Computer Music Association
Vol. 2 No. 3
August, 1981

In this issue of the Computer Music Association Newsletter (CMAN), you will find a variety of announcements including a call for CMA nominations for the Board of Directors. As last year, we intend to have the election completed by the time that the November International Computer Music Conference (ICMC) rolls around.

Also included in this issue of CMAN is a set of abstracts taken from papers presented at the Fourth Italian "Colloquio di Informatica Musicale" submitted by Goffredo Haus, as well as a brief article on Music-11, ST-10 and stochastic music programming by Kimball Stickney. The CMA Bulletin Board is quite full this time and appears near the back of the issue.

This will be the last issue of CMAN before the 1981 ICMC in Texas (see announcement, enclosed). It should prove, as always, to be a beneficial event for all who attend. We at CMA look forward to meeting you there.

Until Then....
-Thom Blum, Pres. & CMAN Co-ordinator
CMA

Nominations Open for the Computer Music Association Board of Directors

Nominations are now open for the second annual election of the Board of Directors for CMA. Nominations must be received by September 15, 1981, and candidates will be announced in the ballot going out in the October Newsletter.

Candidates may be nominated by the CMA nominating committee or by member petition. Any general or student member is eligible to serve on the Board. Petitions must contain valid signatures of two members and be accompanied by the written consent of the nominee. If you would like to be considered for nomination, please send us a card indicating your name, address and background in computer music. It will be reviewed and a response concerning your nomination will be forthcoming. Formal petitions should be mailed to:

Computer Music Association
P.O. Box 1634
San Francisco, CA 94101

Please let us know, also, if you are interested in being nominated by the new Board of Directors for a position as a CMA officer (president, vice-president, secretary, or treasurer). Officers may or may not be on the Board of Directors.

The Computer Music Association
General Information

The Computer Music Association is a non-profit, tax exempt entity, functioning internationally, devoted to the furtherance and promotion of the art and science of computer music.

The CMANewsletter is an unrefereed quarterly periodical distributed to all CMA members. Any item of interest to the computer music community (including program listings) may be submitted for publication in CMAN and must be presented in facsimile form. Articles, studio reports, reviews, and announcements of concerts, conferences, workshops, etc. can be submitted in any language, however if written in other than English, a brief abstract in English should be included.

CMA Publications consists of a variety of conference proceedings and scholarly papers pertaining to computer music. Materials are refereed and may be submitted to CMA at the address, below, for review.

A limited number of advertisements are accepted for publication in CMAN. For rate and deadline information, write to The Computer Music Association.

Back issues of all Newsletters are available on request for US$3.00 each to members and US$4.00 each to non-members.

All communications should be mailed to:

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

****
* New Members of the Computer Music Association *
* July, 1981 *
****

Amspoker, Brian, Irvine, California, USA

Braun, Eric, Old Westbury, New York, USA

Bushell, Thomas, Halifax, N.S., CANADA

Castro, Edmundo Carlos Guizolphe, Sao Paulo, BRAZIL

Chapman, William J., Huntsville, Alabama, USA

Glassner, Andrew S., Old Westbury, New York, USA

Lippe, Cort, Utrecht, NETHERLANDS

Medakovich, George, Chicago, Illinois, USA

O'Neill, John C., Urbana, Illinois, USA

Peterson, Tracy, Old Westbury, New York, USA

Sauve, Martial, Montreal, CANADA

Schindler, Keith, Berkeley, California, USA

Supper, Martin, Utrecht, NETHERLANDS

Svae, John, Hafslundo, NORWAY

Tjepkema, Sandra L., Danbury, Connecticut, USA

Ulveling, Julie M., Bloomfield Hills, Michigan, USA

Vurek, Lindsay, Berkeley, California, USA

Zurynski, Robert, Rooty Hill, NSW, AUSTRALIA

****
* Computer Music Association -- Sustaining Members *
****

Molava, Pamela, Simsbury, Connecticut, USA

Shenale, John P., Redondo Beach, California, USA

****
* Computer Music Association -- Board of Directors and Officers *
****

Battier, Marc, FRANCE

Beauchamp, James, USA

Blum, Thomas, USA - Pres., Co-founder

Byrd, Donald, USA

Dashow, James, ITALY - V.Pres.

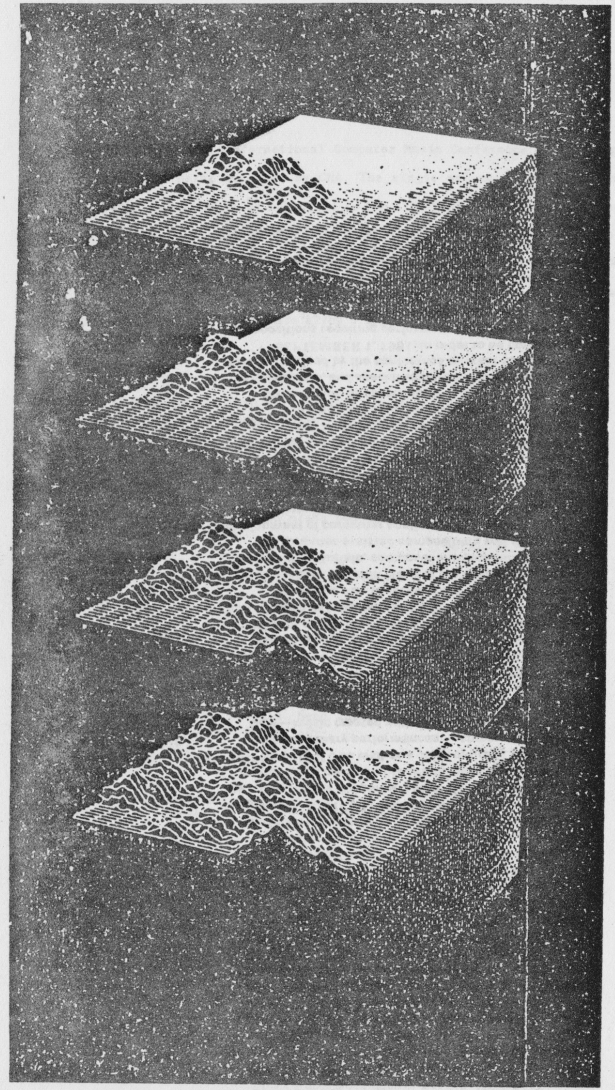
Gross, Dorothy, USA - Secretary

Howe, Hubert, USA

Roads, Curtis, USA - Co-founder

Snell, John, USA

Strawn, John, USA - Treas., Co-founder



"The First Fractional Brownian Island," created by and reprinted with the permission of Benoit Mandelbrot, copyright, 1977.

1981 INTERNATIONAL COMPUTER MUSIC CONFERENCE

November 5-8, 1981

School of Music
North Texas State University

Denton, Texas, USA

Guest composer John Cage will address the conference and, along with co-composer Lejaren Hiller, will be in attendance for a special performance of their classic computer music composition, HPSCHD, for harpsichords, tapes, and films.

The School of Music of North Texas State University invites participation in the 1981 International Computer Music Conference, November 5-8, 1981, in Denton, Texas. Since the first such meeting in 1974, the ICMC has become the principal annual meeting for composers, theorists, acousticians, educators, scholars, and scientists active in developing computer applications in music. The ICMC provides an important forum for the presentation of concerts, papers, studio reports, panel discussions, special demonstrations, tutorial sessions, exhibition of computer music systems, and meetings of special interest groups. PAPER SESSIONS—Topics for the presentation of papers at the ICMC cover a wide range of significant concerns:—compositional algorithms—system overviews—synthesis software—acoustics and psychoacoustics—sound analysis—music analysis—musical data structures and input language—computer-assisted instruction in music—synthesis hardware—computer-assisted research in theory and musicology—CONCERTS AND GALLERIES—Central to the conference is the performance of music created with computers. Five formal concerts are scheduled for the 1981 ICMC as well as a daily, ongoing schedule of informal gallery performances:—computer music on tape—music created with real-time digital synthesis systems—computer music combined with instrumental/vocal soloists and ensembles—computer-controlled intermedia—music involving compositional algorithms—COMPUTER MUSIC TUTORIALS—As a special service to participants new to the theory and practice of computer music, a series of three, hour-long tutorials is scheduled for 9-12 noon on Thursday, November 5th, to precede the first session of the conference. Dr. Lejaren Hiller of the State University of New York at Buffalo, composer and pioneer in the field of computer-assisted composition, will discuss the development of computer applications in music since the early 'fifties; Dr. James Beauchamp of the University of Illinois, scientist and acoustician, will discuss recent acoustical research and sound analysis in computer music; and Dr. Charles Dodge of Brooklyn College, innovative computer music composer, will discuss the theory and techniques of computer sound synthesis. SUBMISSIONS—Proposals to the ICMC for presentation of papers, tape or real-time synthesis performances, and special exhibitions and installations must be received by the conference director no later than SEPTEMBER 1, 1981, in order to be considered. Compositions requiring performers must be received by JULY 1, 1981, to facilitate programming and preparation. Such works, to be considered, must substantially involve computer-assisted compositional processes and/or be combined with computer music on tape or with real-time digital synthesis systems. Submission guidelines follow: —To deliver a paper, submit a typed abstract describing the subject, length of presentation time, and audio-visual requirements. Papers should be limited to 20 minutes.—To submit a composition for performance consideration in a concert or gallery context, send one score and/or tape of the work along with a typed statement, 150 words maximum, describing the role of the computer in the work. Tape formats are restricted to reel-to-reel, ¼-inch tape, half-track stereo or four-track quad, head-out. Unfinished works or works-in-progress will not be considered.—To present a special exhibition, installation, or demonstration, send a typed statement detailing its nature and intent and its space and technical requirements. The Board of Directors of the Computer Music Association will serve as an advisory panel to assist the conference director with overall conference programming. Announcement of the final program schedule of events will be sent to advance registrants prior to the conference. Send all submissions, proposals, and inquiries to: Larry Austin, Director: 1981 International Computer Music Conference: School of Music: North Texas State University: Denton, Texas 76203—CONFERENCE FACILITIES/LOCATIONS—The North Texas State University School of Music, second largest in the USA, is making available facilities, resources, staff, and performers for the 1981 ICMC. A large concert hall, two recital halls, an experimental theater, computer music facilities, and meeting and exhibit spaces will be reserved for conference sessions, concerts, galleries, special exhibits, and installations. Denton, Texas, part of the Dallas/Ft. Worth metropolitan complex, is located thirty minutes north of D/FW International Airport, one of the world's largest and most accessible from any part of the world. Conference events will take place in the School of Music Building and the University Union. The Music Building is located on Avenue C at Chestnut Street. (Exit highway 35E at Ave. D. Turn right on Maple and left on Ave. C.)—LODGING/MEALS—Three motels within 5 minutes of the NTSU campus are providing a block of rooms for conference participants until October 15: Holiday Inn ($30): Dallas Dr. & I-35E: Denton, TX 76201/ (817) 387-3511: Ramada Inn ($28): I-35E: Denton, TX 76201: (817) 387-0591/ La Quinta Motor Inn ($19): 700 Ft. Worth Dr.: Denton, TX 76201: (817) 387-5840. Rates listed are for single occupancy; nominal increases are possible. To make reservations, telephone the motel of your choice, or return the enclosed reservation card. For those sending cards, if rooms become unavailable in the motel you have indicated, a reservation will be made at a nearby motel and, until October 23, you will be sent notification of the substitution. ROOMS ARE LIMITED IN NUMBER; PLEASE ACT QUICKLY Van service to and from the motels and the NTSU campus will be available for participants. Meal service is available on the NTSU campus in the University Union. Denton also has several fine restaurants as well as a number of fast-food restaurants, many within walking distance of the campus TRANSPORTATION/PARKING—A shuttle service to and from D/FW Airport will be available for participants on Nov. 4 from 5-8 p.m., Nov. 5 from 8-12 noon, and Nov. 8 at 3 and 5 p.m., $5 one way, payable to the driver. Alternate limousine service by Denton Cabs, Inc., is available five time daily, $18 one way per passenger, if reservations have been made in advance by calling (817) 387-6141. Rental cars are available at D/FW and Love Field in Dallas. If arriving at Love Field, participants are advised that ground transportation to Denton necessitates, first, a bus ride to D/FW, where transfer to transportation described above will be available. A detailed schedule of transportation arrangements will be sent to advance registrants prior to the conference. Campus parking permits will be sent to advance registrants upon request. REGISTRATION—Registration will begin November 5, at 8:00 a.m. in the Student Commons of the Music Building, located on Avenue C at Chestnut Street, and will continue throughout the conference. The regular registration fee is $35 (students $15) and covers admission to all conference sessions and concerts. The registration fee after October 1 will be $40 ($20 for students). Requests for refunds will be honored if postmarked on or before November 2, 1981. CREDIT—This conference offers participants the option of receiving one hour of graduate or undergraduate extension credit. Those wishing to transfer this credit to another institution should contact the receiving institution in advance to determine acceptability. North Texas State University awards continuing education units (CEU's) for completion of this conference.

FURTHER INQUIRIES

Additional information on program and submissions:
Larry Austin
ICMC Director
School of Music
North Texas State University
Denton, Texas 76203; 817/788-2791

Additional information on registration and local arrangements:
Patricia Warde
University Center for Community Services
North Texas State University
P.O. Box 5344, N.T. Station
Denton, Texas 76203; 817/788-2656

PLEASE POST

1980 ICMC PROCEEDINGS

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

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Attn: 1980 Proceedings

INTERNATIONAL COMPETITION «LUIGI RUSSOLO» FOR YOUNG COMPOSERS OF ELECTROACUSTIC MUSIC

Varese (Italy) - 18-20 September 1981

RULES

1 - The «Russolo-Pratella» Fondation and with the cooperation of the Assessorschip of Culture of the Lombard Region and the Municipality of Varese in order to honour the memory of the futurist musician Luigi Russolo (1885/1947) proclaims the three International Competition of music of magnetic tape worked out by electroacustic, electronic and computer means for young composers not older **35 years.**

2 - The following prizes be awarded:
L. 1.000.000 - 1° prize
L. 750.000 - 2° prize
L. 500.000 - 3° prize

3 The International Jury will be presided over by G. Franco Maffina, the President «Russolo-Pratella» Fondation will be made up of the following musicians:
LUIS DE PABLO (Espana)
ROBERTO DICKMANN (Switzerland)
GIUSEPPE DI GIUGNO (France)
CARLO FERRARIO (Italy)
PIETRO GROSSI (Italy)
TERESA RAMPAZZI (Italy)
ROSSANA MAGGIA secretary

4 - Each competitor may take par with one or more than one composition be must send his written adhesion before 31 July 1981 to the secretary of the competition at the «Russolo-Pratella» Fondation, 6 Via Bagaini, 21100 Varese (Italy) and enclose a photo of his, his artistic curriculum, a short description of the composition and one copy of the score sent to the competition for the pubblication of the cometition official catalogue.

5 - The composition on recording tape (7½ o 15 ips-2 o 4 track must reach the secretary of the competition, free of cost before 10 September 1981. Please specify the lenght of the competition not exceding 20'.
The copy will belong to the tape library of the «Russolo-Pratella» Fondations with reserves the right to make use of it also for public auditions on other places, it requested.

6 - The public auditions will take place at Palazzo Veratti, 6 Via Veratti, Varese. Rhe prize distribution will take place in the same seat on Sunday 20 September 1981. All the competitors will be invited in advance. Moreover the organizers will advertise the competition and its results as much as possible through the press, the radio and television.

7 - **For any inquiry please write or telephone to the segretary of the competition at the «Russolo-Pratella» Fondation 6 - Via Bagaini, 21100 Varese (Italy) - Tel. (0332) 237.245.**

A CATALOG FROM THE GROUPE DE RECHERCHES MUSICALES

The latest issue of Cahiers Recherche/Musique, the journal published by the Institut National de l'Audiovisuel in Paris, France, is a compendium listing of work undertaken at the Groupe de Recherches Musicales from 1948 to 1980. The 415-page issue contains a chronological listing of electro-acoustic works completed over that period, which comprises 935 titles. Details such as durations, different versions, and the recording media are also given. A listing of GRM radio programs dating from Pierre Schaeffer's historic Concert de Bruit (Concert of Noises) broadcast in 1948, up to a 1980 broadcast on Classiques des Idees et du Repertoire GRM are included. A section on Classiques du Repertoire GRM follows, which includes sundry documentation and photographs. A Discography, Bibliography, and list of scores follows. An extensive index finishes the issue. The issue is a valuable reference source for information on works by such composers as: Pierre Henry, M. Chion, J. Lejeune, J. Schwarz, Pierre Schaeffer, M. Philippot, G. Reibel, B. Parmegiani, Iannis Xenakis, F.-B. Mache, Ivo Malec, Luc Ferrari, and Francois Bayle. The issue is in French. Contact: INA/GRM Publications, 116, ave. du President Kennedy, 75016, Paris, France.

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.

Digital Music Systems, Inc.

FOR IMMEDIATE RELEASE
March, 1981
Contact:
Sue Bishop
(617) 542-3042

SUMMER WORKSHOPS IN DIGITAL SOUND SYNTHESIS AND PROCESSING

BOSTON, MA. Three one-week workshops in Digital Sound Synthesis and Processing will be offered this summer in Boston. They will provide a hands-on introduction to digital audio technology and are intended for electronic music composers and performers, recording engineers, psychoacoustic researchers and others who work in fields where digital audio technology is playing an increasingly important role. The courses will be held Aug. 3-7, Aug. 10-14 and Aug. 17-21, 1981 in Boston, Mass. The cost is $300 for the one-week session; this includes tuition, studio time and course materials. More information about the course may be obtained from Digital Music Systems, Inc., PO Box 1632, Boston, MA, 02110, (617) 542-3042.

Topics to be covered include fundamentals of digital audio, unit generators, automated synthesis and processing, non-linear techniques, digital delay, filtering and reverberation, digital audio hardware and future trends in digital audio. Each day of the five-day workshop will include a class session, group studio time to work on practical studio problems in synthesis and processing, and individual studio time. There is no prerequisite for the course, but some knowledge of analog synthesis techniques or elementary muscial acoustics will be helpful.

The courses will be held in Digital Music Systems' studio, one of a few in the world equipped with a real-time digital audio synthesis and processing system. Participants will learn how to program and use this system and will have individual studio time each day to pursue their own interests.

Leading these workshops will be Dean Wallraff, a former member of the faculty of M.I.T.'s Computer Music Studio and the founder of Digital Music Systems. There will also be guest lectures by well-known authorities in the digital audio and computer music fields.

18 OLIVER STREET, ROOM 1000 BOSTON, MASSACHUSETTS 02110 (617) 542-3042

IJCAI·81

SEVENTH INTERNATIONAL JOINT CONFERENCE ON ARTIFICIAL INTELLIGENCE

24-28 AUGUST 1981

UNIVERSITY OF BRITISH COLUMBIA
VANCOUVER, B.C., CANADA

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All-day Tutorial Program August 24
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Conference Information:
Richard Rosenberg,
Department of Computer Science,
University of British Columbia,
Vancouver, B.C.
Canada V6T 1W5
(604) 228-3061

Tutorial and R&D Exhibit Programs Information:
Louis G. Robinson,
American Association for Artificial Intelligence,
Stanford University
Box 1613,
Stanford, CA 94305 USA
(415) 497-0425

BEEP ELECTRONIC MUSIC

The thirty-fourth BEEP Electronic Music Workshop will be held from February 16-27, 1981. During the first week (February 16-20) classes will be held in the BEEP Studio from 8-10 PM on such subjects as: organization of the sonic palette; the tape recorder as a compositional tool; practical compositional considerations in the plan of a tape piece; etc. During the second week (February 23-27) each participant will have individual studio time.

A unique feature of this 34th workshop will be the use of video to present "over the shoulder" views of a wide variety of synthesizers and associated equipment.

The BEEP Studio was the first voltage-controlled studio in the Boston area; it remains the best. Equipment includes Modular Moog and Polyfusion Synthesizers; EML-101, 200, 301, 401 & 500 Synthesizers; "hot rodded" Mini-Moog; Synare 2 Computer-controlled Percussion Sequencer; two analog sequencers; a state-of-the-art digital sequencer; Revox, Teac & 8-channel Otari tape recorders. Total cost for the workshop is $90.00.

CALL OR WRITE BEEP AT 731-3785 / 33 ELM STREET / BROOKLINE, MA 02146

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CALL OR WRITE BEEP AT 731-3785 / 33 ELM STREET / BROOKLINE, MA 02146

MUSIC-11 AND ST-10:
Classic Stochastic Concepts Revisited

by Kimball P. Stickney

This paper describes a simple software interface between the FORTRAN program ST-10 and the MUSIC-11 sound generation program. The interface can be used in a highly intuitive manner; the composer exercises control at a high organizational level and can achieve a wide variety of interesting results experimentally.

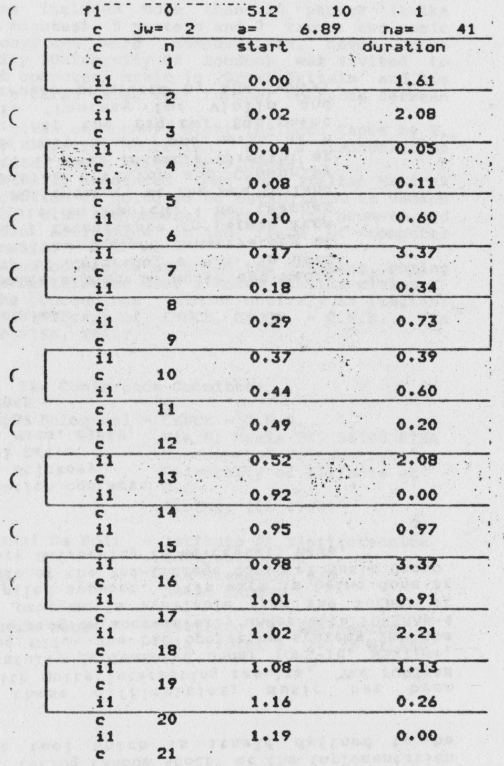
The main advantage of this interface lies in its simplicity: the composer specifies an input file containing the necessary information (as described in chapter 5, "Free Stochastic Music by Computer", from Formalized Music by Iannis Xenakis) and the program outputs a MUSIC-11 score file (see Figure 2.). My own personal compositional approach using this tool has been to exploit a single MUSIC-11 "instrument" definition (orchestra file) in conjunction with the stochastically-generated score file. The overwhelming choices confronting the composer with regard to mapping output data to musical parameters led me to pursue , at these initial stages, an "experimental" approach toward defining the orchestra file (see Figure 1.).

The main disadvantage at present, for the non-technically oriented composer, is wading through the terse explanation of the program's operation in Formalized Music. It takes a good deal of sorting through things to understand what's going on enough to make music with it. For the small group of composers known to me who are currently enthusiastic about the preliminary results achieved with this system, I plan to develop more extensive documentation.

A second disadvantage in the current implementation lies in the unstructured nature of the FORTRAN source code (written by or for Xenakis in the 1960's to run on an IBM machine and adapted for DEC-10 and PDP-11 operating systems by the author) which makes it difficult to easily follow program flow and data modification; plans have been made to develop a functionally equivalent but structured version. Accompanying this difficulty is the nature of the input data to the stochastic program: the original program read from Hollerith cards, and even the current version follows the card-field format, though data is read instead from a disk file. For the composer, this is an annoying inconvenience: input data must be entered cryptically into FORTRAN data fields, line-by-line, to comprise a file which appears ultimately

```
sr=20000
kr=1000
ksmps=20
nchnls=2
instr 1
p4 = (p4 * 200) + 100
i6 = (p9=5? (p6+72)/100 : p10/12)
i3 = (p9=5? (p7 + 80) : p2 + 1)
i7 = (p9=5? ((p3 * 2)/(p8 + 73)) : p3 * 10)
i5 = (p5 * 100) + 10
k1 linseg 1,p3/7.,.7,p3/7.,.5,p3/7.,.25,p3/7.,.14,p3/7.,.07,p3/7.,.05,p3/8,0
k2 expseg 300,i7,800
a1 foscili k1*p4,i5,p10,i6,k2/100,1
k3 linseg 1,p3+.02,1,.01,0
a2 reson a1,k3*1000,i3*50,1
outs a1,a2
endin
```

Figure 1. This MUSIC-11 orchestra file defines a single instrument. The parameters are mapped from the score file in a completely flexible manner specified by the composer. This particular instrument yielded remarkably diverse results, sounding more like several instruments.



```
f1      0          512      10       1
c   jw=  2    a=     6.89     na=     41
c     n        start          duration
c     1
i1                0.00           1.61
c     2
i1                0.02           2.08
c     3
i1                0.04           0.05
c     4
i1                0.08           0.11
c     5
i1                0.10           0.60
c     6
i1                0.17           3.37
c     7
i1                0.18           0.34
c     8
i1                0.29           0.73
c     9
i1                0.37           0.39
c     10
i1                0.44           0.60
c     11
i1                0.49           0.20
c     12
i1                0.52           2.08
c     13
i1                0.92           0.00
c     14
i1                0.95           0.97
c     15
i1                0.98           3.37
c     16
i1                1.01           0.91
c     17
i1                1.02           2.21
c     18
i1                1.08           1.13
c     19
i1                1.16           0.26
c     20
i1                1.19           0.00
c     21
```

Figure 2. The accompanying score file contains the usual note parameter data. This file is generated by the FORTRAN program ST-10. Only a portion of the file is shown here.

a(i)=0.10/0.01/0.01/0.01/0.12/0.32/0.05/0.11/0.13/0.09/0.04/0.01/

dynam	pitch	sliss1	sliss2	sliss3	class	instrm
34	68.7	0.0	0.0	0.0	6	2
17	44.7	45.0	19.0	-25.0	5	3
17	35.8	0.0	0.0	0.0	9	1
7	56.8	0.0	0.0	0.0	6	2
14	0.0	0.0	0.0	0.0	1	6
16	0.0	0.0	0.0	0.0	1	6
4	37.2	0.0	0.0	0.0	9	1
28	25.3	0.0	0.0	0.0	4	2
2	51.2	56.0	37.0	-30.0	5	1
38	0.0	0.0	0.0	0.0	1	9
10	34.9	0.0	0.0	0.0	6	3
0	49.1	-45.0	-25.0	25.0	5	3
3	15.1	0.0	0.0	0.0	7	2
29	12.2	0.0	0.0	0.0	6	7
38	0.0	0.0	0.0	0.0	1	6
1	53.7	0.0	0.0	0.0	10	1
25	63.1	-45.0	-22.0	-25.0	5	1
7	40.9	0.0	0.0	0.0	6	3
17	52.0	0.0	0.0	0.0	6	8
29	35.9	0.0	0.0	0.0	8	2

undecipherable. I admit having taken the easy way out initially, by using Xenakis' original data file for several preliminary experiments. I submit, though, that "unscientific" as this methodology may appear to hard core software types, it remains in spirit much closer to the intuitive nature of music composition as practiced by many composers. There is an intriguing and productive element, which is not internally inconsistent philosophically, about "taking random shots" at the implementation of a of an artistic tool which is itself defined to be "stochastic".

Notwithstanding these difficulties, music has been sucessfully produced with quite interesting results. The FORTRAN program has been sucessfully implemented under TOPS-10, RSX11M+, RSTS/E and UNIX running F77. The DEC operating systems for the PDP-11 have executed the program successfully under both FORTRAN-4 and FORTRAN-4+. This program is available from the author at media costs with no implied support. This work is being done at the Computer Music Studio of the Tri-College Computer Music Group which is located at Clark University in Worcester, Mass.

For information contact:
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31 Colonial Drive
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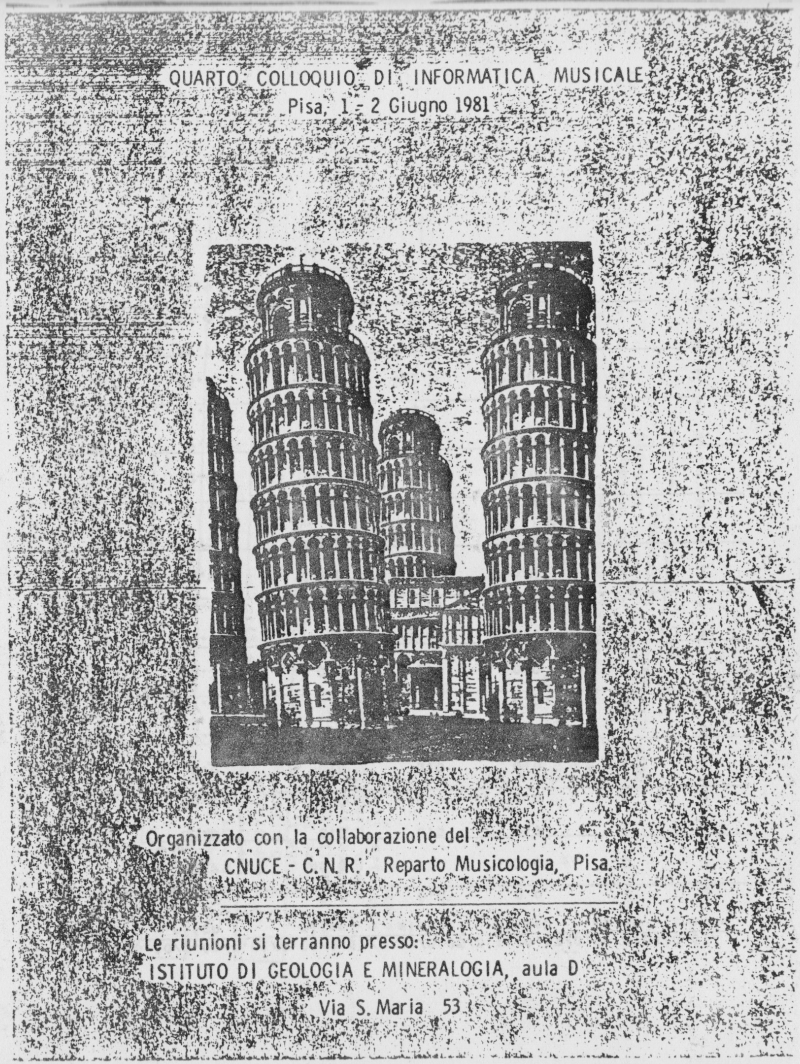
493-4069

About the author:

Kimball Stickney holds a B.S. in Music and Media from the University of Colorado, a M.M. in Jazz Composition from the New England Conservatory of music, and a Level I Certificate in German from the Goethe Institute in Munich. He teaches several courses in Music Theory at the New England Conservatory Extension Division and Community Services Department, is Jazz Ensemble Director at the College of the Holy Cross, and works as a Software Engineer for the Digital Equipment Corporation. His "Fantasy for Violin and Orchestra" was recently premiered by the Denver Symphony Orchestra.



ABSTRACTS FROM THE 4TH ITALIAN
"COLLOQUIO DI INFORMATICA MUSICALE"

The 4th "Colloquio di Informatica Musicale" was held at Pisa on June 1-2, 1981; it was organized with the collaboration of the Musicology Section of CNUCE, an Institute of the (Italian) National Research Council (C.N.R.).

Contributions included more than 20 papers (talks lasted 15 to 30 minutes), 5 posters and 7 tapes; two music processing microsystems were demonstrated. Kevin Jones (Music Dept., City University of London) was invited to speak about both computer music in Great Britain and his own research, as a first step for further contacts between the two Countries.

The Concert given on Monday night included tapes by V. Asta, O.Laske, T.Rampazzi, M.Graziani, and a demonstration of the local computer music system by P.Grossi.

It was eventually announced that the Italian Musical Informatics Association is going to be established in Venice (at the Biennale), with the general purpose to promote and coordinate Italian activities in the field of computer applications to music.

About one hundred people attended the Meeting, coming from institutions distributed over a dozen Italian cities.

Copies of the proceedings (almost entirely in Italian) are available at: Library of CNUCE, CNUCE - C.N.R., Via S.Maria 36, 56100 PISA, ITALY.

The Conference Committee

Tommaso Bolognesi - CNUCE - C.N.R.
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University of Illinois at
U-C
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ed Elettronica
Via Gradenigo 6/a,
35100 PADOVA

Goffredo Haus - Istituto di Cibernetica
Via Viotti 5, 20133 MILANO

COMPOSITION

■Poetry, Linear Algebra and Music: an Experience
V.ASTA - IRCAM, PARIS; AXIS DIGITAL, PARIS

The paper describes the various considerations and operations required during the composition and realization of A VOLTE for magnetic tape; the piece is entirely based on the prosodic and phonetic features of a poem, with the same title, according to a procedure which, starting from a computer analysis of the various phonemes, arrives to a series of data on the control parameters for the synthesis process through the application of a particular homomorphism between linear spaces and various other logical and combinatorial decisions.

■A Musical Game and its Optimal Solution (in English)
T.BOLOGNESI - CNUCE, C.N.R., PISA

A game that produces music sequences over an alphabet of sound events is defined. Two players, in turn, extend of one sound event the partial sequence, trying respectively to maximize and minimize the "degree of harmonicity" (here arbitrarily defined) of the final sequence.

The α-β pruning technique is applied to reduce the size of the game tree and minimize the work to find the optimal solution (that of a match played by the best players).

■Some Reflections on the Technical Realization of
CHEMINS V
V.ASTA - IRCAM, PARIS; AXIS DIGITAL, PARIS
P.PREVOT - IRCAM, PARIS

CHEMINS V by Luciano Berio, for clarinet and digital synthesizer has been realized at IRCAM, Paris. The first performance was given at the "Theatre d'Orsay" in May 1980.

In this paper we describe the various technical problems that this realization has gradually required to solve.

These problems have mostly been caused by transportability (to/from the concert-hall) of the technical apparatus needed for the performance.

A series of hardware and software solutions had to be adopted to have a relatively slow machine, with a small extention of memory, operate rapidly (real time) and satisfactorily from the point of view of security and versatility.

■Music Processes Description by means of Geometric
Operators: an Applicative Example
S.DE STEFANO, G.HAUS, A.STIGLITZ
- ISTITUTO DI CIBERNETICA, MILANO

In this work we describe an example of geometric operators application for the description of musical processes.

Particularly, we use a formalism derived from the notion of homology as a language for the representation and

transformation of musical texts.

The notational system which we are proposing is a first step towards the individuation and definition of synthetic descriptive tools very close to methods of musical composition aided by computer.

■ Toward Enneadecaphonic Music
E.GAGLIARDO, M. GHISLANDI - ISTITUTO MATEMATICO, PAVIA

The "enneadecaphonic" system (i.e. the set of frequencies proportional to powers of $\sqrt[19]{2}$) is discussed. Beethoven's themes give rise to samples of music for this kind of scale, while new compositions could not be played with instruments tuned in the traditional way. A basic mathematical structure for programming automatic enneadecaphonic composition is described.

■ New Programs for Automated and Combinatorial Composition.
P.GROSSI - CNUCE, PISA
L.MICHI - FIRENZE

Some automatic elaboration programs of sound structures constituted by masses of various density and formal development have been designed and realized.
The operator can control, to his discretion, the development processes using interactive procedures formed for the most part by groups of special characters assigned at the console.

Combinatorial computation, one of the elaboration and formal development tools of TAUMUS, is utilizable through a TAUMUS subroutine which has the following operative characteristics:

- The development can be controlled by different formulas as combinations, permutations, dispositions both simple and with repetition.
- The subsets elements can be at most 9. In this way we can define single acoustic parameters, single sounds or passages sections.

The user can define the number of subsets and musical voices to elaborate and have the subsets randomly ordered.

■ Software for "Serial" Composition
V.OZZOLA - C.N.R., MILANO

Three programs for composition of serial character created respecting the following general principles are shown.
The computer is used as a tool capable only of relieving the fatigue of a great number of combinatorial operations; the program is conceived in order to obtain (with higher musical criteria) pre-arranged effects;output data may be used either as finished musical compositions or as simple equipment from which to start a further elaboration that, reflecting the taste and the creativity of composer, respects the basic structures processed by computer.
The computer programs, very flexible, correspond to three different composition criteria and the output may also be

used with mutual partial or total superimposition and also sequentially.

DIGITAL SYNTHESIS

■ A Microprogrammed Oscillator Bank
S.CAVALIERE, I.ORTOSECCO,A.PICCIALLI, S.VERGARA - ISTITUTO DI FISICA, NAPOLI
P.PARASCANDOLO - I.N.F.N., NAPOLI

In the following report we describe a digital oscillator bank in the acoustical range interfaced to a personal computer (or even mini). The hardware made up of fast discrete components carries on the synthesis of up to 80 oscillators on different wave shapes with a sampling rate of 32 KHz. The synthesis is carried on prevailingly with an additive technique, but it is possible to implement frequency modulation or non linear wave shaping.

Owing to the hardware techinques we used, first of all microprogramming, the bank appears as a modular piece of hardware which can be used in the next realizations for a wide range of digital signal processing such as IIR - FIR - FFT and others.

The system works well for real time sound synthesis and tries to define an efficient and modular architecture for digital signal processing in the range of small systems eventually personal ones.

■ Sound Synthesis by Waveshaping Function with Two Complex Conjugate Poles
G.DE POLI - ISTITUTO DI ELETTRONICA ED ELETTROTECNICA, PADOVA

A nonlinear synthesis technique using a memoryless transformation described by a function with two complex conjugate poles is presented.

The spectra obtained by varying the different parameter values are analyzed and the computing procedure is illustrated. It is shown how this techinque can be advantageously applied to musical synthesis.

■ Real Time Control of a Sound Processing System (in English)
P.PREVOT - IRCAM, PARIS

The system presented here has been designed and written to drive Peppino di Giugno's 4C machine.

Strongly oriented towards the real time control of the sound processor, and essentially in endless evolution, this system already used in several experiments and performances, intends to be a step towards a real time instrument, and not only a sound synthesizer. It can be conversational or execute a "musical program", and not only a sequence of notes. It allows a complete asynchronism between the parameters of an instrument, by a large set of programmed "actions", triggered by various types of events, and has an original philosophy of time. It does not imply any pre-assignation of the gestual controls.

■Non Linear Distortion of the Sum of Two Cosinusoids: Spectral Analysis by Matrices
P.REINHARD - PADOVA

This paper, in addition to a complete description of the distortion of a cosine wave with polynomial functions, proposes, using a compact matrix notation, an extension of these results to the analysis of the complex spectrum resulting from the distortion of the sum of two cosines of different frequencies.

■An Analysis of Music V Filter FB1
E.SIMIONI - PADOVA

Many digital filters are involved in the treatment of musical signals with the MUSIC-V programming language. Among these filters, the one called FB1 is used as a band pass filter.
Referring to the parameters recommended by the MUSIC-V, the filtering characterstics of FB1 have been analyzed and the results compared with the given specifications.
The actually existing relations between the given parameters and the filter structure have been obtained, emphasizing possible incompatibilities and inconsistencies.
Finally some partial modifications to the system's structure have been suggested with the intention to improve the performances, and the most immediate results of these modifications have been emphasized.

FORMAL ANALYSIS AND ARTIFICIAL INTELLIGENCE

■The Design of a Melodic and Harmonic Generative Grammar
M.BARONI - ISTITUTO DI STUDI MUSICALI E TEATRALI, BOLOGNA
R.BRUNETTI, C.JACOBONI - CENTRO DI CALCOLO ELETTRONICO, MODENA

A new project on the harmonization of a given melody has been recently started by the group operating at Bologna and Modena, as a branch of the studies on melodic grammars presented at previous 'Colloqui di Informatica Musicale'. This new aspect of the research, still dealing with Bach's four voice chorales, is here emphasized.
The harmonization process is based on a generative tree which first produces the harmonic functions of highest structural priority and then those at lower levels. In the successive steps the bass melodic line and other voices are generated, by properly applying the melodic grammars. As voices are generated, harmonies to be used within the already fixed harmonic functions are precisely determined.
Examples of melodic generation and harmonization are presented to illustrate the most recent results obtained by the melodic grammar, which can now generate a whole chorale and control its micro and macrostructures.

■A Fuzzy Learning System for the Generation of 4 Voice Counterpoint (in English)
A.M.SEGRE - UNIVERSITY OF ILLINOIS AND ISTITUTO DI

CIBERNETICA, MILANO

Given a set of pieces in four part chorale style, the system creates a network of assertions through the analysis of these input pieces that can then be used in the creation of a new counterpoint. The generation of new pieces uses a state space representation technique which reduces the generation of counterpoint to a series of searches through the state space.
The system consists of a set of programs written in LISP on a UNIVAC 1100. The LISP interpreter actually used is the MACCLISP interpreter written at the University of Wisconsin (Madison, Wisconsin, U.S.A.).

DIGITAL MUSIC SYSTEMS AND PERSONAL COMPUTERS

■Music and Personal Computers
M.BARTOLINI, G.BERARDO - C.R.A.U.S., MESSINA - BOLOGNA

The invention of the Personal computer has made possible the computerization of music at a low cost and with a simple language. Some exemples are presented using the Apple II plus and the Music Synthesizer Alf which permit the writing (on video) and the composition with two external potentiometers.
With this system mainly melodious music is obtained, while in fact, by means of the keyboard, using a "Chroma" basic program, it is possible to create electronic sounds and music, even randomized.

■The Information System of the Musical Informatics Laboratory at the Cybernetics Institute of Milan
G.HAUS - ISTITUTO DI CIBERNETICA, MILANO

In this paper we describe the computing system of the Laboratory of Musical Informatics of the Institute of Cybernetics of Milan.
It has DMX-1000 as digital signal processor and a set of software modules corresponding to functionalities and levels of representation of musical data.
The system is oriented to interactive musical texts computing and allows to execute musical texts by means of DMX-1000 in real time.
Symbolic computing has been implemented in Pascal and libraries handlers, DMX-1000 microprogramming, data communications in COBOL.

■Experiences in the Design and Development of Efficient Computer Music Systems.
M.MALCANGI - MILANO

It is well known that the development of Computer Music systems is made quite complex by the heavy demand on computer resources mainly if real time performance is considered. Many recent advances in computer science may help in developing Computer Music systems. In this work several experiences concerning the most significant design steps are reported, such as: choice of programmig language,

man-machine language definition, data base definition, real time and multiprocessing problems.

■ An Implementation of "PRIMULA" Language
L.TARABELLA - CNUCE, C.N.R., PISA

PRIMULA stands for PRogramming Interactive MUsic LAnguage; it runs on PET CBM3032 by Commodore

The basic idea is that all musical parameters can be expressed as numerical sequences and their overlappings (melodies,rhythms, timbres, harmonies, etc.).

PRIMULA is a high level interactive language which allows to define multidimensional array variables, complex operations over them (in the sense of APL), functions, and to control the flow of operation by the use of if-t-else,while, etc., structured programming tools (in the sense of Pascal).

PRIMULA communicates with outside world with memory-mapped I/O technique: a specified memory location (or a buffer) corresponds to a particular musical parameter.

In this way, processed numerical arrays take meaning at the time of sound processing, so that both implementation effort and learning process are reduced.

AURAL PERCEPTION/VISUAL PERCEPTION

■ A Musical Application of the Gestalt Theory on the Perception of Temporal Structures
R.DOATI - CONSERVATORIO B.MARCELLO, VENEZIA

The descriptive principles which have been formulated by the Gestalt school seem utilizable for music composition. Several musical examples (and acoustic in general) have been provided by the same founders of this school to prove their theories.

After a brief exposition of these theories, some of the experiences which have led to a composition, realized by means of a computer, whose structure is defined and controlled by some Gestalt laws are analyzed.

■ Sound - Colour
C.GENOVESE - C.R.A.U.S.,MESSINA - BOLOGNA

Considering the fundamental biological substratum of visual and acoustic perception, it is possible to hypothesize a correlation sound-colour. Suitable research will establish the correlation mechanisms.

The methodology employed is carried out with a transducer which generates rhythms, which pilot coloured lights, and with a Personal computer which generates colours and sounds. It is therefore possible to measure in the various subjects the reactions to synchronous stimuli, determined by sound-colour. The results will permit a more rational use of sound-colour in the theatre, in the cinema, and in various other applications.

■ Informatics, Music, Theatre - A Project for a Cybernetic Theatre.

L.PAPADIA - C.S.C., PADOVA
S.CAVALIERE - ISTITUTO DI FISICA, NAPOLI

A theatrical work included in the program of the Festival of Two Worlds, Spoleto 1981, is presented and discussed, involving the realization of a system of controls and feedback in which all elements of the mise-en-scene are regulated by a logic of interrelations structured on the music produced at the C.S.C.of the Univ. of Padua.

The theoretical and technical aspects of creating such a computerized system are shown and the aesthetic implications of its employment are examined.

The interactive system is constructed from a calculator of the mini/personal computer class, which controls a complex of devices purposely designed.

This computer updates, by program, the parameters to be sent to the external world: stage motors, laser beams, synthesis of sound effects, reproduction system, lighting, etc., often connecting events or sequences of events with the elaboration of optical and acoustic signals drawn from the action and movement on the stage.

GUEST: KEVIN JONES

- Computer Music in Great Britain (in English)
- Stochastic Music: Compositional Techniques and Applications (in English)
K.JONES - MUSIC. DEPT., THE CITY UNIVERSITY, LONDON

POSTERS

Fractal Sampling - T.BOLOGNESI - CNUCE, C.N.R., PISA
"Gioco di velocita" - R.DOATI - CONSERVATORIO B.MARCELLO, VENEZIA
The SIN I Digital Synthesizer - P.MARRAMA, I.D.A.C. - C.N.R., ROMA
Mathematical Models for the Synthesis of Complex Sound Structures - S.PETRARCA, ROMA
"Embrio" - N.SANI - ROMA

TAPES

"A Volte" - V.ASTA
"Terpsichore" - O.LASKE
"Atmen Noch" - T.RAMPAZZI
"The Silent God" - M.GRAZIANI

"Gioco di Velocità" - DOATI
"Little Science, Little Magic" - FARNEDA
"Embrio" - SANI
"Cardo" - TORRESAN

CMA BULLETIN BOARD

Please address all inquiries to the appropriate person(s) listed below.

*** WANTS TO RECEIVE ***

1) Any kind of Unix compatible music software.
Contact: Goffredo Haus, Istituto di Cibernetica, via Viotti 5,
20133 Milan, ITALY
PH: (02) 235293

2) Notation language compilers (e.g., SMUT, MUSTRAN, SCORE, etc.).
Contact: Bruce McLean, 1114 Thomas Ave., San Diego, CA 92109
PH: (714) 270-7309

3) Any music editors or languages. Also, any sound analysis software.
Contact: Rebecca T. Mercuri, 463-B Ave., B, Horsham, PA, 19044 or
c/o RCA David Sarnoff Research Center, Princeton, NJ 08540
PH: (215) 674-3407 or (609) 734-2998

*** WANTS TO OFFER ***

1) Software: Music/plot for generating music scores (avail. by mid-summer).
Runs under Burrough's ALGOL (avail. on 9-track tape).
Terms: Undetermined at this time.
Contact: Chuck Dierbach, 41 Thorne LA, Apt. 7, Newark, DE 19711
PH: (302) 738-7539

2) Album: John Duesenberry (electronic music).
Terms: $6.00 (postpaid)
Contact: John Duesenberry, 1135A Commonwealth Ave., Apt. C,
Allston, MA 02134.

3) Paper: Dancing Musicians (8pp).
Terms: Contact author.
Contact: FRY, M.I.T. Experimental Music Studio, 26-311,
Cambridge, MA 02139
PH: (617) 491-0468 (home) or (617) 253-7441

4) Papers: A variety available.
Terms: Contact author.
Contact: Goffredo Haus, Istituto di Cibernetica, via Viotti, 5,
20133 Milan, ITALY

5) Composition/Installation: Quaquaversal Transmission: A direct telepathy
work of immediate music performance system
for remote/local transmission.
Terms: $40.00 coupler rental + return shipping charge + collect station to
station charge.
Contact: Jerrt Huny, Rt. 1, POB 240, Canton, TX 75103.

6) Software: C language conversion of MUSIC V.
Terms: $40.00, specify Unix format 800 or 1600 BPI tape or
Unix file system floppy disk.
Contact: Mark Pearson, 510 West End Ave., Apt. 3, New York, NY 10024
PH: (2120 580-3541.

7) Compositions: A variety available (7.5 or 15 ips tapes),
Terms: Contact composer.
Contact: Stephen Pope, Zielgelstadelstr. 44, A-5026, Salzburg, AUSTRIA

8) Compositions: MCABC0475 for 10 wind instruments and
MCABC0476 for brass instruments.
Terms: Contact composer.
Contact: Don Wilson, 455 Highland Pk. Dr., Baton Rouge, LA 70808
PH: (504)769-1508 or (504) 388-8872 (work)

CMA Bulletin Board is a quarterly Newsletter feature giving members an opportunity to directly offer, receive, or exchange computer music artifacts from other CMA members. If you have works that you want to make available or request, send us a list. Be sure to include your address, medium of the work(s) (and, if determined, the terms of the offer).

Computer Music Association, POB 1634, San Francisco, CA 94101, USA

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LA JOLLA, CALIFORNIA 92093

15 June 1981

Dear Colleague:

The first software distribution from the UCSD Computer Audio Research Laboratory (CARL) is now available. The CARL system VAX11/780 running the Bell Laboratories/Berkeley UNIX/32V operating system will be used to generate the distribution tape on a per-order basis.

This distribution will include the cmusic program, signal processing software, miscellaneous library programs, and documentation, all on a 9-track 1600 bpi tape in UNIX "tar" format. Each directory on the tape includes both a "README" file describing the contents of the directory, and one or more "make" files which allow software to be automatically regenerated.

No charge is made for any CARL software. The Computer Audio Research Laboratory in no way warrants this software, and due to time limitations, no consultation will be available from CARL personnel. The distributed software will constitute a "snapshot" of the CARL system at the time the tape is made. A fee of $100.00 is charged to offset costs of distribution.

If you would like to receive this distribution, please execute the enclosed software agreement form and return it with a check for $100.00 made out to The Regents of the University of California. The tape will be shipped to you by return mail as soon as possible.

Best regards,

Gareth Loy

D. Gareth Loy, Manager
CARL

Please contact Center for Music Experiment directly for the above mentioned order form.

Proceedings of the 1978 International Computer Music Conference
In Two Volumes
Compiled by C. Roads
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::::::::::::::::
CMA OPEN FORUM
::::::::::::::::

One of the broader purposes of the C.M.A. is to establish links between those interested in the subject of computer applications to music. The Newsletter offers a physical channel for communication and we want this channel to remain as functional and efficient as possible for members and administrators of CMA.

Recently, some questions have been revived within the computer music community as to the actual need for such an Association. (These questions were also raised at the 1977 La Jolla ICMC.) If it is to exist, exactly how can it serve its members? For the moment, there is this Newsletter and it can and should be used to disseminate the following questions and to publish your responses and input.

The questions formulated thus far are below. Please respond to these and pose any others you see as relevant. This forum is open to CMA members and non-members.

1) How do you feel about the general need for a C.M.A.? What specifically specifically should/could it do for you?

2) Should the C.M.A. continue to publish and distribute a Newsletter?
   a) If so, how could its features complement those of the M.I.T. Press Computer Music Journal?
   b) What should the focus of the Newsletter be such that it provides a definite service without overlapping with the Journal?

3) Should C.M.A. membership automatically include subscription to the Computer Music Journal? If so, understand that we will obviously need to cover the cost within the membership fees.

4) What role, if any, should C.M.A. take with respect to the Int'l Computer Music Conferences?
   a) Should it remain totally uninvolved?
   b) Should it be involved in the site selection?
   c) Should it be involved in planning?
   d) Should it be involved in sponsoring, etc., etc.?

5) What questions or suggestions do you have concerning the formation and/or maintenance of such an organization?

6) What other thoughts and considerations do you have concerning any aspect of C.M.A. or your (group's) relationship with it?

It is imperative that we openly pose and seek to resolve these kinds of questions, especially while the Association is in its germination phase. Perhaps it is useful to bear in mind that the degree to which CMA can serve you is directly related to your participation and willingness to provide input and/or feedback.

Your prompt response will be appreciated. Send these and any input to:

Computer Music Association
P.O. Box 1634
San Francisco, CA 94101

Thank You,

Tom Blum, Co-Director

Your responses, please....

1)

2)

3)

4)

5)

6)

Computer Music Association Member Questionnaire

Note: The purpose of this questionnaire is to gather information which may help provide services and facilitate communication and exchanges among members of the CMA. Please answer as many questions as are appropriate to your situation. Note, however, that completion of this form is not a prerequisite to membership in the CMA. Thank you for your cooperation.

(1) name _____

(2) address _____

_____

_____

(3) telephone number _____

(4) background (education, work, etc. - a brief summary)

_____

_____

_____

_____

_____

_____

(5) When did you first begin to work with computer music?

_____

(6) What are your areas of interest in computer music?

_____

(7) What are your current areas of activity in computer music?

_____

(8) Do you have access to a computer music facility? _____

(9) If "yes" to (8), describe the facility (hardware, operating system, other software)

_____

_____

(10) If "no" to (8), do you have access to a computer dedicated to other applications? _____

(11) Do you have music software available which others could use?

(describe) _____

_____

_____

_____

(12) If "yes" to (11), what format (file system, etc.) and medium (e.g., 9-trk tape) is it available on, and for what terms?

_____

_____

(13) What software would you like to receive from others?

_____

_____

(14) If you are a composer of computer music, provide (on a separate sheet) a list of your compositions, your publisher (if any), and information on recordings (commercial or private) and their availability (e.g., rental or sale of tapes or scores).

(15) If you have written papers or books on computer music, provide (on a separate sheet) a list of these papers, their place of publication, and information on their availability.

(16) If you have purely technical interests and skills, please list them on a separate sheet.

(17) If you have any additional comments, please submit them on a separate sheet.

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$12.00 per year	Check Here
Student:	US$ 8.00 per year	If Renewing
Sustaining:	US$30.00 or more per year	Membership ------
Institutional:	US$30.00 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.