



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

IEEE-TAB Committee on Social Implications of Technology
New York - November 11, 1972

MINUTES.

The Chairman, Dr. Wolff, called the meeting to order at 9:10 a.m. in Childs Restaurant.

Attendance

Those present: Edward A. Wolff, Chairman (TAB Vice-Chairman)

Anthony Robbi, Vice-Chairman

Peter D. Edmonds, Secretary, TAB Staff

Walter R. Beam, representing IEEE Educational Activities Board (EAB)

J. Malvern Benjamin, Chairman, Working Group on INTERCON'73

Harold Chestnut*, IEEE Vice-President for Regional Activities and Chairman, Regional Activities Board (RAB)

W. Eugene Cory*, representing RAB, and Director, IEEE Region 5 (South-West). Past Chairman, IEEE Committee on Applications of Electrotechnology to Social Problems.

Richard M. Emberson, TAB secretary

Curt F. Fey, representing IEEE Computer Society, and Chairman, S-C Committee on Economic Decision Analysis

John E. Gaffney, Jr., representing Region 2 (Mid-Atlantic), and past Vice-Chairman, IEEE Committee on Applications of Electrotechnology to Social Problems

Arthur M. Killin, representing TAB Division II

Victor Klig, Chairman, Working Group on Procedures

Frank Kotasek, Chairman, Working Group on Publicity and Participation

Michael Pessah, Chairman, Working Group on Newsletter and Newsletter Editor

Bill Stillinger, representing IEEE Student Activities Committee and Student Branch Chairman, New York University; Vice-Chairman, Working Group on Curriculum Survey

Paul Stoller, Chairman, Working Group on Active IEEE Members

Stephen Ungar, Chairman, Working Group on Publications

Lawrence A. Tate*, Chairman, Working Group on Other Societies' Activities

Ted Werntz, Chairman, Working Group on Bibliographies

Those absent: William A. Higinbotham, Chairman, Working Group on Subject Areas

Lester L. Nagel, to represent IEEE-TAB Environmental Quality Committee

Homer M. Sarasohn, Chairman, Working Group on IEEE Activities

--?--, to represent IEEE-TAB Technology Forecasting & Assessment Committee

(*part-time)

The current committee roster is attached (Attachment A). Please note address changes for Stoller and Werntz.

2.0 Agenda and Minutes

2.1 The agenda were approved as submitted (Appendix 2.1)

2.2 The minutes of the August 12, 1972 meeting were approved as submitted.

3.0 IEEE Constitutional Amendment

Dr. Chestnut announced the result of the ballot on the amendment to the IEEE Constitution to permit professional activities in addition to technical activities:

YES 85%; NO 13%; INVALID 2%

(expressed as percentages of those returning ballots, namely, 38.4% of the total IEEE membership).

This affirmative vote exceeds the required two-thirds majority; consequently, changes to the IEEE Charter in N.Y. State will now ensue.

Legally, professional activities are only permissible after the changes have been initiated by a judge of the N.Y. Supreme Court; the estimated date for completion of these changes is March, 1973.

4. Review of Working Group Activities

- 4.1 Procedures: The Chairman noted that the TAB Chairman had not commented on the statement of procedures distributed as Attachment 'C' to the 8/12/72 meeting minutes. These procedures were therefore considered accepted. A draft of amendments to these procedures was submitted by Mr. Klig in fulfillment of tasks assigned for clarification and expansion. (Appendix 4.1). The draft was revised in committee. After waiving the requirement of 30 days notice of amendments, without objection, the committee voted unanimously to adopt the amendments to Procedures paragraphs 5.1, 5.10, 5.11, 6.4 and 9.3 shown in Attachment 'B'.

Procedures paragraphs 6.6 and 7.3 were also amended by addition of the sentences: (6.6) "Every subcommittee meeting shall be open to any member of CSIT." (7.3) "All subcommittee Chairmen shall be responsible for submitting timely information to the newsletter editor."

The current Procedures statement, as amended, is shown as Attachment 'C'. Please mark the version attached to your 8/12/72 minutes as superseded. The remaining task assigned to the Working Group on Procedures consisted in drafting definitions of "Professionalism" and "Professional Responsibility." Mr. Klig requested guidance. The Chairman noted that other IEEE entities, such as the Professional Activities Committee of the Board of Directors, would have to grapple with that problem also; he requested all members of CSIT to submit written opinions to Mr. Klig on these definitions.

ACTION
(A11)

- 4.2 Newsletter: Mr. Pessah's report is shown as Appendix 4.2. Copy for the first issue of the CSIT Newsletter had been reviewed by Dr. Wolff, revised by the Editor, and submitted to IEEE Headquarters for publication. An announcement of its genesis in Spectrum and EE was requested. [N.B. The respective Editors have been advised - PDE]

A schedule for receipt of copy by the Editor was established:

THE DEADLINE FOR RECEIPT OF COPY BY THE CSIT NEWSLETTER EDITOR IS THE 15TH OF EACH ODD-NUMBERED MONTH.

(By exception; December 1, 1972 will apply instead of November 15, 1972).

ALL MEMBERS OF CSIT AND OTHERS ARE REQUESTED TO SUBMIT COPY.

ACTION
1)

ACTION
(Pessah)

The editor undertook to prepare an editorial describing editorial policy for acceptance of copy.

- 4.3 Publications: Dr. Ungar's report is shown as Appendix 4.3. Contact had been made with the editors of Spectrum and IEEE Proceedings. The former welcomed submission of items for potential publication and the latter advised that special issues of Proceedings were already scheduled through March 1975. Alternatively, special issues of the IEEE Transactions on Systems, Man & Cybernetics or on Aerospace & Electronic Systems were mentioned as possibilities. It was decided by consensus to proceed with generation of papers for a special issue of some archival IEEE publication and to find a suitable sponsor at a later date.

ACTION
(Ungar)

Mr. Klig moved for the appointment of Gene Cory and Norman Balabanian (Syracuse University) as co-editors. [N.B. - In the absence of formal action, the task of determining if these gentlemen are willing to serve reverts to Dr. Ungar. It should be noted that Dr. Balabanian has also been named in appended reports 4.2 and 4.3 as an associate in the tasks of preparing material for the CSIT Newsletter and Spectrum.]

ACTION
(Ungar)

The Secretary noted a reference in the 3/21/72 minutes of the IEEE Press Board meeting to interest in a reprint volume on the technology/society interface. The Chairman asked Dr. Ungar to investigate with the managing Editor of the IEEE Press, Reed Crone.

TASK
(Ungar)

Mr. Beam pointed out the need for a reading list of introductory texts on sociology suitable for engineers and for publication in Spectrum. The task of preparing such a list was assigned to Dr. Ungar.

- 4.4 INTRCON'73: Mr. Benjamin's report is shown as Appendix 4.4. A general discussion of possibilities for contributing to the INTERCON'73 program ensued before lunch; during lunch sub-sets of CSIT members formulated two specific proposals for a session and a workshop which were reported to and unanimously accepted by the full Committee by formal vote when it reconvened.

Proposed Session - "Conversion to a Peacetime Economy"

- Proposed Chairman: Harold Chestnut
- Proposed speakers: (one from each set, listed in order of preference):

(A)	(B)	(C)	(D)
Edward David	Edward Kennedy	Seymour Helman	David Packard
Richard Foster(DOD)	Emilio Daddario	Herbert Holloman	Pat Haggerty
Thomas Fletcher(NASA)	Alan Cranston	Herbert York	Lewis Branscomb
	Edward Brooke	John Ullman	William Gross
	Otis Pike		

- Proposed format: 4 invited talks + debate
- Proposed time: Thursday evening - March 29, 1973
- Proposed location: Americana Hotel
- Proposed Attendance: Open

The Committee requested approval of the IEEE Executive Committee prior to transmittal of its request to the INTERCON'73 Program Committee and an assurance of inclusion of the session on the INTERCON'73 printed program. Mr. Benjamin will provide a written description of the scope and objectives of the session to Dr. Chestnut, with copies to Dr. Emberson and Dr. Wolff, before November 23. (Extra copy to Dr. Chestnut c/o El San Juan Hotel, San Juan, Puerto Rico, 11/27/72).

Proposed Workshop: "The Engineer and Military Technology"

- Proposed moderator - to be decided
- Proposed discussion leaders or panel (4 of the following): Gross, Higinbotham, Larsen, Garwin, Cory, Zelby, Gavin, Levy Nolan, Herbert and a representative of DoD. (The Secretary will contact Ralph Clarke at the IEEE Washington Office, for suggestions on the last named).
- Proposed format: brief introductory talks, general discussion, break-up into round-table discussions.
- Description: "The scope of this workshop is: (1) to present some examples of modern technology for warfare and (2) to reexamine our attitudes toward the social impact of military technology."
- Proposed time: Monday Evening (late) March 26, 1973
- Proposed location: Americana Hotel
- Proposed attendance: IEEE BoD, G/S Presidents and CSIT by invitation, plus open attendance in response to all available means of publicizing the workshop. Responses to an announcement in the CSIT Newsletter could be used to gauge potential attendance.

Mr. Benjamin will provide Dr. Emberson with a firm proposal by November 27, with copy to the Newsletter Editor and Dr. Wolff, who will be responsible for transmittal of a request to the INTERCON'73 Program Secretary for space and program listing.

ACTION
(Benjamin)

ACTION
(Benjamin)

'Hyde Park' Booth

The Committee voted unanimously in favor of setting up a booth at the Coliseum for the purpose described in Appendix 4.4, item VI, provided that the location be adjacent to the film theatre, that the 'Hyde Park' booth be separated from the exhibits by a curtain and that a sign be prominently exhibited disassociating IEEE from any material displayed or statements made at this booth.

Tolerance for this activity was held to be comparable to the tolerance displayed habitually by IEEE for classified meetings held concurrently or sequentially with IEEE conferences even though IEEE officially declines to cosponsor such meetings.

It was acknowledged that a full-time attendant will be required at the booth to ensure orderly scheduling.

ACTION
(Wolff)

The Chairman will write a letter of intent to Dr. Chestnut for presentation to the IEEE Executive Committee.

Film Theatre

The Committee unanimously approved a suggestion for presenting films (and/or slide-tapes) dealing with introductory concepts in sociology during the scheduled sequence of short films at the Coliseum.

ACTION
(Benjamin
(A11)

Mr. Benjamin will contact the film theatre coordinator for logistical information and then compile a list of suitable films and tapes. All members of CSIT should provide Mr. Benjamin with suggestions.

4.5 Other Societies' Activities

Mr. Tate reported that he was continuing his enquiries. He did not favor coalescence of Working Groups established at the June 24, 1972 meeting.

4.6 Active IEEE Members' and IEEE Activities

Mr. Stoller reported that the questionnaire on Active IEEE Members had been submitted in draft form to the Newsletter Editor and found unsuitable for publication. The Chairman and Secretary recommended that the draft be circulated to the full Committee for review and made ready for inclusion in the next issue of EE (deadline January 1, 1973 at TAB Office). The draft is shown as Attachment 'E'. Comments should be sent to Mr. Stoller before December 15, 1972

ACTION
(A11)

Mr. Sarasohn did not report on Current IEEE Activities. He had requested and received copies of all 1972 G/S Newsletters and had set an 11/30/72 deadline for identifying Activities.

4.7 Publicity and Participation

A revised action schedule is shown as Attachment 'D'

4.8 Bibliographies

No report.

4.9 Subject Areas

No Report

4.10 Curriculum Survey

Dr. Lewis's report, including a draft questionnaire and letter to Deans of Engineering Schools and Heads of Electrical Engineering Departments, is shown as Appendix 4.10. Mr. Stillinger commented and received the following suggestions:

a) A test run is desirable before distributing the questionnaire as intended. Dr. Wolff asked Mr. Stillinger to test the questionnaire on the Dean and EE Department Head at New York University and report back to Dr. Lewis.

b) Mr. Wertz offered additional questions:

"Has a reading list on social implications of technology been compiled?" If YES:

"Who is the contact for obtaining the reading list?"

"Have any members of your faculty published on the topic of social implications of technology? If YES:

"Please provide complete references to these publications."

Answers to the questions under (b) above are desired by Mr. Wertz for compilation of bibliographies.

The format of the printed questionnaire should be: Cover letter on first page, questionnaire on two inner pages, return address on back.

ACTION
(Stillinger)

ACTION
M. Herrick)

5. New York State Legislation

Dr. Seville Chapman, Director, Assembly Scientific Staff, NY State Assembly, had contacted IEEE for prospective assistance in reviewing and commenting on bill before the NY State Assembly. He foresaw activity in areas of medical electronics, consumer electronics and traffic flow. The present need is for a list of volunteers prepared to respond on a rapid schedule when called upon during the next session of the state legislature. (Reference: Agenda Attachment 5).

The Committee tacitly approved of this activity and appeared to need more information and time for reflection. Potential voluntary consultants might be contacted through the Newsletter. A presentation by Dr. Chapman to CSIT might prove helpful. No action was taken on this item.

6. International Conference on Societal Systems, February 26-28, 1974

Information on this conference was distributed with the agenda (Reference: Agenda Attachment 6). Those interested may contact the Conference Organizer, William H. von Alven, RFD #1, W Redding Connecticut 06896.

Dr. Wolff will request a representative to CSIT from the IEEE Systems, Man & Cybernetics Society.

7. "National Goals, Priorities & Technology Policy"

ACTION
(All)

Dr. Fey solicited comments on his paper with the above title which was distributed with the agenda. The paper will be submitted to Spectrum.

8. New Business

8.1 General Objectives of CSIT: Mr. Killin requested preparation of a draft of the general objectives of CSIT, vis-a-vis technology, policies and economics.

8.2 Speakers List: The Secretary requested recommendations of speakers to address IEEE Section/Chapter meetings on topics within the scope of CSIT.

9. Next Meeting

ACTION
(W.G. Chairmen)

The next meeting will be held on Saturday, January 13, 1973 at 9:30 a.m. The place will be announced with the agenda. Reports are due at IEEE Headquarters, attention P.D. Edmonds, no later than December 30, 1972, for distribution with the agenda. Previous rules apply.

- + Appendix 2.1 Agenda
- " 4.1 Draft amendments to Procedures (Klig)
- " 4.2 Report on Newsletter (Pessah)
- " 4.3 " " Publications (Ungar)
- " 4.4 " " INTERCON'73 (Benjamin)
- " 4.10 " " Curriculum Survey (Lewis)

Attachment 'A' 1.0 Current Committee Roster
" 'B' 4.1 Revised amendments to Procedures
" 'C' 4.1 Amended Procedures Statement
" 'D' 4.7 Revised action schedule on Publicity and Participation
" 'E' 4.6 Draft Questionnaire to Active IEEE members

Exhibit I The Scientist and His Indentured Professional Societies

Distribution: CSIT Roster
IEEE Executive Committee
Staff Directors
B.B. Barrow

PDE:gd

Peter D. Edmonds
Staff Secretary

Issued: November 29, 1972



TECHNICAL ACTIVITIES BOARD

COMMITTEE ON SOCIAL IMPLICATIONS OF TECHNOLOGY

Meeting Notice

The third meeting of CSIT will be held as follows:

Date: Saturday, November 11, 1972
Time: 9:00 AM to 4:00 PM (lunch will be served)
Place: Child's Restaurant
(Jimmy Walker Room)
47 E 42 Street
New York, N.Y. (1 block West of Grand Central Station)

Please notify Dr. Emberson at IEEE Headquarters using attached form if you plan to attend so adequate lunch arrangements can be made.

Agenda

1. Introductions
2. Approval of agenda
3. Approval of previous minutes
4. Review of subcommittee activities (reports attached)
 - a. Procedures - V. Klig
 - b. Newsletter - M. Pessah
 - c. Publications - S. Unger
 - d. Intercon - J. M. Benjamin
 - e. Other society activities - L. Tate
 - f. IEEE activities & activists - H. Sarasohn & P. Stoller
 - g. Publicity & participation - F. Kotasek
 - h. Bibliography - T. Werntz
 - i. Subject areas - W. Higgenbottom
 - j. Curriculum survey - J. Lewis
5. New York State legislation
6. International Conference on Societal Systems
7. Old Business
8. New Business
9. Time and place of next meeting



D R A F T

ATTACHMENT 4.a
C-SIT Agenda 11/11/72

AMENDMENTS TO PROCEDURES

APPENDIX 4.1
CSIT Minutes, 11/11/72

Submitted 10/30/72

by Victor Klig

- 5.1 (Revised) The CSIT coordinating committee shall consist of the chairmen of the CSIT subcommittee and, upon approval of both the coordinating committee and its chairman, other IEEE members in either of the following categories:
- 5.1.1 Liaison members from other IEEE entities. Such members shall actively participate in a specific CSIT activity, or in an activity consonant with a specific phase of CSIT endeavour.
- 5.1.2 Representatives from other ad hoc groups of IEEE members whose activities are consonant with a specific phase of CSIT endeavour. Such representation shall be based on the location, size, and number of such groups.
- 5.11 (Revised) CSIT shall encourage student representation on the coordinating committee subject to the provisions of Section 5.1.
- 5.15 (Addition) The term of membership on the coordinating committee shall be one year. Each subcommittee liaison group, or unit having representation on the coordinating committee shall select a new representative at least

one month before the expiration of the incumbent member's term. The coordinating committee chairman shall be notified of the selection of a new representative at least three weeks prior to said representative taking office. No member of the coordinating committee shall hold office for more than two consecutive terms.

6.4 (Addition) Each subcommittee shall inform its members of the nature of its activity report prior to submission. Majority and minority reports may be submitted and shall be so labeled. Minority reports shall address themselves only to matters covered in the majority report. All other matters shall be processed by the coordinating committee as correspondence.

9.3.1 (Addition) These procedures and amendments shall expire by December 31, 1973, or when found by a majority of the entire coordinating committee to be in contravention of the IEEE constitution or bylaws as amended. New procedures shall be adopted by majority vote of the entire coordinating committee at the last meeting before December 31, 1973 or by majority vote of the entire coordinating committee at the meeting at which the present procedures are ruled invalid.

9.3.2 Such new procedures shall take effect thirty (30) days after adoption subject to the conditions of Section 9.2.

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D R A F T

REPORT OF WORKING GROUP ON NEWSLETTER

Copy for the first C-SIT Newsletter has been submitted to IEEE Headquarters on October 19. Plans are now afoot for a second issue. Therefore, I would like to request anyone who wishes to contribute to the second issue to get in touch with Dr. Norman Balabanian, Syracuse University, Department of Electronic & Computering, Syracuse, N.Y., or me as soon as possible. Items of topical interest such as upcoming meetings, discussion groups, work-study groups are of special interest. Of course, book reviews, and personal commentary are also useful.

Submitted by: Michael Pessah

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IEEE Technical Activities Board 11/11/72

Committee on Social Implications of Technology

Working Group on Publications

Progress Report- October 29, 1972

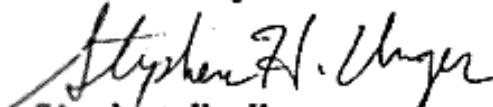
Mr. Donald Christiansen, IEEE Spectrum Editor, was contacted concerning the idea of establishing a regularly appearing section in Spectrum on social implications of technology.

He stated that the pressure of acceptable articles on the limited available space in Spectrum made it impractical to reserve space on a regular basis for the proposed feature. However, he did agree that the area we are concerned with is of great importance, and that it might be possible to make some arrangement whereby he could give a high priority to articles submitted thru the CSIT.

The next step is to arrange a meeting with Mr. Christiansen and a CSIT member who would serve as a sub-editor for articles channelled thru the Committee. It is proposed that Professor Norman Balabanian be asked to accept this position.

A contact will be made shortly with Mr. Reed Crone, Managing Editor of the IEEE Proceedings, to explore the possibility of having a special issue of the Proceedings under the auspices of the CSIT.

Submitted by


Stephen H. Unger



MEMORANDUM

TO: Members of CSIT
FROM: J. Malvern Benjamin, Jr.
SUBJECT: Progress Report on Intercon Arrangements

ATTACHMENT 4.d
C-SIT Agenda 11/11/72
APPENDIX 4.4
CSIT Minutes 11/11/72

I: QUESTIONNAIRE RESULTS

11 answers to the questionnaires were received and tallied, with the following results, in order of popularity:

- 1) Ethics, with emphasis on the E. E. and the Vietnam war.
- 2) National security, with emphasis on reconversion.
- 3) The energy crisis.
- 4) Education, with emphasis on courses in "Technology and Society."

II: SUGGESTED SESSION TOPICS

I understand that the topic chosen for the Monday evening banquet lecture is "The Energy Crisis," hopefully to be presented by Dr. Ed David, and that on Wednesday evening there will be a session on "Limits of Growth." Since these two topics are thus being handled anyhow, it would seem that we need not worry about them. In addition, I understand from Dr. Wolff that the Computer Society might be able to arrange a session on the impact of computers and the Environmental Quality Committee may be able to arrange one on "Technology and Governance in Achieving Environmental Quality."

This would leave us free to concentrate on "The Engineer and War Technology" and "Reconversion."

Will all who have suggestions for speakers or panel members on either of these two topics please drop me a line or phone me right away so we can get these two sessions as concretized as possible before our November 11 meeting? (Bionic Instruments, Inc., 221 Rock Hill Road, Bala Cynwyd, PA 19004 215/839-3250)

III: SESSION SPACE

It seems that there is no space left in the regular halls set aside for the daytime sessions. In fact, if anything, they are even overcommitted at present. We are therefore presently exploring space in the Coliseum for daytime sessions and/or evening meeting space or sessions or "workshops."

IV: WORKSHOPS

It has been suggested that if we anticipate a maximum of perhaps 50 attendees at any one meeting that a room be found for evening use that would contain tables as well as chairs--and possibly, to make it more attractive, even bar service--and further, that the session be structured so that the first hour is spent in lectures or, preferably, a panel presentation, after which, for the second hour, the speakers would split up and go to individual tables to join the audience for informal discussion (possibly "over a beer"). This kind of informal format, I believe, lends itself ideally to the material we are working with.

V: FILM THEATER

We will explore with the chairman of the film theater the possibility of including some appropriate film or slide materials in our area of concern.

VI: "HYDE PARK" AT THE COLISEUM

An imaginative suggestion has been made that a booth be set up in the Coliseum called "Hyde Park." It would contain a bulletin board and a table. The bulletin board would have a notice explaining that anyone who wishes to discourse on any engineeringly-relevant topic should post a notice giving his name, the subject matter, the amount of time he expects to spend, and when he will appear. The table would be available for the display of any society/technology material that anyone wishes to present. Naturally, the notice on the board would also state that the IEEE does not endorse any of the material or any of the statements being made at the booth.

VII: POSITIVE FEEDBACK

Please let me hear your reactions to any or all of the above proposals so we can continue working on them before our November meeting.



IEEE GROUP CORRESPONDENCE

Sample Letter to Deans of
Engineering Schools (or Colleges) and to
Electrical Engineering Department Heads (Chairmen)

Dear ... :

Engineers have become increasingly concerned with the effects of technology on our society. The uses of technology, the priorities assigned in developing new technology, and the effects on our physical and social environment are of vital importance to our future.

Several months ago a group of members of the IEEE moved to establish a strong focus for these concerns. As a result, a Committee on Social Implications of Technology was organized under the IEEE Technical Activities Board, and it is our hope that this eventually will be a Technical Group of the Institute.

The Committee currently is studying many aspects of this subject, and one of our tasks during this first year is to find out what activities have been developed in our engineering schools. Obviously, this is a question of great importance to the engineering profession.

We have prepared a brief questionnaire and would appreciate your completing it and returning it to the IEEE Headquarters. In addition, we would be very much interested in any comments you have on the appropriate directions that academic programs might take with regard to developing an increased awareness of the social implications of technology.

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Sample Letter to Deans ...
Page 2.

Thank you for your help.

Sincerely,

John B. Lewis, Chairman
Curriculum Survey Subcommittee
Committee of Social Implications
of Technology

JBL/mar

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APPENDIX 4.10 - CSIT Minutes

Report of Curriculum Survey Subcommittee
of the TAB Ad Hoc Committee on Social
Implications of Technology 11/11/72

Subcomm. Chm.: J. B. Lewis
Subcomm. Vice-Chm.: Bill Stillinger

1. A survey of all engineering deans and electrical engineering department heads has been planned.
 - a) Sample letter is attached - comments urgently solicited.
 - b) Sample questionnaire attached - comments and additions or changes needed.

Approval of these forms (with any changes) is requested.

2. Budget

IEEE Headquarters will prepare, mail and tabulate for us (Mrs. Herrick).

Postage (600 pieces with return)	\$120.
Printing and Folding	25.
Tabulating	<u>100.</u>
	\$245.

Approval is requested.

3. Schedule (Approx.)

Dec. 1	Material to IEEE
Dec. 15	Mailing
Jan. 20	Tabulate
Feb. 1	Results available

4. Committee Membership

Suggestions for committee members are requested. After Feb. 1, it is important that several interested persons review the results of the survey so that appropriate further work can be planned. Send names to J. B. Lewis.

Sample Questionnaire
Curriculum Survey

IEEE Committee on Social Implications of Technology

Purposes

1. Develop means to encourage and support professional and social responsibility in the practice of engineering.
2. Promote sensitivity to and understanding of the interaction between technology and society.
3. Foster study, discussion and appropriate action involving IEEE members and others.
4. Promote the conception of means and implement programs for predicting and evaluating the impact of technology on society.
5. Take appropriate action to implement programs.

Considering these purposes as a background, please answer the following questions concerning your school.

1. Is there a credit course offered in the general area of social implications of technology? Yes No
If yes,
 - a) Number of credits 1-2 3 more than 3
 - b) Required of all students? Yes No
 - c) Offered by College E.E. Dept.
 - d) Approximate number of students/year 0-25 25-100 more than 100

2. Is there a non-credit course or seminar offered? Yes No
If yes,
- a) Required of all students Yes No
- b) Approximate number of students/year 0-25 25-100
 more than 100
3. Is there any annual lecture series by faculty or visiting lecturers concerned with social implications of technology?
 Yes No
4. Are there any activities of student organizations which have specific programs (lectures, discussions, etc.) on social implications of technology?
 Yes No
5. Are any courses offered on technological forecasting and the impact of new technologies on society?
 Yes No
6. Are any courses offered by the engineering faculty to students not in engineering which consider the role of technology in society?
 Yes No

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

- | | | |
|-----------------------------|------------------------------|-----------------------------|
| a) Energy needs | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| b) Mass transit | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| c) Environmental quality | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| d) Privacy in communication | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| e) Waste disposal | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| f) Urban housing | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| g) Health care | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

8. These replies pertain to

- College (School) E.E. Dept.

Institution

Please return questionnaire to the IEEE Headquarters in the enclosed return envelope.

Please direct all comments to:

John B. Lewis
E.E. Dept.
Pennsylvania State University
University Park, Pa. 16802

CURRENT CSIT ROSTER

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11/11/72

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D R A F T

AMENDMENTS TO PROCEDURES

Submitted 10/30/72

by Victor Klig

- 5.1 The CSIT coordinating committee shall consist of the chairmen of the CSIT subcommittees and, upon approval of both the coordinating committee and its chairman, other IEEE members in either of the following categories:
- 5.1.1 Liaison members from other IEEE entities. Such members shall actively participate in a specific CSIT activity, or in an activity consonant with a specific phase of CSIT endeavour.
- 5.1.2 Representatives from other ad hoc groups of IEEE members whose activities are consonant with a specific phase of CSIT endeavour. Such representation shall be based on the location, size, and number of such groups.
- 5.10 The terms of membership on the coordinating committee shall be one year. Each subcommittee liaison group, or unit having representation on the coordinating committee shall select a new representative at least one month before the expiration of the incumbent member's term. The coordinating committee chairman shall be notified of the selection of a new representative at least three weeks prior to said representative taking office. No member of the coordinating committee shall normally hold committee membership for more than two consecutive terms.
- 5.11 CSIT shall encourage student representation on the coordinating committee subject to the provisions of Section 5.1.
- 5.14 Each subcommittee shall inform its members of the nature of its activity report prior to submission. Majority and minority reports may be

AMENDMENTS TO PROCEDURES

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submitted and shall be so labeled. Minority reports shall address themselves only to matters germane to the subcommittee's majority scope. All other matters shall be processed by the coordinating committee as correspondence.

- 9.3 These procedures shall be reviewed by the entire coordinating committee at least the last meeting before December 31, 1973.

PROCEDURES

1. PREAMBLE

This committee shall be known as the IEEE Committee on Social Implications of Technology (CSIT). It is an AdHoc TAB Committee. This committee will function as an open forum for the interchange of ideas related to the technology/society interface. Neither the committee nor any committee member will purport to be an "IEEE Spokesman" on any issue unless expressly authorized by the IEEE Board of Directors or the IEEE Executive Committee.

2. PURPOSES

- 2.1 To develop means to encourage and support professionalism and social responsibility in the practice of engineering.
- 2.2 To promote sensitivity to and understanding of the impact of technology on society.
- 2.3 To promote an interaction among IEEE members and others, on the impact of technology on society.
- 2.4 To promote the conception of means, and to implement programs for predicting and evaluating the impact of technology on society.
- 2.5 To take appropriate action to implement programs, in consonance with the IEEE Constitution, Bylaws and Policies.

3. SCOPE

- 3.1 The scope of this committee shall embrace the purposes previously outlined and shall include such areas as:
 - 3.1.1. Effects of present and probable new technology on society.
 - 3.1.2. New technology needed to solve society problems.
 - 3.1.3. Attitudes of society towards engineering.
 - 3.1.4. Impact of society on technology
 - 3.1.5. Professional and social responsibility in the practice of engineering.
 - 3.1.6. Content and levels of existing educational programs.
 - 3.1.7. Activities of others directed at technology/society interaction.

3.2 The scope of this committee shall include such activity areas as:

3.2.1. Programs to explain technology to society.

3.2.2. Communication among engineers, and between engineers and society on needs and concerns of society and on capability and responsibility of technology.

3.2.3. Involvement of IEEE members in the purposes, scope and functions of the committee.

4. MEMBERSHIP

4.1 The membership of CSIT shall consist of members of IEEE, of any grade, professing an interest to participate in the purposes, scope, and functions of this committee.

4.2. A member shall be entitled to participate in any subcommittee of CSIT (except the coordinating committee). Any member shall be eligible to serve on the coordinating committee, subject to the procedures described in Section 5 and 6.

5. COORDINATING COMMITTEE

5.1 The CSIT coordinating Committee shall consist of the chairmen of the CSIT subcommittees and, upon approval of both the coordinating committee and its chairman, other IEEE members in either of the following categories:

5.1.1. Liaison members from other IEEE entities. Such members shall actively participate in a specific CSIT activity, or in an activity consonant with a specific phase of CSIT endeavour.

5.1.2. Representatives from other ad hoc groups of IEEE members whose activities are consonant with a specific phase of CSIT endeavour. Such representation shall be based on the location, size, and number of such groups.

5.2. In the absence, incapacitation, or resignation of a subcommittee chairman, the subcommittee vice-chairman shall sit on the coordinating committee. A subcommittee vice-chairman shall be designated by the subcommittee chairman, or be appointed under operating rules adopted by the subcommittee, subject to approval of the coordinating committee chairman.

5.3. No member of the coordinating committee shall have more than one vote.

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- 5.4. The TAB chairman shall designate a coordinating committee chairman and vice-chairman, with such powers as may be delegated to them by the coordinating committee, and the TAB chairman.
- 5.5. The chairman shall preside at coordinating committee meetings. The vice-chairman shall assume the duties of the chairman when the chairman is absent or incapacitated.
- 5.6. The chairman shall appoint a Secretary-Treasurer.
- 5.7. The chairman, through the Secretary-Treasurer and in cooperation with the IEEE staff, shall prepare and distribute meeting announcements, subcommittee reports, and meeting minutes.
- 5.8. Reports or budgets submitted to IEEE shall be subject to coordinating committee review.
- 5.9. Decisions of the coordinating committee shall be by majority vote, and only if a quorum has been established. A quorum shall consist of a majority of the voting membership.
- 5.10. The terms of membership on the coordinating committee shall be one year. Each subcommittee liaison group, or unit having representation on the coordinating committee shall select a new representative at least one month before the expiration of the incumbent member's term. The coordinating committee chairman shall be notified of the selection of a new representative at least three weeks prior to said representative taking office. No member of the coordinating committee shall normally hold committee membership for more than two consecutive terms.
- 5.11. CSIT shall encourage student representation on the coordinating committee subject to the provisions of Section 5.1.
- 5.12. Members of the coordinating committee shall be members of IEEE of any grade. At least one member of the coordinating committee shall be of student grade.
- 5.13. Coordinating committee meetings may be arranged at the discretion of the chairman, or upon the request of one-third of the committee members. A mail ballot shall be distributed at the discretion of the chairman or, upon request of one-third of the committee members.
- 5.14. Coordinating committee shall be governed by Robert's Rule of Order (latest revision).

6.

SUBCOMMITTEES

- 6.1. Subcommittees may be established or dissolved and their chairmen chosen by majority vote of the coordinating committee. A subcommittee can be dissolved by majority vote of the entire coordinating committee.

- 6.2. A model set of subcommittee operating rules shall be developed by the procedures subcommittee subject to approval by the coordinating committee. These rules may be adopted by any subcommittee. Any subcommittee may develop its own organizational structure and rules consistent with these votes, subject to approval by a majority of the coordinating committee.
- 6.3. Each subcommittee shall submit its operating rules to the coordinating committee for approval within four months of its establishment.
- 6.4. Each subcommittee shall inform its members of the nature of its activity report prior to submission. Majority and minority reports may be submitted and shall be so labeled. Minority reports shall address themselves to matters germane to the subcommittee's majority scope. All other matters shall be processed by the coordinating committee as correspondence.
- 6.5. Subcommittees may be of a topical or activity orientation, or may be local, regional or group oriented, pursuant to the scope of CSIT.
- 6.6. Every subcommittee meeting shall be open to any member of CSIT.

7. PUBLICATIONS

- 7.1. Articles related to Social Implications of Technology shall be solicited openly.
- 7.2. Manuscripts (except notices and the newsletter) evolving from specific activities and studies undertaken or sponsored by this committee, or bearing the name of this committee or any of its subcommittees, shall be subject to approval by the coordinating committee prior to submission to an appropriate journal. Such manuscripts shall be distributed to each member of the coordinating committee at least two weeks prior to a committee meeting or at least thirty days prior to a mail ballot of the coordinating committee.
- 7.3. A newsletter shall be published at intervals designated by the coordinating committee or a duly designated subcommittee. All subcommittee chairmen shall be responsible for submitting timely information to the newsletter editor.
- 7.4. Those members of IEEE indicating interest in membership in CSIT shall be entitled to receive a newsletter containing information regarding the purposes and functions of CSIT, events related to these matters, notices of available CSIT publications, and meeting notices.

8. FINANCES

- 8.1 A CSIT account shall be established at IEEE Headquarters with disbursements being made as authorized by the chairman of the coordinating committee, or as voted by the coordinating committee, to pay for the newsletter or similar expenses. An account shall be established at IEEE Headquarters and disbursements shall be authorized by the chairman or secretary treasurer.
- 8.2. The TAB Secretary shall, at intervals designated by the coordinating committee, issue a statement of disbursement.

9. AMENDMENTS

- 9.1 Amendments to these procedures shall be made by a two-thirds affirmative vote of the entire coordinating committee. Thirty days shall be allowed after the distribution of the proposed amendment to the coordinating committee members for the responses to be made. Responses may be made at a meeting of the coordinating committee or by mail. Any committee member can propose an amendment to these procedures.
- 9.2 These procedures and subsequent amendments shall take effect thirty days after being sent to the IEEE Technical Activities Secretary. If disapproved by the TAB Chairman within that period, a meeting to resolve differences shall be requested.
- 9.3 These procedures shall be reviewed by the entire coordinating committee at least the last meeting before December 31, 1973.

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Revised action schedule on Publicity and Participation referring to Appendix 2, Item V(f) of 8/12/72 CSIT Minutes:

<u>Action Step</u>	<u>Submission Date</u>	<u>Description</u>
2	-	Writing overview articles for <u>Spectrum</u> deleted from schedule
5	12/20/72	Draft announcement to IEEE Student Branch Chairmen
6	12/20/72	Draft announcement to University Electrical Engineering Department Chairmen
7	12/20/72	Draft news release to trade press
8	12/20/72	Draft news release to section bulletin and G/S newsletters

All drafts will be submitted to P.D. Edmonds for distribution to CSIT, review and opportunity to comment, prior to mailing.

Frank Kotasek
11/20/72

IEEE - TAB AD HOC COMMITTEE ON SOCIAL IMPLICATIONS OF TECHNOLOGY

Dear

Since any large organization such as the IEEE is held together by a small but dedicated group of members by doing a large amount of work, it was decided that our committee could benefit from their practical experience on how to get things done within the IEEE, and their opinions of what they feel should be done. It was recognized that most of these activists do not have the time to become deeply involved with this committee, therefore a survey is being conducted by mail via the mailing list of "Electrical Engineering".

IEEE-TAB COMMITTEE ON SOCIAL IMPLICATIONS OF TECHNOLOGY

(a) Purpose

1. Develop means to encourage and support professionalism and social responsibility in the practice of engineering.
2. Promote sensitivity to and understanding of the interaction between technology and society.
3. Foster study, discussion and appropriate action involving IEEE members and others relevant to the technology/society interface.
4. Promote the conception of means and implement programs for predicting and evaluating the impact of technology on society.
5. Take appropriate action to implement programs.

(b) Scope

The scope includes:

1. Effects of present and probable new technology on society.
 2. New technology needed to solve society problems.
 3. Attitudes of society towards engineering.
 4. Programs to explain technology to society.
 5. Communication among engineers and between engineers and society on needs and concerns of society and capability of technology.
 6. Impact of society on technology.
 7. Professional and social responsibility in the practice of engineering.
 8. Content and levels of existing educational programs and relevant new programs.
 9. Awareness of other activities directed at the technology/society interaction.
 10. Involvement of IEEE members in the above.
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SURVEY

1. Given the purposes of this committee, are there some items which you feel are:
a) appropriate # _____ c) very important? # _____
b) inappropriate # _____ d) unimportant? # _____
2. Are there additional scope items that you feel should be included?

3. What are the areas of overlap between this committee and other IEEE activities?
IEEE activities? Scope# Other IEEE Activity

4. Are you currently engaged in an IEEE activity that falls within our scope? No Yes (Please name activity and give person to contact)

5. Were you engaged in a past IEEE activity that falls within our scope?
 No Yes (as above)
What were the results? _____
6. What would you like to see us do that is within our present scope _____
7. What types of actions do you feel the committee should engage in to accomplish its purposes? _____
8. What IEEE resources would be useful to this committee? _____

Comments: _____

Please use additional pages to answer where space above is insufficient.

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The Scientist and His Indentured Professional Societies

"Employed professionals are among the first to know about industrial dumping of mercury or fluoride sludge into waterways, defectively designed automobiles, undisclosed adverse effects of prescription drugs and pesticides. They are the first to grasp the technical capabilities to prevent existing product or pollution hazards. But they are very often the last to speak out..." Ralph Nader prepared this article for presentation at the 1971 Annual Conference on International Pollution Control of the Society for Social Responsibility in Science, held last August at Trondheim, Norway. We reproduce it here with Mr. Nader's permission.

Much has been said about the "responsibility of professionals." Lawyers have obligations to their clients, but also have sometimes conflicting obligations to the legal system which they serve and to the general citizenry which the legal system purports to protect. Doctors owe duties to their patients, but also owe duties to medical science and to the general public's health and well-being. Many engineers also have corporate employers or clients to which they owe their loyalty, but they also are required with varying degrees of compulsion to honor codes of ethics which mandate that they never sacrifice the health and safety of others to suit the whims of their clients. And so it goes with all professionals whose professions have developed from a tradition of supplying independent judgment based on expertise

and education to the problems and purposes of their employers or clients.

Scientists are usually placed or place themselves in a slightly different category. They are bound to search for the truth, for the hard facts, for the essential realities in their respective disciplines. They are compelled to discover truth, and in a sense they view truth as their "client." To say all this about scientists is to state but the first premise. Without elaboration it says absolutely nothing about a scientist's obligations to his fellow man. Unfortunately, too many scientists are content to rest their commitment to "social responsibility" on this empty truism. To do so is to embrace a particularly virulent form of hubris which has no place among people who, to a substantial degree, hold the keys to the future of mankind.

Other scientists go one step further. They seek to know the consequence of their work. Having discovered one or more "truths," they feel compelled, and happily so for the rest of community, to ask, "To what uses will my new knowledge be put and how should I seek to influence those uses?" This is the critical point at which even the scientist who is most enlightened about social responsibility, or thinks he is, can easily fail to do anything other than satisfy his own conscience in some small way.

At this point the concerned scientist is in roughly the same position as any other professional with clients or an employer. He must, publicly or privately, choose between his allegiances, his duties, and his obliga-

tions to his immediate employer or even to some idealized notion of "the truth" and his responsibilities to his fellow man or more specifically to those who will be affected by the uses to which his work will be put.

In 1967 the Study Committee on Ethics and Responsibilities of Scientists of the American Association for the Advancement of Science (AAAS), under the direction of Anatol Rapoport, sampled the opinions of AAAS members on various ethical questions. Over 80 per cent of the respondents "agreed that devotion to science implies also a devotion to certain values, such as concern for human welfare," and that a part of a scientist's responsibility is to help in promoting these values and not to help in promoting goals incompatible with them. The survey revealed the same high level of agreement with the proposition that "if they found evidence of dishonesty within their organization they would protest (at least) within the organization." And between 70 per cent and 80 per cent said they "would publicize their opinion if they thought that a drug released for the market had not been sufficiently tested for safety."

The survey also posed the following hypothetical situation:

You find evidence that organs of the government withhold or suppress information (apparently for policy reasons) which you feel very strongly should be available to the public. You have this information and can rely on its source. Assume that while the dissemination of the information is legal, it undercuts government policy or is embarrassing to the government.

Of the respondents, 52.5 per cent indicated they would disseminate it under certain circumstances. Unfortunately, the issue was not drawn to elicit responses for cases in which the scientist is employed by or is an adviser to the particular agency which was suppressing the information. In the United States it is quite typical for large segments of the important leadership of a scientific discipline to be drawn formally into some kind of government advisory body. Some have argued most persuasively that this tends to co-opt dissenting views within the scientific establishment. And it is in this situa-

There are signs that some scientists at least are moving to transform these opinions into behavioral facts to give them institutional meaning and, above all, to put them into practice. The Federation of American Scientists and the Society for Social Responsibilities in Science and similar groups can be instrumental in this development.

There are generally two avenues in which scientists and technologists, whether academic or industrial, can influence decisions which have an impact on the lives and livelihoods of their fellow citizens. They can act through organizations like professional societies and issue-oriented associations or they can act individually. These two possibilities are not mutually exclusive. Depending on the circumstances, it may be necessary and appropriate to act collectively or individually or both. Of course, there are a multitude of possible variations within each of these avenues. SSRS represents one form of the collective approach. So do recent efforts within some established scientific and professional societies.

The special obligation of any society of professionals — a society of engineers or scientists, no less than one of lawyers or doctors — is to be more than the sum of its parts. A society must have more influence, conduct more significant activity, be more aggressive in the protection and advancement of the public interest, and more effectively advance professional responsibility and guarantee professional independence than any of its members were they to act individually.

Too often professional societies in general, and engineering and scientific societies in particular, are content to issue vague moral pronouncements about moral or professional responsibility. Societies frequently "roll over and play dead" when truly critical issues are raised: What is the society doing to defend and extend the rights of members or would-be members to challenge clients or employers who seek to stifle dissent?

You may have heard of the case of A. Ernest Fitzgerald, a high official in the U.S. Department of the

precisely, and his position abolished) for relentlessly doing what he was hired to do: control defense contractor cost over-runs. Mr. Fitzgerald "blew the whistle" on the C-5-A (a giant transport airplane) cost over-runs in testimony before a committee of the U.S. Senate. Mr. Fitzgerald appealed to his professional society the American Institute of Industrial Engineers, for support. He was a founding member of a student chapter of the AIIIE. Their response: A task force of the executive committee convened to discuss his case decided that the society was a "technical" and not a "professional" society, and that it therefore had no jurisdiction over his case and others like it.

The realities of most professional societies in general, particularly engineering and scientific ones, which issue minimal product standards (e.g., Society of Automotive Engineers, the Society of Mechanical Engineers, etc.), have been that they tend to be indentured to the particular corporations, industries, or government agencies that deal with their subject matter. The automotive and chemical industries can easily control the society which, for example, deal with automotive matters or chemistry.

The other sources of control are even more overt in the sense that the companies provide full expenses for whatever testing is done — for example, in engineering areas with company property. The topics of symposia are determined by engineers and scientists on company missions, not on their own professional missions. The fact that there are crises in such areas as pollution, pesticides, and auto safety indicates that there is quite a spread between what the companies are doing by way of allocating resources or backing up scientific and technical personnel and what are the professional missions of these bodies of knowledge.

A second reality of professional societies is that they do not defend the whistle blower. I think every individual who is working for an organization — whether he is a professional or a technician or a floor sweeper — has got to have in mind

beyond which his allegiance to society supersedes his allegiance to the organization. This has to be so. There must be some sort of inner, initial determination that the individual employee will only go so far in obeying the dictates of the organization and beyond that will have to, in effect, "blow the whistle" and achieve a resolution of his own conscience by attaching his concerns and his information to outside authorities.

This is basically the principle that was established at the Nuremberg trials: that you can only go so far in excusing your performance by saying that you are just taking orders. There is a limit, for instance, to letting four million cars go on the market with defective lower control arms by simply saying, "Well, that's what management wants us to do and that's all there is to it." Those automotive engineers could have read any numbers of codes such as the National Society of Professional Engineers' code of ethics. The NSPE code states specifically that an engineer is obligated, after exhausting his internal corporate remedies, to go to outside authorities to alert the public about a hazard in the product on which he has worked.

The function of a professional society in defending the whistle blower is basically to make it unnecessary for an individual to perform an act of courage in order to utter a simple statement of truth. It's a function of how authoritarian a system is as to how much courage it takes for one simply to speak one's mind or act on one's conscience; and the level of courage needed is an indication of just how authoritarian the process has become. There is no doubt that if we are going to await these expressions of courage not many of them are going to be forthcoming unless the professional society assumes the responsibility of defending its members in such circumstances.

At what point should corporate or government scientists, engineers or other professionals dissent openly from their employer-organization's policy? If the professional does dissent, how can he protect or defend his decision to place his professional

(Continued on page 46)

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Sila is the formulation of the new economic system, never implemented. The study is entitled, "The Inverse Economic Miracle, the Case of Czechoslovakia after World War II." The thesis, thoroughly documented, is that the Czech attempts to "build socialism" were based upon support from the capitalist world. There were warnings that this was thoroughly unsound, but these criticisms were suppressed.

Natural resources were exhausted in favor of extensive economic development. The problems raised could not be solved by the highly centralized, bureaucratic system of organization, financing, and planning of the nonmarket economy, and in the absence of real worker participation. Such a system, it is argued, could grow only while it had available easily mobilized resources of extensive economic development. Once these were exhausted, the system could not ensure further economic growth, and was unable to provide any qualitative change.

That is why Dubcek had to go. He led not a struggle for reform, but a struggle for the improvement of the system, which inevitably was a struggle against the system.

That is why the Soviet Union had no alternative but to intervene militarily.

PROFESSIONAL SOCIETIES

(Continued from page 44)

conscience over what he believes is his organization's illegal, hazardous or unconscionable behavior? These are important questions and they are rarely answered in heated context of controversies such as the defoliation of Vietnam or the standards for constructing nuclear power plants? They should be answered in deliberate and rational formulation of legally supported rights and obligations.

Staying silent in the face of a professional duty has direct impact on the level of consumer and environmental hazards. This fact has done little to upset the slavish adherence to "following company orders."

Employed professionals are among the first to know about industrial dumping of mercury or fluoride sludge into waterways, defectively

designed automobiles, undisclosed adverse effects of prescription drugs and pesticides. They are first to grasp the technical capabilities to prevent existing product or pollution hazards. But they are very often the last to speak out, much less refuse to be recruited to support or perform acts of corporate or governmental negligence or predation.

The 20-year collusion by the U.S. automobile companies against the development and marketing of exhaust control systems is a tragedy for those engineers who, union-like, programmed the technical artifices of the industry's defiance, to say nothing of the cynical and knowing violation of U.S. antitrust laws by lawyers and high corporate officials.

A prime foundation for professionalism is sufficient independence to pursue a course that could save lives, secure rights, or preserve property unjustly imperiled by the employer-organization. The overriding ethic of the professional is to foresee and forestall the risks to which he is privy by his superior access and knowledge, regardless of his own or his employer's vested interests. Physicians should strive first to prevent disease; lawyers should apply the law to prevent auto casualties; economists should try to clarify product and service characteristics in the context of quality competition; engineers should make technology more humane as a condition of its use; and scientists should anticipate the harmful uses of their genius.

All these ideal missions unfortunately possess neither the outside career roles for their advancement nor the barest of independence for the organizationally employed professional to exert his conscience in practice beyond that of the employer's dictates. The multiple pressures and sanctions of corporate and government employers are very effective to daunt the application of professional integrity. When on occasion such integrity breaks through these restraints, the impact is powerful. This might well explain the organization's determined policy of prior restraint.

During the past half dozen years of disclosures about corporate and governmental injustices, the initiators have largely been laymen or ex-

perts who were outsiders to the system exposed. The list is legion — black lung, brown lung, DDT, mercury contamination, enzymes, phosphates and NTA (nitrotetraacetic acid) in detergents, SST hazards, the anti-cholesterol drug MER 29 (triparanol) and nerve gas storage and disposal. Inside the systems, however, mum's the word.

Three basic changes are needed to make a beginning: First, governments should enact legislation providing for safeguards against arbitrary treatment by corporations and government agencies against employees who exercise their constitutional rights in a lawful manner. At a minimum, such laws would authorize the courts to protect a professional's "skill right" in a far more defined manner.

Second, employed professionals should organize to provide a solid constituency for the adoption by management of the requisite due process procedures which the professional can appeal to or enforce in the courts.

Third, as I have already suggested, professional societies should clearly stake out their readiness to defend their colleagues when they are arbitrarily treated for invoking their professional ethics toward the corporate or government activity in which they were involved. Most of the established professional societies or associations never challenge corporate or governmental treatment of lawyers, engineers, scientists or physicians as the American Association of University Professors has done on occasion for university teachers denied academic freedom. And where there is no willingness to challenge, there is less willingness for the employee to dissent.

To require an act of courage for stating perceived truth is to foster a system of self-censorship and the demise of individual conscience against the organization. Whether a professional's chief guiding light is a desire to abide by the law, to pursue the Golden Rule, or to adhere to his profession's code of ethics, the paramount allegiance to one's fellow man over an illegal, negligent, or indifferent organization must find concrete recognition, respect and defense.