Read 4/28

IEEE COMMITTEE ON SOCIAL IMPLICATIONS OF TECHNOLOGY

New York - March 30, 1973, 9:30 a.m.

MINUTES

1. The Chairman, Dr. Barrow, called the open meeting to order at 9:30 a.m. in the Americana Hotel.

Those present:

Bruce B. Barrow, Vice-Chairman, TAB, Chairman ex-officio
Anthony Robbi, Vice-Chairman
Peter D. Edmonds, Staff Secretary

J. Malvern Benjamin, Chairman, Working Group on INTERCON
Richard M. Emberson, TAB Secretary
William A. Higinbotham, Chairman, Working Group on Subject Areas
Einar E. Ingebretsen, Director, IEEE Region 6
Arthur Daush, Jr., Region 6 Ecology Commission
Gerald Goldenstern, Region 6 staff
Victor Klig, Chairman, Working Group on Procedures
Frank Kotasek, Chairman, Working Group on Publicity and Participation
Lester L. Nagel, representing IEEE Environmental Quality Committee
William L. Stillinger, representing Student Activities
Paul Stoller, Chairman, Working Group on IEEE Activists
Stephen Unger, Chairman, Working Group on Publications
Ted Werntz, Chairman Working Group on Bibliographies

Carl Barus
Ted Conant
Walter K. Kahn
Gerald Rabow
Fred Steingardt
Richard J. Treadwell

Those absent:

Walter E. Beam, representing EAB
William Cory, Director, Region 5, representing Region 5 (South-West)
Curt F. Fey, representing Computer Society
Arthur M. Killin, representing Division II
John E. Gaffney, Jr, past Vice-Chairman, Committee on Applications of Electrotechnology to Social Problems
John B. Lewis, Chairman, Working Group on Curricula

Michael Pessah, Editor, C-SIT Newsletter
Homer M. Sarasohn, Working Group on Current IEEE Activities
Lawrence A. Tate, Working Group on Other Societies' Activities
E. A. Wolff, past Chairman, C-SIT

Mr. Pessah excused himself because of an eye injury. A revised roster is shown as Attachment A.

2. Minutes

The minutes of the meeting held on February 17, 1973 were approved with one deletion: Dr. Unger did not recognize a commitment to review the play, Barbara's Polar Bears, presented at INTERCON'73. [N. B. Evidently, Dr. Unger's offer was made in jest, perhaps without realizing that this play, which is a parody on federal grantsmanship, does indeed address itself to social implications of technology. The author and cast are members of IEEE Professional Communications Group -- PDE].

3. Additional Items for the Agenda

3.1 USAC

The Secretary requested time to report on the current activities of the U.S. Activities Committee (USAC), which has been charged with developing IEEE policies on professional activities and implementing these through operating committees reporting to USAC. Interfaces with C-SIT arise on Employment Guidelines/Professional Ethics, Surveys/IEEE Activities, Activists and Subject Areas, Manpower Planning/Curricula and Student Activities, Government Relations/ Publications and Participation, Ecology Study (California)/Participation; TAB-USAC: Technology Forecasting/Subject Areas and Curricula, Consumer Product Standards/Subject Areas, CATV Guidelines/Subject Areas, Technical Year-end Review/Publications and Subject Areas. Time limitation precluded discussion of this item.

3.2 C-SIT Operations

Mr. Klig requested discussion of C-SIT operations and the possibility of more permanent status for the Committee. The Chairman recognized cause for concern over the composition of the Committee and the lack of effectiveness of some of its operations. He pointed out that its purposes and scope implied Institute-wide activities, so that it would be inappropriate to think in terms of becoming a Group. Dr. Benjamin noted that C-SIT seeks to perform a staff function rather than a line function in Institute affairs. The TAB Secretary added that the Group on Professional Communications (and Groups on Engineering Management and Education -- PDE) had sought at various times to perform similar staff advisory functions and had found difficulty in doing so from a base in the Group structure. Consideration could be given to the appropriate place in the IEEE

structure and to the methods of effective operation of those groups of members specially interested in advisory (educational) functions. Mr. Robbi remarked that the special interest of others in C-SIT had both advantages and disadvantages; among the latter was the monitored environment in which C-SIT currently operates, e.g., the editing and processing of the Newsletter.

ACTION (Agenda) Mr. Klig agreed to table the question until the next meeting.

4. Report on INTERCON'73 Activities

4.1 Open Forum

Dr. Benjamin reported that a small sub-set of IEEE members had learned of and benefited from the new, unrestricted opportunity to express themselves at the Open Forum on March 28-29. The resulting 15 presentations and discussions had covered a broader scope than had been intended originally, including topics such as psycho-kinesis and the use of pulsed magnetic fields for the treatment of cancer. Dr. Unger expressed appreciation of personal contacts made and of the discussions in depth.

ACTION (Benjamin -completed) ACTION (Robbi) Dr. Benjamin undertook to summarize the Open Forum activities, attaching the abstracts provided by the speakers and to send copies to the Chairman and Vice-Chairman by April 9, 1973. The Vice-Chairman's copy would be transmitted to the Newsletter Editor by April 15, together with other reports. A copy was also to be sent to the TAB Office [- received April 6, 1973.]

4.2 Workshop

Dr. Benjamin reported that attendance at the workshop on 'The Engineer and Military Technology' had been about 35 people including seven Directors in addition to the Chairman and panelist Director Cory. (Letter of invitation shown as Appendix 1) Notably absent from the audience were IEEE members anxious to defend the status quo. He expressed satisfaction with the event and was commended by the Committee for his efforts in organizing both the workshop and the Open Forum. At these two events, 27 additional people interested in C-SIT were identified.

ACTION (Higinbotham) Dr. Higinbotham agreed to write a brief review of the workshop for the Newsletter; submittal by April 9 to Mr. Robbi was requested.

4.3 Technical Sessions

Mr. Robbi reported that the INTERCON'73 technical sessions designated for review in the previous minutes had been covered with the exception of 'Computers and Public Systems' and 'Applications of

Technology Forecasting and Assessment'. Mr. Rabow agreed to write a brief review of the latter. All reviews were to be submitted to Mr. Robbi by April 9 for transmittal to the Newsletter Editor by April 15.

ACTION (Reviewers, Robbi)

4.4 Technical Session Scheduling

Mr. Klig pointed out that Session 57 had been added to the printed program as an evident afterthought, thus undercutting the credibility of the claim that no opportunity was available for for scheduling the sessions requested by C-SIT.

4.5 G-PC Play

Further to the note under minute 2, it was proposed to make contact with Jim Lufkin, G-PC author of 'Barbara's Polar Bears' to discuss writing and production of further plays. Drs. Benjamin, Emberson and Edmonds were assigned to attend to this item.

ACTION (Benjamin Emberson Edmonds)

4.6 Film Theatre

Mr. Robbi expressed concern over some of the films presented at the Coliseum, in particular, one made by IBM, which was felt to be unduly promotional of the IBM perspective on society. Mr. Daush assured the Committee that its inclusion was unlikely to be accidental, since in his experience very careful prior reviewing of all films occurred.

5. Future Major Meetings

5.1 INTERCON'74

Mr. Robbi and others favored repeating the Open Forum but as part of the official program with attendant call for papers and better publicity. It was anticipated that some effort, starting now, would be required to achieve this recognition. Still others felt that the ground rules for INTERCONs should be clarified before plans were formulated for 1974. In the meantime, several Groups and Societies were identified in which sympathetic individuals could be contacted for possible inputs to a 1974 Open Forum, i.e., S-Com, S-C&S, S-Mag, S-SMC, G-EMB, G-MTT/COMAR, G-AP, S-NPS, G-PC. Mr. Robbi agreed to present initial plans for INTERCON'74 at the next meeting.

ACTION (Robbi)

Mr. Treadwell suggested that the authors of papers at a regular conference, such as INTERCON, be asked to rate their papers on a scale of social significance. Mr. Klig extended the idea to arranging a workshop following one regular session at which the social implications of the papers read would be discussed.

5.2 NEREM'73

Dr. Barrow reported that the technical program Chairman of NEREM'73 was receptive to inputs concerning social implications and that he and Mr. Tate expected to participate in further planning discussions and report at later meetings. This initiative by Dr. Barrow was enthusiastically endorsed.

ACTION (Barrow/ Tate)

5.3 WESCON'73

It was agreed that no action would be taken on this conference.

[N.B. Appendix 2 refers to event at COMPCON'73].

6. Surveys

6.1 Subject Areas

Dr. Higinbotham distributed a report on the responses to the questionnaire on subject areas (Attachment B.) He concluded that seven working groups, comprising 24 people in all plus later volunteers, could be formed. The Chairman asked Dr. Higinbotham to proceed to form these seven working groups on:

ACTION (Higinbotham)

	Topic	Liaison
1.	Ethics	USAC
2.	Environment/Energy	EQC,S-PE,S-IA,S-NPS
3.	Urban Technology/Transportation	Trans, S-IA,G-SMC, S-C&S
4.	National Security/Conversion to Civilian Engineering	
5.	Socio-Economic Employment issues	USAC
6.	Education/Courses for Electrical Engineers	EAB,G-Ed
7.	Bio-electronics/Social and Ethical Problems (Medical Engineering)	G-EMB

The Secretary has appended above the initials of some other IEEE entities with which liaison should be made in these subject areas. In some cases (EQC, EAB) liaison members to C-SIT have already been appointed. [N.B. Mr. Beam also serves on USAC; Mr. Killin is past Chairman of S-IA, Mr. Gaffney is a member of G-AES AdCom, Dr. Higinbotham is past Chairman of S-NPS, Dr. Lewis is past Chairman of S-CS, Mr. Sarasohn is past Chairman of G-EM.]

6.2 Curricula

Dr. Lewis submitted a letter report, shown as Attachment C. Time constraints did not permit discussion of this item. Dr. Lewis

ACTION (Lewis/ Stillinger) and Mr. Stillinger are asked to proceed as they find appropriate and to report further at the next meeting.

6.3 IEEE Activists

Insufficient responses had been received to date to permit useful conclusions to be drawn.

7. Next Meeting

The next meeting was scheduled for Wednesday, May 2, 1973 at 6:30 p.m.

[N.B. Subsequently, the date was changed to Saturday, April 28, at 9:30 a.m. all day.]

8. Adjournment

The meeting adjourned at 12:15 p.m. to permit some attendees to participate in the subsequent meeting of the IEEE Environmental Quality Committee.

P. D. Edmonds
Secretary

Issued: April 28, 1973

\+ Appendix 1 (Chairman's letter to Board of Directors 3/7/73)
(Secretary's letter to G/S officers 2/8/73)
2 R. M. Emberson's letter, COMPCON Advance Program 3/9/73

Attachment A. Roster
B. W.A. Higinbotham's Report/Subject Areas
C. J. B. Lewis' Report/Curricula

Exhibit I APS Forum
S-PE Newsletters March '73 + April '73
CSRE questions at "Limits to Growth' session

Distribution: C-SIT members
J. M. Kinn
D. Christiansen
R. L. Clark
H. Chestnut

APPENDIX 1
C-SIT Minutes 3/30/73

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

345 EAST 47TH STREET, NEW YORK, N.Y. 10017 AREA CODE 212 752-6800

TO: All members of the IEEE Board of Directors

FROM: Bruce B. Barrow, Vice-Chairman, TAB and Chairman, ex-officio, IEEE Committee on Social Implications of Technology

DATE: March 7, 1973

SUBJECT: Personal Invitation to the C-SIT Workshop on: *"The Engineer & Military Technology,"* Thursday, March 29, 1973, 8 p.m. at the Americana Hotel, Biarritz Suite, 4th Floor

You will recall our discussion at the January 10, 1973 Board Meeting of the activities proposed by the IEEE Committee on Social Implications of Technology to take place during INTERCON'73. Arrangements for the workshop on *"The Engineer & Military Technology"* have been completed and this event is scheduled on the evening following our Board meeting on Thursday, March 29.

I wish to extend a personal invitation to each of you to attend this workshop. There are several reasons why your presence is important. Firstly, you will domonstrate your support of open discussion with those members of the Institute who feel that the work our engineering colleagues perform to make practicable the electronic complexity of modern warfare is a suitable subject for intellectual examination and debate. Secondly, your personal experience may be relevant to this subject, so that you will be able to contribute authoritatively to the discussion and, possibly, correct misapprehensions about the subject or the Institute. Thirdly, you may hear arguments developed or attitudes expressed that you feel should be taken into account in the discussions and decisions made by the Board in directing the affairs of the Institute; and fourthly, you may achieve some measure of personal enlightenment or reinforcement of your prejudices!

I am attaching for your information a copy of the announcement of this workshop that will appear in the March73 issue of *Spectrum*. The format will be presentations by the five named speakers, general discussions from the floor, and then round table discussions in which the speakers will be expected to participate on a give-and-take basis with the audience.

I hope to see you there.

BBB:gd
Enclosure: Spectrum announcement
cc: D. G. Fink

Engineering and modern warfare

On Thursday evening at 8:00 in the Biarritz Room of the Americana, the IEEE *ad hoc* Committee on Social Implications of Technology (CSIT) will sponsor a workshop titled "The Engineer and Military Technology." Speakers have been chosen to represent a wide range of viewpoints on the engineering content of modern warfare and its consequences. Represented on the panel are William E. Cory, Director of IEEE Region 5; Dr. William Davidon, professor of physics, Haverford College; Howard Levy, research associate, Health Policy Advisory Center, New York; Dr. Edward Ramberg, consultant, technical staff, RCA (retired); and Harry Davis, Deputy Undersecretary of the U.S. Air Force (retired). Moderator is Dr. Bruce Barrow, vice chairman, IEEE Technical Activities Board.

THE INSTITUTE OF
ELECTRICAL AND
ELECTRONICS
ENGINEERS, INC.

345 EAST 47TH STREET, NEW YORK, N.Y. 10017 AREA CODE 212 752-6800

MEMORANDUM

To Group/Society Presidents/Vice-Presidents and Secretaries Date 2/8/73

From P. D. Edmonds

SUBJECT: OPEN FORUM for CONTRIBUTED PAPERS at INTERCON'73

The attached page describes two activities which will be organized by the IEEE Committee on Social Implications of Technology during INTERCON'73, March 26-30, 1973, at the Americana Hotel, New York.

Those who have attempted unsuccessfully to obtain a slot in the INTERCON technical program will be interested in the OPEN FORUM which will be in operation for the last two-and-a-half days of the convention. Please make this information known promptly to your technical and other committees and members, so that individuals may have time to prepare contributions. Spectrum, and Group/Society Newsletters with issues appearing in time, are being asked to carry this announcement. However, this is no substitute for your personal knowledge of members who might wish to avail themselves of an opportunity to contribute their opinions and even some facts.

The second activity, the workshop on "The Engineer and Military Technology" is described fully in the attachment. The purpose of this cover memo is to invite you to attend this workshop in person and to participate in the round-table discussions with the speakers, members of the IEEE Board of Directors, members of C-SIT and other members of the Institute. We hope you will recognize the significance of this innovative workshop.

Pete Edmonds

PDE:gd

Enclosure: Announcement

cc: R. M. Emberson

9

OPEN FORUM FOR VOLUNTARILY CONTRIBUTED PAPERS

The IEEE ad hoc Committee on Social Implications of Technology (CSIT) will sponsor two events at INTERCON '73:

1) A Workshop on THE ENGINEER AND MILITARY TECHNOLOGY, on Thursday evening, March 20 in the Biarritz Room of the Americana Hotel, fourth floor, commencing at 8 p.m. Speakers have been chosen to present a wide range of viewpoints on the engineering content of modern warfare and its consequences. They include:

William E. Cory, Director IEEE Region 5
William Davidon, Professor of Physics, Haverford College
Howard Levy, Research Associate, Health Policy Advisory Center, New York
Edward G. Ramberg, Consultant and Fellow, Technical Staff RCA (retired)
Harry Davis, Deputy Undersecretary of the Air Force (retired)
Moderator: Bruce B. Barrow, Vice-Chairman, IEEE Technical Activities Board and Chairman, CSIT ex-officio

The remarks by the speakers will be followed by an open-ended period of discussions at several round tables, when the speakers may be challenged or supported or invited to consider additional aspects. The theme will be interpreted broadly, provided relevance is maintained to military activities that depend upon the past, present, projected, planned or potential work of the engineering community. All members of the IEEE Board of Directors will be personally invited to attend and all other IEEE members are hereby invited.

2) An OPEN FORUM FOR CONTRIBUTED PAPERS on Wednesday and Thursday March 28-29 in the Chelsea Suite of the Americana Hotel fifth floor, throughout the days and on Friday, March 30, 9-12 noon in the Monte Carlo Room, fourth floor.

Any IEEE member may request time to present his views on any subject related to electrical or electronic engineering without the constraint of submitting an abstract and receiving approval of a program committee. A member of C-SIT will be present at all times to act as the moderator, whose decision on the appropriateness of material and the time allowed to any speaker shall be final. To request time, a member should send his name, contact address and phone number, time requested and title of his intended remarks to the [illegible]zer. Malvern Benjamin, Bionic Instruments, Inc., 221 Rock Hill Road, Bala Cynwyd, Pa. 19004 or to IEEE Headquarters (attention Peter Edmonds, Staff Secretary, C-SIT) on or after March 1, or sign up at the table which will be found in La Reserve Room on the fourth floor of the Americana throughout INTERCON '73. A title is essential for the information of members who may form an audience. Although an abstract is not required, speakers may find they draw a larger audience by displaying an abstract on the bulletin board which will be provided near the sign-up table in La Reserve Room. A moderate amount of literature may also be displayed in the Chelsea Suite (Wednesday and Thursday) and Monte Carlo Room (Friday) throughout the Forum. Reproduction services will not be provided.

APPENDIX 2
C-SIT Minutes 3/30/73

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

345 EAST 47TH STREET, NEW YORK, N.Y. 10017 AREA CODE 212 752-6800

March 9, 1973

Dr. Bruce B. Barrow
GTE Laboratories, Inc.
40 Sylvan Rd.
Waltham, Ma. 02154

Dear Bruce:

I have just returned from Computer Society Executive Committee and Board meetings, held in conjunction with the CompCon-73.

You will notice on the second page of the advance program (copy enclosed) that there were two provisions for volunteer efforts to exchange information:

a) The "Short Notes" Forum - sessions of 5-minute papers, orally presented and open for discussion, but not listed on the advance program and with nothing in the Conference Record. This was exceedingly popular - some people thought the Forum sessions went better than the regular sessions.

b) The "Birds-of-a-feather" session - informal workshops devoted to a specific theme or topic. For example, if a few people took the initiative to schedule a time and put up an announcement on the Conference bulletin board, everyone interested in laser memories could get together for an evening session - until closed at midnight.

These CompCon-73 successes are merely another demonstration that Group/Society-sponsored conferences have done exactly what C-SIT tried to do at INTERCON-73. As you know, most G/S proposals to INTERCON, have been rejected in recent years. This may explain why so many members, particularly those active in some specialty area, seem to feel that INTERCON is not for them.

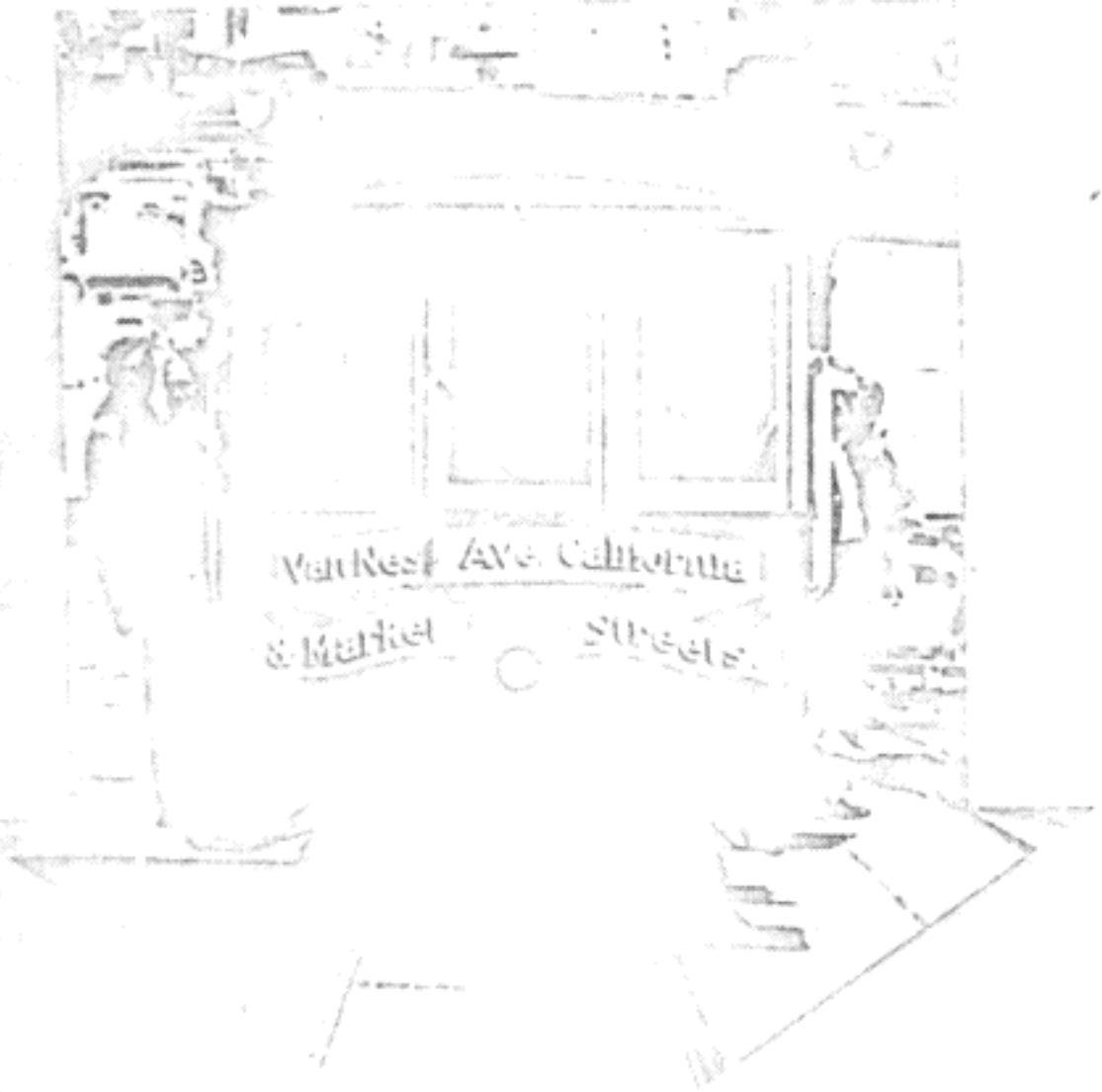
Sincerely,

RME

Richard M. Emberson
Director, Technical Services

RME/lb
cc: J.M. Benjamin
A. Robbi
J.K. Dillard
P.D. Edmonds

"Computing Networks
from Minis through Maxis—
Are They for Real?"



February 27-28, March 1

SEVENTH ANNUAL IEEE COMPUTER SOCIETY
INTERNATIONAL CONFERENCE

12

ARE YOU READY FOR COMPUTING NETWORKS? ARE COMPUTING NETWORKS READY FOR YOU?

For years computing networks have been planned and under construction. Often a given network never attained operating status. Some completed networks exacerbate the problems they were intended to solve. But some are functioning very well. They do the jobs for which they were designed and they support worthwhile and previously unanticipated applications.

COMPCON 73 is the first major computer conference entirely dedicated to networks. The present time may be a turning point for computer networks. Experience exists; hardware is better and less costly; standards are beginning to emerge. Dr. Sidney Fernbach, COMPCON 73 chairman, has focused on the following:

"We wish to present a total picture of networks now in being or construction. The aims, experiences, and problems encountered should be part of this picture. Failures or near successes should be recorded, as well as successes. We want to be up-to-date, but avoid paper studies. The major topics of interest are approaches and techniques tried enough to be evaluated."

COMPCON 73 will be your best chance to evaluate the state-of-the-art of computing networks. What do networks offer?

- Economical Computing
- Enhanced Reliability
- Support of Point-of-sale devices, etc.
- Shared large data bases
- Shared large computers or storage devices
- Balance between centralization and decentralization

How will large computer utilities or consortiums affect you? How about CATV-based networks? Is your bottleneck solved by occasional availability of a large computer or storage device? How much do costs decrease when you share larger equipment? What does the future hold for pooled information? Should you be in or out of the network?

If you want to discuss these issues with experts, come to COMPCON 73.

You'll be with the world's top network designers... listening, rapping, and maybe even shooting a few holes in their theories... if you come to COMPCON 73 in San Francisco.

You'll miss a great deal if you depend solely on the Proceedings.

At COMPCON 73, the most important happenings — the face to face dialogues with fellow professionals — won't be recorded in the conference Digest. If you're not in attendance, you'll miss the truly unique "Short Notes" sessions in which anyone (you included) has five minutes to report on recent work, experience, theories, bitches or conjectures; you'll miss the bull-sessions and "Birds-of-a-Feather" get-togethers; you'll miss the exhibits; you'll miss two great COMPCON-hosted cocktail parties followed by the out-standing learning and participatory experiences offered at the evening "Knock Heads" sessions. And, of course, you'll miss one of the world's most delightful cities, San Francisco.

"Short Notes" give you a forum.

Run in parallel with the 27 formal sessions, the 5-minute short note presentations in the Gas Buggy Rooms give you the unique opportunity to present exactly what's on your mind relating to computing networks or our industry. Anything goes except blatant sales pitches. You can register for your Short Note and get full details from:

Dr. Martin H. Graham
COMPCON 73 Assistant Chairman
Professor of Computer Science
University of California
Berkeley, California 94720
Phone (415) 642-4513

Schedule yourself a "Birds-of-a-Feather" session.

Birds-of-a-Feather sessions can be arranged prior to COMPCON 73, or at the conference itself. If you'd like to schedule a session now, write:

David L. Peterson
COMPCON 73 Technical Committee
Lawrence Livermore Laboratory, L-56
P. O. Box 808
Livermore, California 94550
Phone (415) 447-1100, x. 3300

A great conference: Compcon 73
A great city: San Francisco
A great hotel: The Jack Tar

You'll find complete information on the inside back cover of this program on registering for COMPCON 73, the Jack Tar Hotel, and the separate Monday Tutorial on Computer Networks. Advance COMPCON registration saves you money — $10.00 to be exact — and getting reservations from the hotel early assures you a room for the conference. COMPCON 73 features a superb technical program (as you'll discover on the following pages), relevant manufacturer exhibits for the first time in three years at COMPCON, and lots of learning, lots of up-to-the-minute information. And, of no small moment, it promises the myriad delights of "The City", Baghdad-by-the-Bay, San Francisco. COMPCON 73 will be the most significant conference held to date on computing networks. You'll be way ahead by coming to San Francisco on February 27, 28 and March 1.

A "Who's Who" in Computer Nets.

On the next three pages, you'll be getting a thumbnail view of the top professionals in the computing network field. At COMPCON 73, you'll get face-to-face dialogue with these experts. You can join the most illustrious array of "Network Hall of Famers" ever assembled . . . any time, any place, any where . . . in the world. From Keynotor Dr. Ruth Davis down the line of session chairmen, speakers, panelists and authors, Drs. Sid Fernbach and Kay Magleby have collected the most accomplished researchers, theoriticians and, most important, "do'ers" in computer nets, large and small, minis and macros, retail and scientific, governmental and commercial. These are the movers and shakers in communication networks. At COMPCON 73, you can surely learn something from them. Or they from you.

"Innovation and Change in Computer Design"— continuing Compcon theme.

COMPCON 72 proved to be one of the most outstanding professional computer conferences in history. And COMPCON 73 will be even better. A large part of this success is due to the permanent standing committee, chaired by Rex Rice. In essence a quality control organization, the standing committee insures continuity for each annual IEEE Computer Society Conference and frees each year's committee to concentrate solely on the technical program. Rice's group makes sure the continuing theme is adhered to and that conference character remains constant. And if COMPCON 72 and 73 provide any indication, that constant conference character is constantly good.

COMPCON 73

computing networks

Knock heads with the experts while having a few free drinks, and cap your evening at one of The City's world-famous restaurants.

When you come to COMPCON 73, everything that happens will be so significant, you won't want to miss any of the action. So we've made it possible for you to get the best of COMPCON plus the best of the world's greatest City. Two great COMPCON-hosted cocktail parties begin on Tuesday and Wednesday the moment the afternoon sessions end at 5:30 and will run formally until 7:30. Each night, you'll have two free drink tickets — hard or soft. You'll also be given the computer on San Francisco's eateries from COMPCON's resident restaurant expert." We'll tell you everything you need to know about where to eat — price ranges, location, quality. We'll even make dinner reservations for you. One catch, though: no reservations for times prior to 9:15 p.m. so you won't miss the action. The Tuesday and Wednesday night "Knock Heads" (not shop-type panels start at 7:30 and end promptly at 9:00. The bar stays open until the sessions end. Sure, you could say we're bribing you to stay on into the evening for these important workshops, but the fact is you'll get more out of COMPCON if you do.

Relevant manufacturer exhibits return after 3-year hiatus.

COMPCON attendees have asked that we bring back exhibits. So, after three years, we have . . . in a way. On the mezzanine at the Jack Tar, adjacent to the session rooms, there will be a *limited* number of exhibits. Only the most recent, most relevant manufacturer developments will be displayed. You'll see products that are of direct interest to you, and that's all, because there won't be any other kind. COMPCON 73's exhibits will complement the superb technical program without detracting from it in any way. To find out more about COMPCON exhibits, contact:

Robert O. Warr
The Warr Department
1020 Corporation Way
Suite 213
Palo Alto, California 94303
(415) 968-9387

Monday tutorial sets the stage.

On Monday, February 26, Professors Dave Farber and Len Kleinrock will conduct a day-long "Tutorial on Computer Networks." Networks will be introduced, defined, and explored in detail. For complete information on this comprehensive pre-COMPCON seminar, see page 6 of this program.

program sessions

Tuesday
February 27, 1973

Dr. Ruth Davis

1 KEYNOTE SESSION

9:00 to 10:00 a.m., International Room
Chairman: Dr. Sidney Fernbach, Lawrence Livermore Laboratory
Dr. Ruth M. Davis, Director, Institute for Computer Sciences and Technology, National Bureau of Standards

A perspective on computing networks will be given by Keynote Speaker Dr. Ruth Davis who obtained her Ph.D. in Mathematics from the University of Maryland. She has worked for the Director of Defense Research and Engineering, Department of Defense, as a staff specialist in intelligence and reconnaissance, and the National Library of Medicine as the Director of the Lister Hill National Center for Bio-Medical Communications. She is a Fellow of the Society for Information Display and a Visiting Professor in the Computer Science Department of the University of Pittsburgh. She has received medals from the University of Helsinki in Finland and the Karolinski Institutet in Sweden for her work in information sciences. In 1972 she won the Federal Woman of the Year Award. And also in 1972, she won the Computer Systems Man of the Year Award by the Association for Systems Management. In October 1972, she was awarded the Department of Commerce Gold Medal Award.

2 NETWORK VIABILITY

10:30 a.m. to 12:00 noon, International Room
Chairman: David J. Farber, UC, Irvine
Discussant: Einar Stefferud, E. Stefferud & Assoc., L.A. University of California, Irvine

In the six years since the first public statements advocating large scale networks of computers, a host of different architectures and technologies have been. A number of real networks have actually been placed into operation in the U. S. and Europe. This session will review the rationales that support the network approach as well as examine the political, economic and management issues which must be faced in order to develop and operate such networks. Three key speakers will discuss the issues. They are:

"Network Rationale: A 5-Year Reevaluation"
Lawrence A. Roberts
Advanced Research Projects Agency
Department of Defense

"Economic and Political Problems"
Philip H. Enslow, Jr.
Office of Telecommunications Policy
Executive Office of the President

"Administration and Management"
Bertram Herzog
Director, MERIT Computer Network

3 NETWORK EXAMPLES

1:30 p.m. to 3:30 p.m., International Room
Co-Chairmen: Dr. N. Addison Ball, National Security Agency
Prof. David J. Farber, UC, Irvine

The four systems to be discussed represent a wide variety of goals and design features: they support terminal, inter-computer, and central file storage communications; some are primarily service oriented, others primarily experimental; control is local in some, distributed in others; some span a relatively large geographical area, others are small; computers involved range from the very small to the very large, and data rates span a few hundred to 10 million bits per second. The speakers will examine the objectives, architectures, and successes and failures of these systems, and will assume little or no specialized knowledge on the part of the listener.

"Development of Communication Requirements for the Dartmouth Timesharing System"
Prof. Robert F. Hargraves, Jr., Dartmouth College

"OCTOPUS Communications Structure"
John G. Fletcher, Lawrence Livermore Laboratory

"The MERIT Computer Network"
Dr. E. M. Aupperle, University of Michigan

A Distributed Computing System
D. J. Farber, K. Larson, D. Lummus, F. Heinrich, M. D. Hopwood, and L. Rowe, UC Irvine

4 NETWORK COMPONENTS AND DESIGN CONSIDERATIONS

4:00 to 5:30 p.m., International Room
Chairman: Albert F. Hartung, Systems Development Corp.

Computer Communication Networks are made up of various components such as hardware, software and carrier facilities. Each of these components relate to specific design requirements. A network component overview as well as approaches to design are presented.

"Structured Approach to Information Networks"
Hal Becker, Honeywell Information Systems

"Terminal Access to the ARPA Net — Experience & Improvement"
Nancy Mimno, Bolt, Beranek and Newman

"To Switch or Not to Switch"
Henry McDonald, Bell Laboratories

5 PANEL DISCUSSION: A Commentary on Networks Past, Present and Future

7:30 to 9:00 p.m., International Room
Chairman: John Pierce, California Institute of Technology

Panelists will include key participants in the Tuesday daytime sessions.

CONFERENCE AT A GLANCE

tuesday	wednesday			thursday		
1 Keynote Session	6 Research Computing Networks	7 Network Security	8 Short Notes	19 Examples in the Business Community	20 Minicomputer Multi-processors and Computer Network Structures	21 System Considerations
2 Network Viability	9 Networks in Perspective	10 Panel: Network Security	11 A Two-way CATV Network	22 The Singer Retail Network	23 Distributed Minicomputer Networks	24 Network Control
3 Network Examples	12 Uniting the Computer Elements	13 Legal Aspects of Networks	14 Performance in Computer Communications Systems	25 Dedicated Networks	26 Multi-facility Networks	27 Large Data Base Networks
4 Network Components and Design Considerations	15 University Developed Networks	16 Network Architecture	17 Economic Tradeoffs in Network Design			
COMPCON-hosted cocktail party	COMPCON-hosted cocktail party					
5 Panel: A Commentary on Networks, Past, Present and Future	18 Panel: How Not to Run a Network					

wednesday
February 28, 1973

6 RESEARCH COMPUTING NETWORKS
9:00 to 10:30 a.m., International Room
Chairman: Harry Huskey, University of California, Santa Cruz

The current status and prognosis of research computing networks will be covered. The origin, development, and current state of the ARPA network, resource sharing and network load problems will be discussed. Such networks will also be discussed from the user's point of view. Innovations in using radio and satellite for broadcast, packet switched networks will be presented for the first time.

"Origin, Development and Current State of the ARPA Network"
Peggy Karp, Stanford University
"Some Considerations for Improved Service to Computer Network Users"
Thomas N. Pyke, Jr., National Bureau of Standards
"The UC Network"
Ward Sangren, University of California
"Some Advances in Radio Communications for Computers"
S. F. Kuo and Norman Abramson, University of Hawaii

7 NETWORK SECURITY
9:00 to 10:30 a.m., California Room
Chairman: Clark Weissman, Systems Development Corporation

Security of information in computer communication networks is becoming a highly discussed subject. Insuring integrity of data flow and prevention of outside penetration is a key element in network design. Concepts and techniques used in providing secure networks are discussed.

"Security Aspects of Computer Communication Networks"
Al Pfaff, IBM
"Security in the LLL OCTOPUS Nets"
John Fletcher, Lawrence Livermore Laboratory

8 SHORT NOTES
9:00 to 10:30 a.m., El Dorado Room
Chairman: Dr. Martin H. Graham, UC, Berkeley

9 NETWORKS IN PERSPECTIVE
11:00 a.m. to 12:30 p.m., International Room
Chairman: Davie Evans, University of Utah

The true value of a network is determined by the view of it seen by its users. To place the present state of the art of computing networks in proper perspective, papers giving network definition and the user's point of view are included.

"A Definition of a Network"
David P. Jasper, Control Data Corporation
"Computer Networks from the User's Point of View"
John Pickens, UC, Santa Barbara
"A User's View of the LLL Network"
Jerry Owens, Lawrence Livermore Laboratory

10 PANEL DISCUSSION: Network Security
11:00 a.m. to 12:30 p.m., California Room
Chairman: Dennis K. Brandstad, National Security Agency

Panelists: James P. Anderson, J. P. Anderson Company
Philip H. Enslow, Jr., Office of Telecommunications Policy
Robert S. Fabry, UC, Berkeley
A. G. Fraser, Bell Laboratories
Stephen T. Walker, National Security Agency
Clark Weissman, Systems Development Corporation

11 A TWO-WAY CATV NETWORK
11:00 a.m. to 12:30 p.m., El Dorado Rooms
Chairman: William Mason, MITRE Corporation

FCC requirements for two-way service on CATV networks has led to vast speculations on the implications of this wide-bandwidth port into the home for personal computing and data base access. Actual experience using two-way networks and realistic projections of the impact of future systems on computing networks will be presented.

Paper titles and speakers to be announced.

12 UNITING THE COMPUTER ELEMENTS
2:00 to 3:30 p.m., International Room
Chairman: Thomas Pool, United Computing Systems, Inc.

A few years ago, a computer utility was an often discussed dream. Now, United Computing Systems has turned that dream into a reality. The objectives, design, evaluation, and future directions of a group that developed one of the first computer utilities will be covered.

"An Operating System Network to Absorb the Evolutionary Elements"
LaMon Thomson, United Computing Systems
"The UCS Teleprocessing Network"
Wayne L. Hanna, United Computing Systems

13 LEGAL ASPECTS OF NETWORKS
2:00 to 3:30 p.m., California Room
Chairman: Prof. Richard Buxbaum, UC, Berkeley

A short review of some current legal problems will be given. These include the legal implication of the level of computer security, computer trade secrets, and difficulties in a cashless society.

"Computer Security?"
Haley J. Fromhelz, Morrison, Foerster, Holloway, Clinton & Clark, San Francisco; Chairman, California State Bar Committee on Computers and the Law
"Cashless Society?"
L. Richard Fischer, Morrison, Foerster, Holloway, Clinton & Clark, San Francisco

14 PERFORMANCE IN COMPUTER COMMUNICATION SYSTEMS
2:00 to 3:30 p.m., El Dorado Room
Chairman: Wesley Chu, UCLA

Performance of computer communication systems (e.g., delay, thruput, cost) depend on parameters such as message traffic and channel characteristics, multiplexing techniques, network architecture and computer communication software. The relationship of these parameters as well as their trade-offs are presented.

"Performance Measurements in LLL OCTOPUS Computer Net"
George Sutherland & Sam Mendicino, Lawrence Livermore Laboratory
"On the Desirability of Integrating a Communication System to Two User Classes"
John S. DeSilva, Ministry of Communication, Canadian Government
"Study of Architecture Strategies for Terminal Oriented Computer Networks: A Case Study"
Lynn Hopewell, Network Analysis Corporation

15 UNIVERSITY DEVELOPED NETWORKS
4:00 to 5:30 p.m., International Room
Chairman: Dr. Herbert Soskin, UC, Berkeley

In recent years, computing networks have evolved from the research stage to practical networks. The universities have played a key role in this transition. Examples ranging from networks in daily use by university personnel to networks designed for wide usage are presented.

"The PRIME Message System"
M. G. Ruschitzka & R. S. Fabry, UC, Berkeley
"A Local Computer Network"
Saul Rosen, Director, Computing Center, Purdue University

16 NETWORK ARCHITECTURE
4:00 to 5:30 p.m., California Room
Chairman: Walter Levy, Informatics, River Ridge, N.J.

The availability of low cost processors makes it possible to distribute the processing power throughout the network. The characteristics of these processing elements, their interconnection, and operating software present interesting architectural problems. The structure of specialized microprocessors, characterization of networks of microprocessors, and their operating environment are presented in this session.

"The Design for a Multiple Processor Operating Environment"
Stewart Weiser, Digital Equipment Corporation
"Characterization of Multiple Microprocessor Networks"
V. K. Ravindran and Thampy Thomas, Stanford University
"Specializable Processors"
A. Costes and J. C. Lapree, Laboratoire D'Automatique, Toulouse, France

17 ECONOMIC TRADE-OFFS IN NETWORK DESIGN
4:00 to 5:30 p.m., El Dorado Room
Chairman: David P. Jasper, Control Data Corporation

Relative costs of computing and communication have changed rapidly in the last few years. Techniques to evaluate this effect on computing networks are very valuable. The role of large central facilities and distributed computing systems and their relative advantages will be discussed.

"Trade-off Studies in Computer Networks"
George M. Cady & Gunther Luther, System Development Corporation
"Minimal Cost Network of Computer Systems Under Economies-of-Scale"
C. I. Burdet & O. I. Mikhail, Carnegie-Mellon University
"A Tool for Network Design"
T. W. Keller, D. F. Howsley, K. M. Chandy, J. C. Browne, University of Texas, Austin

18 PANEL DISCUSSION: How Not to Run a Network
7:30 to 9:00 p.m., International Room
Chairman: Max Beree, Tymshare Corporation

Panelists: David Evans, University of Utah
Thomas Pool, United Computing Systems, Inc.
Robert Craven, Optimum Systems, Inc.

thursday
March 1, 1973

19 EXAMPLES IN THE BUSINESS COMMUNITY

9:00 to 10:30 a.m., International Room
Chairman: Stephen W. Miller, Stanford Research Institute

A number of networks are in operation in the business community for the purpose of keeping track of the location and flow of goods and money. Several aspects of these working systems are described.

"Computer Networks for Retail Stores"
Vernon Smith, Jewel Companies, Inc.
"Microprocessor Utilization in Transaction Terminals Here"
Allen Cuddon, Honeywell Information Systems, Inc.

20 MINICOMPUTER MULTI-PROCESSORS AND COMPUTER NETWORK STRUCTURES

9:00 to 10:30 a.m., California Room
Chairman: Gordon Bell, Carnegie-Mellon University and Digital Equipment Corporation

Interconnected processors and computers are becoming a standard computer structure. These structures affect system cost, performance and reliability, and functional characteristics. This session will consider tightly coupled computer structures with 10 or more mini-processors.

"A Multi-Computer Network for the ILLIAC Simulator"
Gravino A. Koi, University of Arizona
"Instrumentation for Carnegie-Mellon Multi-Minoprocessor Computer"
S. Fuller, R. Swan, W. Wulf, Carnegie-Mellon University
"Applications and Interconnections for Arrays of Microprocessor Computers"
G. Bell, R. Chen, S. Fuller, J. Grason, D. Siewiorek, S. Rege, Carnegie-Mellon University

21 SYSTEM CONSIDERATIONS

9:00 to 10:30 a.m., El Dorado Room
Chairman: S. R. Ames'o'o, Honeywell Information Systems

This session will examine several system issues in network design. Papers will give a comparison of several protocols for the exchange of information between computers, and consider the effects of distributed data base on the network.

"Bit Oriented Communication Control Procedures"
Edward B. Tymann, Honeywell Information Systems
"Some Considerations in the Design of Homogenous Distributed Data Bases"
Alan N. Chandra, IBM Research, Yorktown

22 THE SINGER RETAIL NETWORK

11:00 a.m. to 12:30 p.m., International Room
Chairman: Samuel Harvey, The Singer Company, New York City

This session will describe the Singer Worldwide Computer Network and MOTS Retail Information System used as part of the network and by many other retailers.

"The Concept of the Singer Worldwide Computer Network"
Samuel Harvey, VP, The Singer Company
"Point-of-Sale Systems"
Clem Presto, The Singer Company

23 DISTRIBUTED MINICOMPUTING NETWORKS

11:00 a.m. to 12:30 p.m., California Room
Chairman: Fred Cory, Hewlett-Packard, Cupertino

Very powerful minicomputers are now available at low prices. The distribution of these processors throughout the network to provide a high degree of local intelligence can reduce communication costs. This session presents mini-computer networks ranging from the university environment to computing utilities and the link management problem associated with these distributed systems.

"A Minicomputer Research Network"
W. J. Lennon, R. C. Barrett, J. T. Spies, Northwestern University
"Networks for Computer Utilities"
T. C. Hogan, H. W. Stevenson, RCA, Burlington, Mass.
"Pro. ems Control and File Management Problems in Large Minicomputer Networks"
E. L. Pritchard, E. F. Miller, Jr., General Research Corporation

24 NETWORK CONTROL

11:00 a.m. to 12:30 p.m., El Dorado Room
Chairman: Dr. Dickson R. Dell, Computer Telecommunications Consultant

The control of distributed computing systems presents many unique problems. Software must be communicated across machine boundaries, the jobs to be performed must be allocated to the various processors, and the control modules must be designed.

"Software Communication Across Machine Boundaries"
E. Akkoyunlu, A. Bernstein, R. Schantz, State University of New York, Stony Brook
"Digital System Design with Control Structures"
David M. Rosenson, University of Delaware
"Models of the Job Allocation Problem in Computer Networks"
V. Sarkhandran, J. W. McCredie, D. I. Mishkin, Carnegie-Mellon University

25 DEDICATED NETWORKS

2:00 to 3:30 p.m., International Room
Chairman: Henry Taylor, Hewlett-Packard, Palo Alto

Efficient networks can be designed when their use is limited to a specific task. Examples of efficiently designed single purpose networks inclu... i network for urban traffic control, air lines reservation systems, and hospital information systems. These examples present a wide enough range of dedicated networks to illustrate their common features and distinctions.

"A Processor Network for Urban Traffic Control"
Rodney Zaks, Singer Traffic Information Systems
"United Air Lines' Plans on On-Line Data Processing"
James C. Goodlett and Joe Manno, United Air Lines
"A Network Structured Hospital Information System"
M. S. Blois, P. R. Clinsky, R. R. Hersey, University of California Medical Center, San Francisco

26 MULTI-FACILITY NETWORKS

2:00 to 3:30 p.m., California Room
Chairman: Henry McDonald, Bell Laboratories, Murray Hill, N.J.

Networks to tie together computing facilities separated by either distance or job function are now being designed. The use of common facilities such as peripheral devices by several computing facilities, commercial viability of these networks, and user's evaluations are presented.

"A Computer Network for Peripheral Time Sharing"
R. R. Rezac, S. J. Sarkanikas, C. A. Trida, Bell Laboratories, Napa, Ohio
"A Multi-Faceted Commercial Computer Network"
Lionel Gilserman, McDonnell Douglas Automation Company
"Project Vigender"
A. R. Breithaupt, Bell Laboratories, Naperville

27 LARGE DATA BASE NETWORKS

2:00 to 3:30 p.m., El Dorado Room
Chairman: Richard B. Gentile, U.S. Department of Defense

Networks are being developed which link together super-computers, large data bases (10^9 bits and larger), and remote terminals. The goals of these networks are to make available a common data base and significant terminal computing power to all users. The technical aspects and network configurations are described.

"Development of the LASL Computer Network"
Ronald D. Christman, University of California, Los Alamos Scientific Laboratory
"TABLON"
M. Pomerantz, and L. Sanes
Department of Defense

monday February 26, 1973

tutorial on computer networks

Speakers: David J. Farber, Associate Professor of Information & Computer Science, University of California, Irvine
Leonard Kleinrock, Professor of Computer Science, University of California at Los Angeles

This will be a self-contained one-day tutorial on computer networks. The goal is to present the essential features of network operation, design, and performance. The presentation will cover: introduction to networks, data communications, teleprocessing computers, software issues, telecommunication network analysis and design, and future directions.

This tutorial will prepare the attendees for active participation in the following three-day COMPCON 73 conference and will serve the professional needs of those who desire an up-to-date compact treatment of computer networks.

The tutorial will be held from 9:00 a.m. until 5:30 p.m. on Monday, February 26, 1973 on the mezzanine floor of the Jack Tar Hotel. Enrollment fee, which includes luncheon and printed text materials, is $60.00. (NOTE: The $60 registration fee is separate and distinct from the registration fee for COMPCON 73.)

To register, send your check for $60.00, payable to "COMPCON 73 — TUTORIAL", to:

Joseph P. Fernandez
Mgr., Central Scientific Services
IBM Research Division
Dept. K-01/Bldg. 028
Monterey and Cottle Roads
San Jose, California 95114

You may also register between 8:00 a.m. and 9:00 a.m. on Monday, February 26, 1973 at the hotel. If you register and are unable to attend, requests for refunds must be received, *in writing*, by Mr. Fernandez prior to February 15, 1973.

registrations COMPCON 73

Mail your registration in now to save $10.00. Applicable if you register *prior to February 15, 1973.*

Advance registration		*Conference registration*	
IEEE members	$40.00*	IEEE members	$50.00
Non-members	$50.00	Non-members	$60.00
Students	$15.00**	Students	$15.00**

Your registration fee includes your copy of the COMPCON 73 Digest of Proceedings and two complimentary drink tickets for each of the cocktail parties (5:30 to 7:30 p.m. Tuesday and Wednesday nights).

*Also ACM members
**Full-time student with I.D.

Mail your advance registration check, payable to "COMPCON 73", to the Registration Chairman:

Ben E. Britt
IBM General Products Division
Dept. H75/Bldg. 141
Monterey & Cottle Roads
San Jose, California 95114

Requests for refunds must be received, in writing, by Mr. Britt prior to February 15, 1973.

Jack Tar Hotel

To be sure of a room in the hotel, please register with the Jack Tar by February 14, 1973. Indicate in your reservation letter your arrival date and time, departure date, and type of room desired. Rooms available include 1-person singles ($20-$22; $23-$25; and $26-$28 deluxe); double bed for 2-persons (ranging from $24 to $31 deluxe); Twin ($25 to $32 deluxe); Studio Twin ($25 to $34 deluxe); large 2-room suites ($50, $58 and $66); and 3-room suites ($75 and $86). Luxurious International Suites are $62 for 2-rooms, $106 for 3-rooms. Rooms will be held until 6:00 p.m. on day of arrival unless accompanied by deposit to cover first night's rental. Register for your hotel room by writing:

Reservations Manager
Jack Tar Hotel
Van Ness at Geary
San Francisco, California 94101

Digest of Proceedings

If you saw the informative and beautiful 336-page Digest for COMPCON 72, you will be doubly pleased with the COMPCON 73 Digest. Your registration at the conference entitles you to a single copy. If you are unable to attend, or you wish additional copies, you may order them from the IEEE Computer Society office in Northridge, California. Copies are $15.00 for IEEE members, $20.00 for non members. Send your check, payable to "COMPCON 73 DIGEST", to:

John L. Kirkley
IEEE COMPUTER SOCIETY
8949 Reseda Boulevard
Suite 202
Northridge, California 91324

IEEE Computer Society

If you are not a Computer Society member and wish to join, you may apply $10.00 of your COMPCON 73 registration toward the annual membership fee of the Society. An IEEE Computer Society information desk will be conveniently located adjacent to the COMPCON 73 registration area at the Jack Tar Hotel.

the people

COMPCON 73 Chairman
Head, Computation Department
Lawrence Livermore Laboratory

Sid Fernbach is an internationally recognized and respected computer scientist, particularly noted for the application of computer technology to the broad spectrum of physics research. He has been extremely active on prestigious national and international committees. Dr. Fernbach has overseen the total technical development of COMPCON 73, the most important conference devoted to computer networks ever held.

Dr. Kay B. Magleby
Technical Program Chairman
Communications Program Manager
Hewlett-Packard

Kay Magleby pioneered in the development of minicomputers, directing HP's entry in this field. He has been active in the design of data communications equipment, including intelligent keyboard CRT terminals, and other advanced terminal equipment. Dr. Magleby has taught courses in digital communications and computer technology at Stanford University and is a member of Stanford's Computer Science Advisory Board. A member of the Computer Society and IEEE, he is currently responsible for HP's activity in the communications field.

Rex Rice
Permanent COMPCON Chairman
Director of Technology
Fairchild Camera & Instrument Corp.

Besides his many technical credits, including the development of the unique SYMBOL research computer, Rex Rice is one of the most active individuals in the computer industry. His standing committee is charged with assuring the continuity of the annual COMPCONs and their adherance to the permanent theme, "Innovation and Change in Computer Design." Rex is a Fellow of the IEEE Computer Society and serves on the Editorial Advisory Board of *Computer Design* Magazine.

COMPCON 73 COMMITTEE

Dr. Sidney Fernbach, Lawrence Livermore Laboratory, Chairman; **Dr. Martin H. Graham,** University of California, Berkeley, Vice Chairman; **Dr. Kay B. Magleby,** Hewlett-Packard, Technical Program Chairman; **Albert F. Hartung,** SDC, Vice Chairman, Communications; **Gordon Mitchell,** National Security Agency, Vice Chairman, Hardware; **Dr. William McKeeman,** University of California, Santa Cruz, Vice Chairman, Software; **Stephen W. Miller,** Stanford Research Institute, Vice Chairman, Technical Program; **Ben E. Britt,** IBM General Products Division, Registration Chairman; **Dr. E. A. Feustal,** Texas Instruments, Technical Committee; **David L. Pehrson,** Lawrence Livermore Laboratory, Technical Committee; **Dr. Carl A. Jensen,** Lawrence Livermore Laboratory, Technical Committee; **Donald L. Braff,** Lawrence Livermore Laboratory, Technical Committee.

COMPCON STANDING COMMITTEE

Rex Rice, Fairchild Camera & Instrument Corporation, Chairman; **Dr. Merlin G. Smith,** IBM Corporation, Coordination Chairman; **Joseph P. Fernandez,** IBM Research Division, Finance Chairman; **J. Michael Galey,** IBM General Products Division, Arrangements Chairman; **John L. Kirkley,** COMPUTER Magazine, Print Production Chairman; **Stephen W. Miller,** Stanford Research Institute, Publications Chairman; **Robert O. Warr,** The Warr Department, Promotion Chairman; **Lowell Amdahl,** COMPATA, Special Projects Chairman.

"Computing Networks
from Minis through Maxis—
Are They for Real?"

COMPCON 73 will be the most important professional gathering on computing nets ever held—the first to look at network failures as candidly as successes. Dr. Sidney Fernbach and his technical committee have put together one of the finest programs in history for system design professionals. This is your Advance Program for a most significant conference. Read it carefully, put COMPCON 73 on your calendar now, register now, and we'll see you at the Jack Tar Hotel in San Francisco on February 27, 28 and March 1, 1973

F1

ATTACHMENT A
C-SIT Minutes 3/30/73

C-SIT MEMBERSHIP ROSTER
(Revised)

Dr. Bruce B. Barrow (Chairman)
GTE Laboratories
40 Sylvan Road
Waltham, MA 01254
(617) 890-8460 Ext. 391

Dr. Walter R. Bean
P.O. Box 172
Chappaqua, NY 10514
(914) 238-4627

Dr. J. Malvern Benjamin
Bionic Instruments
221 Rock Hill Road
Bala Cynwyd, PA 19004
(215) 839-3250

Ralph L. Clark
IEEE Washington Office
Suite 601
1625 Eye Street, N.W.
Washington, D.C. 20006
(212) 785-0017

William E. Cory
P.O. Drawer 28510
San Antonio, TX 78284
(512) 684-5111

Dr. Peter D. Edmonds (Secretary)
IEEE Headquarters
345 E 47 Street
New York, NY 10017
(212) 752-6800 Ext. 333

Dr. Richard M. Emberson
IEEE Headquarters
345 E 47 Street
New York, NY 10017
(212) 752-6800 Ext. 535

Dr. Curt P. Fey
Xerox Corporation
Xerox Square
Rochester, NY 14580
(716) 872-2000

John E. Gaffney, Jr.
IBM Corporation
18100 Frederick Pike
Gaithersburg, MD 20760
(301) 840-6487

Dr. William A. Higinbotham
Brookhaven National Laboratory
Upton, NY 11973
(516) 345-2908/2123

Einar E. Ingebretsen
Lockheed Missile and Space Company, Inc.
1111 Lockheed Way
Sunnyvale, CA 94088
(408) 742-0788

Arthur M. Killin
3916 Edgewater Drive
Ashtabula, OH 44004
(216) 963-1458

Victor Klig
497 Park Avenue
Leonia, NJ 07737
(201) 947-6755 (Home)

Frank Kotasek
104-60 Queens Boulevard - Apt. 17-L
Forest Hills, NY 11375
(212) 459-2679 (Home)

Dr. John B. Lewis
Electrical Engineering Department
Pennsylvania State University
State College, PA 16802
(814) 865-6452

Lester L. Nagel
54 Dale Drive
Summit, NJ 07901
(212) 264-9630 (Office)

Michael Pessah
1420 Noble Avenue
Bronx, NY 10472
(212) 920-4438 (Office)
(212) 842-4045 (Home)

Anthony Robbi
RD #1
Hopewell, NJ 08525
(609) 452-2700 Ext. 3218 (Office)

H. A. Sarasohn
67 Lambert Lane
New Rochelle, NY 10800
(914) 636-8339

Bill Stillinger
1610 First Avenue
New York, NY 10028
(212) 734-0685

Paul Stoller
184 Hallock Road - Apt. 2B1
Lake Grove, NY 11755
(516) 588-5933

Lawrence A. Tate
A. D. Little, Inc.
Acorn Park
Cambridge, MA 02140
(617) 864-5770 Ext. 2883

Dr. Stephen Unger
229 Cambridge Avenue
Englewood NJ 07631
(201) 567-5923

Ted Werntz
923 Walton Avenue
Bronx, NY 10452
(212) 537-2973

Dr. E. A. Wolff
1021 Cresthaven Drive
Silver Spring, MD 20903
(301) 928-2265 (Office)

2a

Of course, people interpreted the instructions in different ways. Some indicated interest only for the major headings, some for the minor headings and some for both. Some respondents expressed interest in many fields while others were more restrictive. The answers have been transcribed and are presented in the accompanying table (I made a few simplifiations).

I have considered the individual responses and arrived at a level of interest factor, called No. of Volunteers, the last line on the table. The prospects for forming topical working groups, as I see them, are:

1. Ethics: Enough interest, 9 of the 24 who signed their ballots. About equal interest in the 4 categories. It looks as though a committee could be set up on Ethics and that it would have to determine its own scope.

2. Environment: This drew the biggest response, 14 with special emphasis on c, d and e. There doesn't seem to be enough interest to support a and b.

3. Urban Technology: There is probably sufficient interest in this category, although the total given is only 7. The seven clearly state this as a 1st choice and 4 or 5 others as a 2nd choice. However, the table shows that the interest is almost exclusively in category a.

4. Communications: This is definitely marginal and the preference is clearly for c.

5. National Security: This is also marginal. The firm preferences favor a.

The answers also show a wide, though secondary interest in e, conversion from military to civilian engineering. If you take into account second choices (as I weighed them) you get the 9 responses which I note in parentheses. This appears to be a viable topic.

6. Data Banks: I would say that this was not high on enough lists.

7. Socio-economic Employment Issues: There was a strong response to this category. While a. and e. received more votes than the others, the interest appears to be about uniform for all categories. The topic is viable and the group should determine its priorities.

8. Education: 8 is not a bad showing. In fact the individual comments show that the 8 are very much interested in 8a. A number are teaching such courses.

9. Bioelectronics: The 6 who favored this expressed special interest and, from their titles, have high competence. This seems to me to be a viable topic.

10. and 11. Scattered interest, not enough to be encouraging at this time.

12. Seven respondents suggested additional topics, some of which might be sub-topics under the subjects which seem to be suitable for group effort. Only safety in design or safety of products has repeated (4) mention. Some suggested topics (e.g., mobile pensions) are being attacked under other IEEE activities. The questionnaire seems to have covered the territory pretty well.

One point, it would probably not be possible for any one person to serve on more than 2 groups. We end up with possibly 7 groups and 24 people, so far. The 24 individuals show interest in from 1 to 4 of the selected topics, the average being 3. It looks as though each of the 7 groups could start off with an average of 6 members plus any new volunteers.

22

Respondents' Names and Addresses

N. Aron, 3 Clyde Rd., Lexington, Mass., 02173

John Barkley, 2858 Miles Ave., Bronx, N.Y., 10465

Bruce B. Barrow, G.T.E. Laboratories, Inc., 40 Sylvan Rd., Waltham, Mass., 02154

Carl Barus, Dept. of Engineering, Swarthmore College, Swarthmore, Pa., 19081

F. P. Beguin, P.O. Box 122, Southbridge, Mass., 01550

T. Brady, 1150 University Village East, Salt Lake City, Utah, 84108

John F. Cachat, 15725 Edgecliff Ave., Cleveland, Ohio, 44111

D. G. Childers, Dept. of Electr. Eng., Univ. of Florida, Gainsville, Fla., 32601

- Cleaver, Univ. of Louisville, Speed Scientific School, Belknap Campus, Louisville, Kentucky, 40208

John Dixon, Jr., 2101 Cowan Blvd., Fredericksburg, Va., 22401

A. L. Ellery, 4324 Leslie St., Detroit, Mich., 48238

Robert L. Gordon, 36 Stauber Dr., Plainview, N.Y., 11803

S. N. Levy, 204-2, RCA, Cherry Hill, N.J., 08101

John Lory, 27 Stuyvesant La., Smithtown, N.Y., 11787

Donald W. Melvin, 2 Fogg Dr., Durham, N.H., 03824

Kenneth Pugh, 6100 Breezewood Dr., Apt. 301, Greenbelt, Md., 20770

P. M. Russo, David Sarnoff Research Center, Princeton, N.J., 08540

Howard Silver, Chmn. Electr. Eng. Dept., Fairleigh Dickinson Univ., Teaneck, N.J., 07666

Jack Sklansky, School of Eng., Univ. of California, Irvine, Cal., 92664

Otto J. M. Smith, Univ. of California, EE and Computer Science, Berkeley, Cal., 94720

T. E. Veltfort, Jr., 152 Colobaugh Pond Rd., Croton-on-Hudson, N.Y., 10520

- Voltmer, 919 W. Foster Ave., State College, Pa., 16801

Raymond M. Warner, Jr., 5001 Arden Ave., Edina, Minn., 55424

J. R. Zweizig, 2245 Kelton Ave., Los Angeles, Cal., 90064

? Detroit Edison Company

? William S. Watkins & Assoc. Inc., 34711 Chardon Rd., RD-1, Willoughby, Ohio, 44094

? Washington, D.C.

? EE Dept., Univ. of Fla., Gainsville, Fla., 32601

A Questionnaire

1. Ethics — 2
   - a. Code of Ethics for Engineers — X
   - b. Personal Responsibility for One's Products — X
   - c. Role of Professional Societies — X
   - d. EE's Responsibility re The Viet Nam War —

2. Environment — 2
   - a. Instrumentation for Monitoring — X
   - b. Engineering Methodology in Envir. Protection —
   - c. Development of National Energy Policy — X
   - d. Fossil vs. Nuclear Power (resources, pollution) —
   - e. New Sources: Solar, Geothermal, Fusion — X
   - f. Transmission of Electricity —

3. Urban Technology — 2
   - Transportation — Y
   - Traffic Control —
   - Urban Public Safety —

4. Communications — 1
   - a. Impact of on Developing Nations —
   - b. " " " A Divided World —
   - c. For Greater Involvement of Public in Government —

5. National Security — 2
   - a. D.O.D. R&D —
   - b. Electronics in limited warfare —
   - c. " " strategic warfare —
   - d. " and arms control —
   - e. Conversion from Military to Civilian Engineering — *

6. Data Banks and Electronic Surveillance — 2
   - a. To Detect and Prevent Crime —
   - b. Threats to Privacy — X
   - c. Classification and the Public Need-to-know —

7. Socio-economic Employment Issues — 2
   - a. Professional Status for Engineers —
   - b. Employment Problems for EE's —
   - c. Retraining of EE's — X
   - d. Job Security —
   - e. Opportunities for Social Problem Solving — X

8. Education — 1
   - a. Courses in Technology and Society for EE's — X
   - b. Lectures or Courses on Technology/Society for Non-Technical Students and Citizens —
   - c. Electrotechnical Aids to Education — X
   - d. Computer Assisted Instruction — X

9. Bioelectronics (Medical Engineering) — 2
   - a. Social and Ethical Problems Implied by New Technology —

10. Applications of Systems Engineering and Information Theory to Social Systems — 3

11. Humanization of Automation — 3

12. Other —

Remarks:

No name
Dept. of EE
Univ. of Florida
Gainesville, Fla
32601

BY _____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ JOB NO. _____

	1 a	b	c	d	2 a	b	c	d	e	f	3 a	b	c	4 a	b	c	5 a	b	c	d	e	f	g
N. Ayon	4	3	1	2	4	2	1		3	5	1	3	2	3	2	1		3	4				
John Barkley	4	C	B	A	D	1	F	B	A	D	C	E	1	A	B	C	1	B	C	A	2	E	B
Bruce B. Barlow	3		✓		2			✓		✓	5			1				3	✓				
Carl Barus	3	✓		✓	1			✓	✓	✓	1	✓		2	✓	✓	✓	3					
F. P. Beguin	1	1	3	2	5		5	4	2	3	1			1	4	3		4	3	1		1	2
T. Brady	4				1			✓	✓		1	✓								5			
John F. Cachat	2	3	1	4	4	3	4	3	2	2	3	3	3	3	3	3	4	4	4	4	2	2	3
D. G. Childers	4	5	5	5	5	4	4	3	5	5	5	5	2	2	2	5	1	1	1	1	2	2	2
Cleaver	3				1				✓	✓	✓	4			5					3			
John Dixon	3	3	4	4	3	1	3	1	1	1	1	4	2	1	3	3	2	3	3	1	2	1	4
A. L. Ellery	1		✓	✓	3						2			4						3			
Robert L. Gordon		2	2	4	5		3	2	2	2	3	4	1	1	1	2		4	4	4	4		
S. N. Levy	2				2						2	1	1	2	3					5			
John Lory		2	3	3	5		3	3	1	4	1	3		1	1	2	5					1	1
D. W. Melvin		3	2	3	3		1	1	2	2	2	2		2	2	2		3	3	2		5	5
Kenneth Pugh	3	4	3	4	3	3	4	2	4	4	3	5	3	3	2	4	5	5	5	4	4		
P. M. Russo	4	5	5	5	3	1	4	4	2	1	1	5	3	2	2	4	5	5	5	5	3	3	3
Howard Silver	4				1			✓	✓	✓	2			2						4			
Jack Sklansky		2		2			3										3						
C. J. M. Smith		5	1	4	2		4	4	2	5	(1)	5		5	5	5	(3)	4	4		5	5	
T. E. Veltfort	1	3		3	1	1			✓			3	✓		3	✓			5				
Voltmer		4	2	2	2		3	3	1	2	3	2		2	3	3		5	5	3		3	4
R. M. Warner	5				1						2	✓											
J. R. Zuelzig	2				2			✓			2			1					5				
? Detroit Edison				1				1				1				2	1						
Watkins Assoc.	1	4	3	2	1	1		✓			2	✓		4		✓		4					
Washington, D.C.	3	3	1	3	5	1	3	3	3	1	3	1	1	3	3	3	3	3	3	2	2	2	
U. of Florida	2	✓	✓	✓		2	✓		✓		✓	2	✓		1				2				
No. of volunteers	9	4	5	6	4	1	4	2	4	1	2	7	9	2	7	7	3	0	6	4	5	6	6	4	1

/

1 2 3 4 5 6 7 8 9 10 11 12

```
5 2 1   3 1 2   5 2 3 1 4 ?           V V ? V   Comments on # 1 + #
C D A 1 C A B 2 A C E D B 2 A C D B 4 A 2 2
    V 3       5           3           3   5 5 2 ← "Consumerism"
    V 3   V   5           2 V V       4   4 4
3   5   1 2 3 1 1 4 5 3 2   1 2         2 V V ← several addit. topics
                  2         V 1 V       4   5 5
3 3 4 3 3 3 3 2 2 2 2 3 3 3 3 3 3 3 4 5 3 2   too busy to work
2 4 4 1 1 1 3 5 5 5 5 5 2 2 2 2 2 1 2 1 3
      5       2           V 2           1   2 5
4 4 1 2 2 2 1 2 3 3 1 2 1 1 1 2 2 1 1 1 1 2 1 ← "Safety"
    V           1 V V   V   2 V V       3   5 3 1 ← implications of Technology
      5           1 3 4 4 2 4             4 2 4
    2 3         1 1 1 1 1 1 4           4   3 1
1 5 3   1 5 5   1 1 1 1 5   3 5 5 5 3   5 5   Notes' other interests
5 1 2   2 5 3   2 4 4 3 3   1 1 5 5   2 1 3
  3 3 4 3 2 3 3 5 2 5 1 4 4 5 5 5 4 4 3 1
2 2 5 2 1 2 5 5 5 5 5 5 4 3 2 4 5 2 2 3 4
      4         1     V   V 1     V   4   2 3
      3         3                 2 2 3 3 1 1   1
5 5 1   5 3 5   5 5 5 5 (3)   3 (2) 4 3   4 (1) 3   Active on circled items
      3   V 2               V 1 V         1 V 4 5 V   Safety, developing matter
4 3 2   5 3 4   3 2 4 4 1   2 2 2 3   4 4 4
                  4                       3
      4           2 V           1 V       1 2 1
    1   1       2       1       1         1 1
    V 5   V   4           V 4           5   5 3
2 2 2 2 2 3 4 3 3 3 3 3 2 4 3 3 2 2 3 3 1 1 ← safety in design
    V 2   V   2       V   V 1 V   V V 2   3 3

1 2 2 6 4 2 2 X 6 4 5 3 7 8 6 2 2 1 6   5 3
↑ (9)           11
```

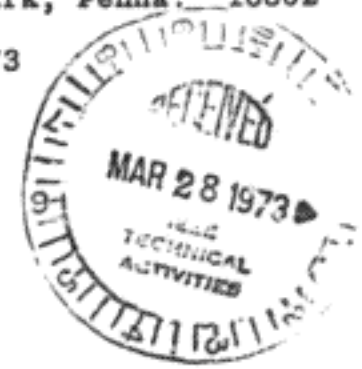
ATTACHMENT C
C-SIT Minutes 3/30/73

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

IEEE GROUP CORRESPONDENCE

Department of Electrical Engineering
The Pennsylvania State University
University Park, Penna. 16802

March 23, 1973



Dr. Peter Edmonds
IEEE Headquarters
345 E. 47th Street
New York, N.Y. 10017

Dear Dr. Edmonds:

The curriculum survey for the IEEE C-SIT is now complete and the results are shown on the enclosed sheet. Since I will not be able to attend the meeting of the C-SIT on March 30, I would appreciate your presenting this and including it in the minutes. I would also suggest that consideration be given to publishing a summary in the C-SIT Newsletter since many respondents were interested in this project.

Questions 8., 9. and 10. did not permit numerical answers, and the material received relative to these has been sent to Bill Stillinger for further analysis. I believe that this material will finally go to Ted Werntz who had requested these additions to the questionnaire.

Sincerely,

John B. Lewis

John B. Lewis
Chairman, IEEE
C-SIT Subcommittee

JBL/mar
Encl.

cc: Bill Stillinger

28

March 13, 1973

IEEE COMMITTEE ON SOCIAL IMPLICATIONS OF TECHNOLOGY

QUESTIONNAIRE

1. Is there a credit course offered in general are of social implications of technology?

YES 179

NO 78

a) Number of credits

1-2 26
3 11
More than 3 - 26

b) required of all students?

YES 25

NO 124

c) Offered by

College 144
E.E. Dept. 29

d) Approx. No. of Students/year

25 49

25-100 81

More than 100 30

---

2. Is there a non-credit course or seminar offered?

YES 37

NO 197

a) required of all students?

YES 0

NO 42

b) Approx. No. of Students/year

0-25 13
25-100 15
Moore than 100 6

---

3. Is there any annual lecture series by faculty or visiting lectures concerned with social implications of techpology?

YES 67

NO 185

4. Are there any activities of student organizations which have specific programs (lectures, discussions, et on social implications of technology ?

YES 111

NO 119

---

5. Are any courses offered on technological forecasting and the impact of new techologies on society?

YES 65

NO 182

---

6. Are any courses offered by the engineering faculty to students not in engineering which consider the role of technology in society?

YES 155

NO 85

---

7. Are there any courses offered where a major topic concerns the application of technology to solving some o the large problems of a modern industrial society?

a) Energy needs
YES 141
NO 79
b) Mass transit
YES 116
NO 94
c) Environmental quality
YES 192
NO 36
d) Privacy in communication
YES 18
NO 171
e) Waste disposal
YES 165
NO 54
f) Urban housing
YES 84
NO 116
g) Health care
YES 80
NO 118

Total of Questionnaires received 259

EXHIBIT I
C-SIT Minutes 3/30/73

letters

The APS Forum and the New Left

In most aspects, the 1971 Winter Meeting of the American Physical Society at MIT was as pleasant and interesting as could be expected. The only discordant note was provided by the "Symposium of the Forum on Physics and Society."

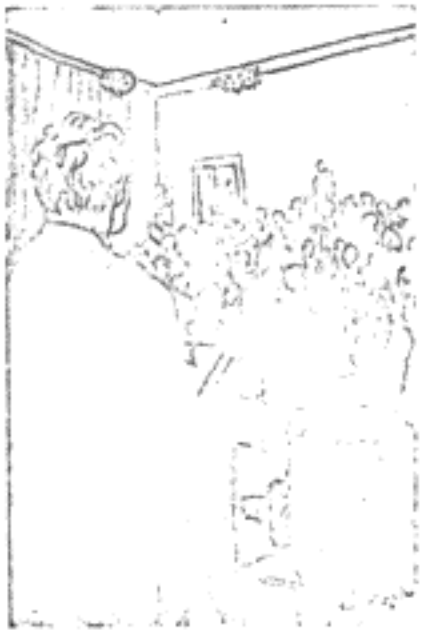
The first invited talk ended with a blatant appeal to support the good North Vietnam cause, the second (not objectionable) talk suggested we should "humanize" science by preceding it with a liberal-arts education, and the third—given by a psychologist turned guru—revealed that (for your group-therapy sessions to relieve hostility) basket weaving is out this season, but mural painting and flower arts are definitely in.

I doubt that it will be in the long-range interest of APS, should the new Forum on Physics and Society become just another auxiliary of the New Left. In any case, it seems to me that the interaction of science and society deserves a sober, factual and unbiased discussion. How nice would it have been, for instance, had the Forum invited to the MIT meeting Jay W. Forrester for a discussion of his "World Dynamics." And there are, of course, many other pressing problem areas, ranging from national science policy to the job security of physicists.

In short, I wish that future symposia of the Forum will be less emotional and politically colored and more in the spirit of mature scientific investigation.

RUDOLF E. [illegible]
Carlisle, Mass.

FORUM CHAIRMAN COMMENTS: The newly formed Forum on Physics and Society is engaged in many activities. There is a group studying the looming employment crunch on non-tenured faculty and research associates, a group forming to make recommendations with respect to such professional employment considerations as tenure, termination, and severence pay. There is a committee designing courses on physics and society. And a Program Committee, chaired by Brian Schwartz, organizes sessions of papers



at APS meetings on science-society themes.

Rudolf Thun asks that the Forum hold sessions on economic growth, science policy and job security. We have in fact organized symposia on population and pollution (several of these), science policy, government funding of physics, the unemployment problem, women in physics, the Bromley report, the Amendment on Professional Responsibility, and on the teaching of science and society courses. At the next New York meeting we will have invited and contributed-paper sessions on a number of topics, including racial minorities in physics (there are only about 50 black PhD physicists!) and on the unemployment problem.

The Forum, which is neutral, has also organized the platform for talks on subjects less appealing to Thun—on the greening of physics, and on the involvement of physics in the war (the red, white, and blueing of physics). The audiencies have been large, so there seems to be interest. Those who find a particular talk, or session, offen-sive are free to leave. On controversial social issues, it would be possible to be acceptable to all viewpoints only by being stupefyingly bland.

Thun charges that the Forum seems to be in danger of becoming "just another auxiliary of the New Left." There is, unfortunately, the appearance of truth in the charge. We are happy to present left-wing views, and leftists appear to be generally eager for a platform. The Forum is also equally happy to present centerist and right-wing views, but we have had serious difficulties in obtaining such speakers. Why a difference in apostolic zeal exists one can only conjecture. Part of the problem is no doubt the well justified fear of attack by radical hooligans. The Forum is designing a proposal to the APS Council to protect speakers and audiences from disruption. But whatever the cause, the reluctance is real.

For example, for the session on physics and the war, John Foster was invited to speak or send a speaker on any related subject. He not only refused to come himself, but informed us that every knowledgeable person in the Defense Department was too busy to address the APS! For the session on the Amendment on Professional Responsibility many, many prominent physicists, including some former and present members of the APS Council, were invited to speak contra. Although many were opposed to the Amendment, all refused to say so publicly. Finally, the day before the session, I agreed to speak, not only so that both sides would be presented, but because I am opposed to the proposed Amendment.

If Thun or any reader has suggestions for speakers or topics, we welcome them. If he or any reader is willing to speak, so much the better. But talks, though useful, are not enough. The Forum also wants to do substantive things.

EARL CALLEN
Chairman, Forum on Physics and Society
American University
Washington, D.C.

WHAT LIMITS TO HUMANITY???

(Some questions to ask yourself about this session)

What choice are we told we face?

Utilities spokesmen and energy producers tell us we must continue to use low-quality fuels and pollute the environment or face a collapse of our standard of living. Automobile and gasoline companies are saying the same thing in their attack on the scheduled 1975 emission standards. On the other hand Prof. Forrester and the authors of THE LIMITS TO GROWTH tell us our very survival will be imperilled unless all growth is stopped promptly and we cut back our standard of living. Is this choice all that technology and modern industry have to offer to humanity?

How closely is resource use tied to human welfare?

Is well-being a simple function of resource use? How do you measure real growth? By depletion? By profits? By Gross National Product? Do all services and goods that help people live better use the same quantities of resources? Do all products counted in the G.N.P. really help us? (If cost of smokestacks, detergents that remove the smoke from clothing, and sewage treatment plants that remove the detergents from water get added up to count GNP, does this measure well-being?) Can't we look for ways to increase growth of human well-being even with a limiting of resource waste?

...st we regiment ourselves?

Who is suggested to enforce the limits to growth? Are the big government and big corporation bureacrcies (that now administer things like highway programs and military production) supposed to administer the limits to consumption? If not, who is to plan? Can we find a way to make planning democratic? If we begin thinking of a more careful development of planning, could technical issues be explained to the public well enough for democratic planning to work? What else would be needed for planning of change by the people and for the people?

Why aren't alternatives being developed?

Why is so little good public transit being developed? Why do U.S. agricultural experiment programs develop plastic-tasting tomatoes for mechanized packing rather than working on non-polluting systems of pest control? Where is the funding going in your area of competence? Are your talents being utilized in the best way for increasing human well-being? If not, who is deciding? Who decides how corporate facilities direct their efforts? Who decides how the federal tax-payer's dollar will be spent? Do they know what they are doing? In whose interest do they plan, anyway?

Think about these questions.....
If you would like to discuss your feelings about them with us,
come talk with us.

Committee for Social Responsibility
in Engineering
475 Riverside Dr., New York, NY 10027

Union for Radical Political Economics
(c/o Edel, Dept. of Urban Studies,
Queens College, Flushing, NY)

3Y

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

345 EAST 47TH STREET, NEW YORK, N.Y. 10017 AREA CODE 212 752-6800

IEEE COMMITTEE ON SOCIAL IMPLICATIONS OF TECHNOLOGY

OPEN MEETING

Friday, March 30, 1973 - 9:30 a.m.
Americana Hotel, 7th Avenue and 52 Street
Monte Carlo Room - 4th floor

A G E N D A

1. Introductions, (with C-SIT function)

2. Minutes of meeting on 2/17/73

3. Items for the agenda

4. Report on INTERCON'73 activities - Benjamin
   Robbi
   Barrow

5. Future major meetings - INTERCON'74
   - WESCON'73
   - NEREM'73

6. Surveys
   - 6.1 Subject Areas - Higinbotham
     - 6.1.1 Priorities
     - 6.1.2 Task Teams
   - 6.2 Curricula - Lewis, Stillinger
   - 6.3 IEEE Activists

7. Project-oriented Activities
   - 7.1 CATV
   - 7.2 Consumer Electronic Products

8. Other business

9. Next meeting

10. Adjournment

3/13/73

32

BROOKHAVEN NATIONAL LABORATORY

MEMORANDUM

DATE: 3/26/73

TO: IEEE Committee on Social Implications of Technology

FROM: W. A. Higinbotham

SUBJECT: Results of the Questionnaire

So far we have received 28 replies to the questionnaire. Unfortunately we forgot to ask for names, so we have names for only 24 of the respondents.

Of course, people interpreted the instructions in different ways. Some indicated interest only for the major headings, some for the minor headings and some for both. Some respondents expressed interest in many fields while others were more restrictive. The answers have been transcribed and are presented in the accompanying table (I made a few simpliciations).

I have considered the individual responses and arrived at a level of interest factor, called No. of Volunteers, the last line on the table. The prospects for forming topical working groups, as I see them, are:

1. Ethics: Enough interest, 9 of the 24 who signed their ballots. About equal interest in the 4 categories. It locks as though a committee could be set up on Ethics and that it would have to determine its own scope.

2. Environment: This drew the biggest response, 14 with special emphasis on c, d and e. There doesn't seem to be enough interest to support a and b.

3. Urban Technology: There is probably sufficient interest in this category, although the total given is only 7. The seven clearly state this as a lst choice and 4 or 5 others as a 2nd choice. However, the table shows that the interest is almost exclusively in category a.

4. Communications: This is definitely marginal and the preference is clearly for c.

5. National Security: This is also marginal. The first preferences favor a.

The answers also show a wide, though secondary interest in e, conversion from military to civilian engineering. If you take into account second choices (as I weighed them) you get the 9 responses which I note in parentheses. This appears to be a viable topic.

6. Data Banks: I would say that this was not high on enough lists.

7. Socio-economic Employment Issues: There was a strong response to this category. While a. and e. received more votes than the others, the interest appears to be about uniform for all categories. The topic is viable and the group should determine its priorities.

8. Education: 8 is not a bad showing. In fact the individual comments show that the 8 are very much interested in 8a. A number are teaching such courses.

9. Bioelectronics: The 6 who favored this expressed special interest and, from their titles, have high competence. This seems to me to be a viable topic.

10. and 11. Scattered interest, not enough to be encouraging at this time.

12. Seven respondents suggested additional topics, some of which might be sub-topics under the subjects which seem to be suitable for group effort. Only safety in design or safety of products has repeated (4) mention. Some suggested topics (e.g., mobile pensions) are being attacked under other IEEE activities. The questionnaire seems to have covered the territory pretty well.

One point, it would probably not be possible for any one person to serve on more than 2 groups. We end up with possibly 7 groups and 24 people, so far. The 24 individuals show interest in from 1 to 4 of the selected topics, the average being 3. It looks as though each of the 7 groups could start off with an average of 6 members plus any new volunteers.

Respondents' Names and Addresses

N. Aron, 3 Clyde Pl., Lexington, Mass., 02173

John Barkley, 2858 Miles Ave., Bronx, N.Y., 10465

Bruce B. Barrow, G.T.E. Laboratories, Inc., 40 Sylvan Rd., Waltham, Mass., 02154

Carl Barus, Dept. of Engineering, Swarthmore College, Swarthmore, Pa., 19081

F. P. Beguin, P.O. Box 122, Southbridge, Mass., 01550

T. Brady, 1150 University Village East, Salt Lake City, Utah, 84108

John F. Cachat, 15725 Edgecliff Ave., Cleveland, Ohio, 44111

D. G. Childers, Dept. of Electr. Eng., Univ, of Florida, Gainsville, Fla., 32601

- Cleaver, Univ. of Louisville, Speed Scientific School, Belknap Campus, Louisville, Kentucky, 40208

John Dixon, Jr., 2101 Cowan Blvd., Fredericksburg, Va., 22401

A. L. Ellery, 4324 Leslie St., Detroit, Mich., 48238

Robert L. Gordon, 36 Stauber Dr., Plainview, N.Y., 11803

S. N. Levy, 204-2, RCA, Cherry Hill, N.J., 08101

John Lory, 27 Stuyvesant La., Smithtown, N.Y., 11787

Donald W. Melvin, 2 Fogg Dr., Durham, N.H., 03824

Kenneth Pugh, 6100 Breezewood Dr., Apt. 301, Greenbelt, Md., 20770

P. M. Russo, David Sarnoff Research Center, Princeton, N.J., 08540

Howard Silver, Chmn. Electr. Eng. Dept., Fairleigh Dickinson Univ., Teaneck, N.J., 07666

Jack Sklansky, School of Eng., Univ. of California, Irvine, Cal., 92664

Otto J. M. Smith, Univ. of California, EE and Computer Science, Berkeley, Cal., 94720

T. E. Veltfort, Jr., 152 Colobaugh Pond Rd., Croton-on-Hudson, N.Y., 10520

- Voltmer, 919 W. Foster Ave., State College, Pa., 16801

Raymond M. Warner, Jr., 5001 Arden Ave., Edina, Minn., 55424

J. R. Zweizig, 2245 Kelton Ave., Los Angeles, Cal., 90064

? Detroit Edison Company

? William S. Watkins & Assoc. Inc., 34711 Chardon Rd., RD-1, Willoughby, Ohio, 44094

? Washington, D.C.

? EE Dept., Univ. of Fla., Gainsville, Fla., 32601

A Questionnaire

1. Ethics — 2
   - a. Code of Ethics for Engineers — x
   - b. Personal Responsibility for One's Products — x
   - c. Role of Professional Societies — x
   - d. EE's Responsibility re The Viet Nam War

2. Environment — 2
   - a. Instrumentation for Monitoring — x
   - b. Engineering Methodology in Envir. Protection
   - c. Development of National Energy Policy — x
   - d. Fossil vs. Nuclear Power (resources, pollution)
   - e. New Sources: Solar, Geothermal, Fusion — x
   - f. Transmission of Electricity

3. Urban Technology — 2
   - a. Transportation — x
   - b. Traffic Control
   - c. Urban Public Safety

4. [illegible]nications — 1
   - a. [illegible]pact of on Developing Nations
   - b. " " " A Divided World
   - c. For Greater Involvement of Public in Government

5. National Security — 2
   - a. D.O.D. R&D
   - b. Electronics in limited warfare
   - c. " " strategic warfare
   - d. " and arms control
   - e. Conversion from Military to Civilian Engineering — *

6. Data Banks and Electronic Surveillance — 2
   - a. To Detect and Prevent Crime
   - b. Threats to Privacy — *
   - c. Classification and the Public Need-to-know

7. Socio-economic Employment Issues — 2
   - a. Professional Status for Engineers
   - b. Employment Problems for EE's
   - c. Retraining of EE's — x
   - d. Job Security
   - e. Opportunities for Social Problem Solving — x

8. Education — 1
   - a. Courses in Technology and Society for EE's — x
   - b. Lectures or Courses on Technology/Society for Non-Technical Students and Citizens
   - c. Electrotechnical Aids to Education — x
   - d. Computer Assisted Instruction — x

9. Bioelectronics (Medical Engineering) — 2
   - a. Social and Ethical Problems Implied by New Technology

10. Applications of Systems Engineering and Information Theory to Social Systems — 3

11. Humanization of Automation — 3

12. Other _____

Remarks:

No name
Dept. of EE
Univ. of Florida
Gainesville, Fla
32601

March 13, 1973

IEEE COMMITTEE ON SOCIAL IMPLICATIONS OF TECHNOLOGY

QUESTIONNAIRE

1. Is there a credit course offered in general are of social implications of technology?

YES 179

NO 78

a) Number of credits

1-2 26
3 117
More than 3 - 26

b) required of all students?

YES 25

NO 124

c) Offered by

College 144
E.E. Dept. 29

d) Approx. No. of Students/year

0-25 49

5-100 81

More than 100 30

---

2. Is there a non-credit course or seminar offered?

YES 37

NO 197

a) required of all students?

YES 0

NO 42

b) Approx. No. of Students/year

0-25 13
25-100 15
Moore than 100 6

---

3. Is there any annual lecture series by faculty or visiting lectures concerned with social implications of techpology?

ES 67

NO 185

4. Are there any activities of student organizations which have specific programs (lectures, discussions, on social implications of technology ?

YES 111

NO 119

---

5. Are any courses offered on technological forecasting and the impact of new techologies on society?

YES 65

NO 182

---

6. Are any courses offered by the engineering faculty to students not in engineering which consider the role of technology in society?

YES 155

NO 85

---

7. Are there any courses offered where a major topic concerns the application of technology to solving some o the large problems of a modern industrial society?

a) Energy needs
YES 141
NO 79
b) Mass transit
YES 116
NO 94
c) Environmental quality
YES 192
NO 36
d) Privacy in communication
YES 18
NO 171
e) Waste disposal
YES 165
NO 54
f) Urban housing
YES 84
NO 116
g) Health care
YES 80
NO 118

Total of Questionnaires received 259

Rec'd 4/28

IEEE COMMITTEE ON SOCIAL IMPLICATIONS OF TECHNOLOGY
New York - March 30, 1973

ACTION ITEMS

Deadline	Minute	Action	By	Remarks
April 15	4.1 4.2 4.3	All reports of INTERCON'73 activities delivered through Mr. Robbi to Newsletter Editor	Robbi Higinbotham Reviewers Benjamin	completed
May 2	3.2	Plans and specific proposals C-SIT operations for future	All	Agenda item at next meeting
May 2	4.5	Contact Jim Lufkin, re: plays	Edmonds (Emberson Benjamin)	
May 2	5.1	Plans for C-SIT activities at INTERCON'74	Robbi	
-	5.2	Participation in planning program for NEREM'73	Barrow Tate	
-	6.1	Formation of working groups in seven subject areas	Higinbotham	Progress report desired for May 2
May 2	6.2	Progress report on Curricula Survey	Lewis Stillinger	
May 2	-	Contact Dr. Fey, re: TF&A liaison	Edmonds	

59

Intercon 74 A Proposal

Intercon, unlike the specialized conferences, brings together a cross-section of IEEE membership and IEEE officers and activists. Assuming that there is an Intercon 74 I propose CSIT play a more active and useful role than it did in 1973. In order to do so our public activities must be acknowledged in the Official Program.

Recommendations:

(A) Name of program - The program should not be called "Technical Program". IEEE is no longer a purely technical society. The Intercon 74 program name and content should reflect this fact. Possibilities - Professional Program, Official Program, Intercon Program, etc.

(B) Workshops - I felt our Open Forum sessions were at their best when they "degenerated" into give and take sessions. What was lacking was attendance, a theme attendees could anticipate, sufficient time, and output beyond newsletter copy. A persistent malaise of all large organized bodies, such as IEEE, is that the leadership is out of touch with the membership. Surveys may point to areas of trouble but the human interaction at a workshop level provides an opportunity to explore alternative courses of action, or inaction. I suggest all-day workshops with a short lunch break, one hour. Attendance by invitation and public notice. Sponsorship should be joint in many instances. Possible themes:

(1) Engineering education - What are its responsibilities? Is it meeting them?
(2) Professional employment guidelines - Do they go far enough? Are they being met? Do engineers need a union or guild?
(3) Indochina - What technology is being used there? What was used there? Was it effective? What are the moral implications?
(4) Public view of engineering - What is the image? Is it false or true? Political status of engineering - NSF, DOD, etc. News coverage of technology.
(5) State and local government - What can engineers do locally to improve the public welfare in their communities, their regions, their states?
(6) And others.....?

(C) Special Session (evening) - take a social look at some aspect of technology. That is apply the Limits to Growth Session strategy to a smaller, more tractable dilemma than world catastrophe. Examples: Cities and transit - does improvement help? The automobile society - a boon or a curse? Communications - is man better off?.....
What I suggest here is to magnify Walter Bearn's suggestion of a sociologist talking to CSIT. Three or four such, with differing viewpoints, talking to IEEE on a technology/society question of sufficiently small dimensions so that a few engineers might be persuaded to take some action on it.

A. D. Robbi

ADRobbi 4/26/73