk' to tell you what's on the raw disk. The raw disk may be subsequently 'replayed' without the delay of copying the file. The program uses 4 10Kbyte buffers (possible on an 11/70 with separate I/D space), but they needn't be this big.

dacdrv.ccc and lowcore.mac

These are the sources for our standalone tape-to-DAC program. dacdrv.boot is the tape-bootable machine code. Our TE-16 tape drive is not very fast. We can only manage 20Khz sampling rate (mono). We used this program until we introduced the DAC to UNIX.

singen.ccc and lowcores.mac

These are the sources for the standalone sinewave generator. singen.boot is the tape-bootable machine code. The 'fixed' command builds a buffer with some integral number of sinewaves in memory and feeds it to the DAC, over and over, until something is typed

on the terminal. The 'table' command attempts to do real-time generation of a sinewave using the good-old table look-up method. You can specify the table-size, frequency or increment, and an amplitude. We used this program for ironing out hardware bugs, and for doing noise analysis of the table look-up method (i.e. various table sizes). The standalone programs were developed on a VAX under RSX emulation (that was all I had at the time). You probably won't be able to re-create them from source under UNIX without some modification. Both programs default to the console, but can be made to talk to an arbitrary DZ-11 terminal line. You've got to figure out the appropriate address and line parameter bits for the DZ-11. Both programs have a 'help' command which should give you some kind of clue as to what's going on. The listings show MACRO-11, object, and possibly C code side-by-side. The addresses on the left should be offset by where the names 'psect' (program section) was loaded. If you need to change the machine code, you can always use 'adb' on the file. There are 100 words of 'patch space' in lowcore.mac and lowcores.mac. To make a bootable tape from these files, use 'dd'
 

```
dd if=singen.boot of=/dev/rmt bs=512
```

pip.c

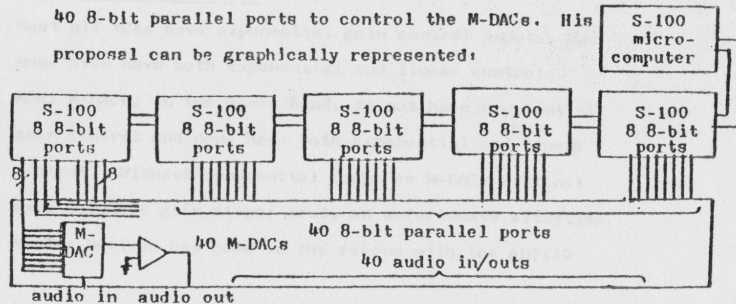
This is a program which reads and writes DEC DOS format magtapes. Just about every DEC operating system around can handle DOS tapes, so it makes an excellent communication medium (it does have its limitations, though).

Due to an error on our part, some copies of the CMAN Vol12, No1 did not contain pages 1 and 2 of the Mike Yantis article - Hybrid Synthesizer Audio Amplitude Controllers. Therefore, we include those pages here....

HYBRID SYNTHESIZER AUDIO AMPLITUDE CONTROLLERS

by Mike Yantis December, 1980

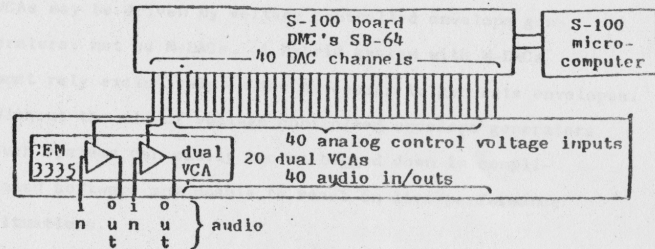
The need for computer control of amplitudes becomes apparent to any hobbyist/musician constructing a hybrid synthesizer (digitally controlled analog synthesizer). One should, as is suggested in Ron Erickson's article "Hybrid Electronic Music Synthesizer,"<sup>1</sup> be able to control a mix of say 4 VCOs' pulse, triangle, and sine waveforms, the resonance of several VCFs, and to control several audio mixers to produce a stereo output from these sources. Erickson fairly suggests that 40 amplitude controllers would be adequate. Erickson chooses to facilitate 40 channels by using 40 multiplying digital-to-analog converters (M-DACs) used as audio attenuators and 40 8-bit parallel ports to control the M-DACs. His proposal can be graphically represented:



<sup>1</sup> Ron Erickson, "Hybrid Electronic Music Synthesizer," Computer Music Association Newsletter, Vol. 1, No. 3 (1980).

\* Mike Yantis, 1210 E. Pine St., Stayton, OR 97383

Another method of facilitating a 40 channel audio amplitude controller is to use an S-100 multi-channel DAC board (Digital Multi-Media Control makes a 64 channel board called the SB-64). The analog control voltages coming from this board are connected to the control voltage inputs of 20 dual voltage controlled amplifier (VCA) chips (Curtis Electromusic's GEM 3335 is one such chip). This may be visualized:



Besides, quite obviously, reducing the size and complexity of a 40 channel amplitude controller (5 S-100 cards reduced to 1 card, and 40 16-pin chips to 20 14-pin chips), the VCA design has many other advantages over the M-DAC design:

1. Audible Switching Transients

VCAs can easily be designed so that extreme changes at the control inputs do not cause "clicks" at the audio outputs. By simply placing a damping capacitor at the control inputs "clicks" can be prevented without audibly slowing the VCAs' response time. As the following paragraph from Analog Devices points out, M-DACs, however,



are inherently transient prone:

In general, the application of high-speed-DAC circuits to audio use can give rise to some serious problems. For instance, if the channel gain is to be manipulated while signals are present, large instantaneous gain changes in the presence of signal peaks will almost guarantee annoying audible switching-transients due to the abrupt change in level. As a remedy, one might restrict gain-switching to times when the signal is near zero. A more-pleasing and satisfactory approach is to spread the gain change over about 50ms or more by digitally "ramping" it, using a clock and preset counter.<sup>2</sup>

Both remedies suggested by Analog Devices are not satisfactory. Performers do not want to restrict gain switching only to times when the input signal is near zero; and neither do most hobbyists care to construct 'digital ramping' circuitry because of added complexities, cost, and board space.

## 2. Equal-db Gain Steps

Most all VCAs have exponential gain control inputs, and some even have both exponential and linear controls. Most M-DACs, on the other hand, do not have exponential gain control and none have both exponential and linear control. Without exponential response M-DACs will not have equal-db gain steps; truly an unfortunate situation. Analog Devices has come to the rescue with the AD7110

<sup>2</sup> Analog Devices, Application Guide to CMOS Multiplying DACs, (Norwood, Mass.: Analog Devices, 1978), pg. 37.

digital audio attenuation device; it is essentially an M-DAC with exponential control, and a bigger price tag.

## 3. Mixing

Mixing control information from two sources is impossible with M-DACs. With VCAs, however, it is possible to sum a DAC output with a slow VCO, for instance, to produce a tremelo effect.

## 4. Envelope Generators

VCAs may be driven by voltage controlled envelope generators; not so M-DACs. A hybrid system with M-DACs must rely exclusively on the processor to generate envelopes. Without the aid of voltage controlled envelope generators such systems can easily become bogged down in complicated software and unable to react in live-performance situations.

## 5. Control Range

VCAs have a much larger control range than M-DACs. VCAs, like CEM's 3335 dual VCA, have a 130 db range; M-DACs, like the AD7110, have an 88 db range.

## 6. Cost/Size

Finally, the following table should convince the most ardent M-DAC supporter:

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IR-0017: Music of James Fulkerson	_____	_____
IR-0013: Music of Dary John Mizelle	_____	_____
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announce a continuing series of recordings.

**IR-0032** Jerry Hunt: Cantegral Segment(s) 16, 17, 18, 19 / Transform (Stream) / Tranaphalba / Volta (Kernel) (1976-1978)

These four works represent some aspects of the composer's performance-composition during 1976-1978. Cantegral Segment 17, 18 is recorded here as an electronic system performance using human voice and transient sound emulators. Tranaphalba is a performance work using electronic instruments controlled through a dynamically interactive electronic processor. Transform (Stream) is a variant of Cantegral Segment 16, 17, 19 using breath stream sounds and auxiliary percussion devices. Volta (Kernel) is a direct voice work using auxiliary mechanical devices.

**IR-0026** Texas Music: Jerry Hunt (Lattice) / Philip Krumm (Sound Machine) / Jerry Willingham (T'Chu) (1974-1978)

Three independent Texas composers and works produced by them or under their direct supervision: Jerry Willingham (Austin) - T'Chu (1974, 1978) in a version for winds and percussion, one of several compositions made during 1974-1978 involving pattern-module performance processes; Philip Krumm (San Antonio) - Sound Machine (1964): one of the earliest compositions using repeat pattern-variant processes in performance, recorded here using electronic voice and instrument simulation; Jerry Hunt (Dallas) - Lattice (1979): pianoforte and attachment devices, one of several recent works for various keyboard instruments, the composition as an accumulation of melody-rhythm pattern in response action to the intonational and resonance properties of the specific pianoforte-environment used.

**IR-0022** Music of Larry Austin (Hybrid Music): Quadrants: Event / Complex No. 1 / Second Fantasy on Ives' Universe Symphony - the Heavens / Maroon Bells / Catalogo Voce (1975-1976)

One part of the widely-acclaimed American composer's 1975-1976 work with the Ives' Universe Symphony concept is presented: Second Fantasy (Heavens) using a chamber group consisting of keyboard instruments, viola, percussion, clarinet, and tape-recorded sounds. Quadrants: Event / Complex No. 1 (1972-), uses wind ensemble, and electronic sounds. A 1976 work, Maroon Bells, employs voice, piano, and electronic sounds. The composer's recent work, Catalogo Voce (1979) is a mini-opera using bass-baritone voice and electronic sounds.

**IR-0017** Music of James Fulkerson: Suite for Solo Cello (Amplified) / Music for Brass Instruments II / Co-Ordinative Systems No. 10 / Antiphonies and Streams (1976-1979)

The internationally-recognized trombonist and composer plays three of his works: Music for Brass Instruments II (1975), using bass trombone and recorded bass trombone sounds; Co-Ordinative Systems No. 10 (1976), using trombone and tape delay; and Antiphonies and Streams (1978) for amplified trombone. Fulkerson's recent work is represented by his Suite for Solo Cello (Amplified) (1978-1979), in a performance by cellist Sarah Hopkins.

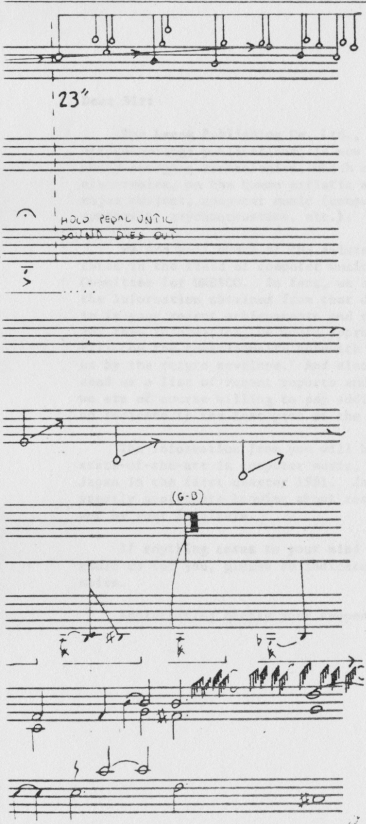
**IR-0013** Music of Dary John Mizelle: Primavera / Spectra / Polyphonies I (1975-1979)

Three works by this important composer document some of his continuing interests: Primavera: Heterophony for 24 cello; Spectra uses contrabass (Diana Mizelle performs) and electronic sounds; Polyphonies I uses shakuhachi, with the composer performing, and tape and tape delay system sounds.

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ELECTRONIC MUSIC OF

# JOHN DUESENBERY



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Opus One is proud to announce the latest addition to its catalog: a recording of recent works for electronic media by John Duesenberry.

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John Duesenberry studied composition with Joyce Mekeel, Allan Schindler, Robert Stern, and John Goodman. His music has been performed widely in the U.S., and in Italy and Australia. Duesenberry has taught at the Boston School of Electronic Music, and has written a number of articles and manuals on electronic music. Among his awards are an Artists Fellowship from the Massachusetts Council on the Arts and Humanities and an Honorable Mention in the 1979 League-ISCN National Composers Competition.

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# COMPUTER MUSIC ASSOCIATION

## APPLICATION FOR MEMBERSHIP

The Computer Music Association is interested in helping develop and further of the art and science of computer music. The Association, which has applied for status as a non-profit tax-exempt corporation registered in the State of California, serves as a place for exchanging information about the use of computers and digital hardware and software for musical purposes. In addition, the Association can serve the computer music community by assisting in the organization of the International Computer Music Conferences.

There are three classes of membership: general, student, and sustaining. Student memberships are available to students enrolled in a recognized school, college, or university. Sustaining memberships are available to persons, corporations, or organizations making a substantial donation (currently, no less than \$25) to the Association. The Association has members in North America, Europe, Japan, and Australia.

Each member receives a copy of the quarterly *Newsletter* published by the Association.

A limited amount of advertising may be accepted for publication in the *Newsletter*. For rates and further information, contact the Association at the address given below.

To apply for membership in the Association, complete this form and mail to:

Computer Music Association  
P. O. Box 1634  
San Francisco CA 94101  
U. S. A.

### Membership rates:

regular: \$6 per year  
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2-15-11 Hiroo Shibuya-ku  
Tokyo 150 Japan  
TEL: 03-498-4880

September 6, 1980

Dear Sir:

The Leona Publishing Co. Ltd., a Japanese firm specializing in art/technology publications, is now making a survey on the effect of newly-emerging technologies, which center on digital and micro electronics, on the human artistic activities, including, as a major subject, computer music (computer composition, digital sound synthesis, psychoacoustics, etc.).

We are well aware of the existence of the directory of institutes in the field of computer music prepared in 1976 by the Canadian Committee for UNESCO. In fact, we are writing to you according to the information obtained from that directory. What we are interested in is your recent achievements and research directions in the future. For this information, we would appreciate it very much if you could fill up the questionnaire herewith enclosed and send it back to us by the return envelope. And also, we would like to ask you to send us a list of recent reports and books that you publish, for which we are of course willing to pay additional expenses necessary (please so indicate in the last part of the questionnaire).

The information from you will be compiled as a report on the state-of-the-art in computer music, which will be published in Japan in the first quarter 1981. Japanese readers, we believe, will greatly appreciate knowing about research activities being carried out by your institute.

If anything comes to your mind which we, as a Japanese publisher could do for you, please so indicate in the last part of the questionnaire.

Appreciating deeply your cooperation and time,

Yours sincerely,

*J. Tsukatani*  
Takuro Tsukatani  
Executive Director

QUESTIONNAIRE

Your name:

Name of your institute:

Address:

tel:

Name of the representative:

- 
- 1) Could you give a rough illustration of your system in operation? In particular, if a major expansion has been made since 1976 or is planned soon, please specify the types of equipment.

- 2) Could you give an explanation of your software system?



Questionnaire, page 2

3) What are the major research interests in recent years? Could you give the names of researchers, fields and publications?

4) What are the fields in which you are planning to do further research?

Questionnaire, page 3

5) Do you have any periodical publications, workshops or seminars?

COMPUTER MUSIC ASSOCIATION  
APPLICATION FOR MEMBERSHIP

The Computer Music Association is active in developing and furthering the art and science of computer music. The Association, which is a non-profit corporation registered in the State of California (federal tax-exempt status is pending), serves as a place for exchanging information about the use of computers and digital hardware and software for musical purposes. In addition, the Association serves the computer music community by assisting in the organization of the International Computer Music Conferences.

There are four classes of membership: general, student, sustaining, and institutional. Student memberships are available to students enrolled in a recognized school, college, or university. Sustaining memberships are available to persons making a substantial donation (currently, no less than US\$30.00) to the Association. Institutional memberships are available to libraries, corporations, and similar organizations. The Association has members in North and South America, Europe, Japan, and Australia.

Each member receives a copy of the quarterly Newsletter published by the Association. Other benefits of membership include membership discounts for CMA Publications, which include the Proceedings of the various International Computer Music Conferences (publications order form available on request).

To apply for membership in the Association, complete this form and mail it to:

Computer Music Association  
P.O. Box 1634  
San Francisco CA 94101-1634  
U.S.A.

Membership rates (effective Jan. 1, 1982)

Regular: US\$12.00 per year  
Student: US\$8.00 per year  
Sustaining: US\$30.00 per year  
Institutional: US\$50.00 per year

Make check or money order (drawn in US\$ on a US bank) payable to Computer Music Association.

Name \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_

Affiliation \_\_\_\_\_



Computer Music Association Membership Survey

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY|STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
COUNTRY \_\_\_\_\_  
TEL. \_\_\_\_\_

Your Permission to  
Disclose Address  
to CMA Members  
\_\_\_\_\_      \_\_\_\_\_  
yes              no

CURRENTLY EMPLOYED AS \_\_\_\_\_  
CURRENTLY EMPLOYED BY \_\_\_\_\_ (optional)

BRIEFLY DESCRIBE YOUR  
BACKGROUND IN COMPUTER  
APPLICATIONS TO MUSIC \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DESCRIBE YOUR CURRENT  
COMPUTER MUSIC ACTIVITIES \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DESCRIBE BRIEFLY THE  
HARDWARE/SOFTWARE SYSTEM  
YOU ARE USING FOR  
FOR COMPUTER MUSIC \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(CMA is currently preparing a survey form for studio reports)

DO YOU HAVE SOFTWARE/HARDWARE AVAILABLE FOR DISTRIBUTION TO OTHER CMA MEMBERS _____	BRIEFLY DESCRIBE THE PRODUCTS _____
_____	_____
_____	_____

LIST TAPE FORMAT ( 7/9 track, density, etc.) \_\_\_\_\_  
\_\_\_\_\_

WHAT SOFTWARE/HARDWARE  
WOULD YOU LIKE TO  
RECEIVE FROM CMA MEMBERS? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Optional: LIST OF YOUR COMPOSTIONS. IF AVAILABLE TO CMA MEMBERS, PLEASE  
INDICATE TERMS OF OFFER (e.g., price/free, exchange, tape required,  
etc.). USE SEPARATE SHEETS OF PAPER IF NECESSARY.