

Division newsletter



American Society for Engineering Education

DIVISION:

EDITOR: FRED BEAUFAIT
DEPARTMENT OF CIVIL ENGINEERING
WEST VIRGINIA UNIVERSITY

DATE: NOVEMBER 1984

CHAIRMAN'S REMARKS

The Executive Board of the Civil Engineering Division met at Salt Lake City and took several actions that should be of interest to you. One of the foremost actions was to name Fred Beaufait of West Virginia University to succeed Pete Hoadley of Vanderbilt University as Editor of Civil Engineering Education. Stan Klemetson of Brigham Young University was named to serve as an Associate Editor of the publication. I'm sure each of you join with me in expressing the Division's appreciation to Pete Hoadley for the fine job he did over the past five years in editing and publishing the journal. I think it is also appropriate to thank the Associate Editors that served along with Pete in the publication of the journal.

Marvin Criswell of Colorado State University reported that progress is being made on the establishment of a Civil Engineering Division award to recognize an individual for outstanding service in civil engineering education. It is planned that the award will carry the name of its first recipient.

The Division approved a new policy relative to the development of its technical and social program at future conferences. Based on the new policy, the Division will be the principal sponsor or co-sponsor of no more than four prime time sessions, excluding

mini-plenaries and software exchanges. In addition, a greater effort will be made to establish more meaningful cooperative development and sponsorship of sessions with other constituent committees and/or divisions. Efforts will be continued to call for papers for all sessions, however especially qualified speakers will be invited if appropriate. Acceptance of papers will be strongly contingent on the author's commitment to submit the paper for publication in the Conference Proceedings. Lastly, a new program development schedule was adopted to improve the process of developing the annual conference programs.

As his last official act as Chairman of the Division, Ron Eck of West Virginia University issued invitations to both the Construction Committee and the Environmental Engineering Division to join the Civil Engineering Division. His action was in response to a recommendation by the Board. The Board's concern was that the Division was losing good talent by the separation of the civil engineering related groups and that significant scheduling conflicts were developing between the various functions and sessions of the three groups. To date, a negative response has been received from the Construction Committee. No response has been received from the Environmental Engineering Division.

One of my major goals for this year is to determine if the present committee structure and membership policy of the Division are satisfactory. In my judgment, the committees should be relevant to the civil engineering education process and the goals of the Division. The Committee membership policy should encourage the infusion of new members with new ideas while maintaining appropriate continuity and stability. Any ideas or suggestions you have on these issues will be greatly appreciated.

In closing, I would like to express the appreciation of the Division to Ron Eck for the fine job he did as Chairman of the Division for 1983-84. Ron has been a faithful member and leader within the Division and ASEE for a number of years. Knowing Ron, I'm sure we'll be able to count on his continued service to the Division.

Roger S. Seals
Louisiana State University
Chairman, Civil Engineering
Division

GUEST EDITORIAL

Civil Engineering,
Wake Up To The Challenge!

Today, civil engineering is a dichotomus profession. As an engineering science, it can be proud of its profound achievements in the analysis and design of structures, in the analysis of flows, waves and precipitation in the design of water treatment plants, of highways and transportation facilities, in the study of environmental resources, and in the application of computers, often earlier and with greater sophistication than other engineering professions. These achievements have been as difficult, as intellectually demanding and as important as any in science and engineering -- perhaps even more.

On the other hand, in spite of these great achievements, if we look at civil engineering as an industry, the situation is a dismaying one;

Our new houses are immensely expensive because still, by and large, they are not being produced by industrial methods.

Our physical infrastructure is crumbling because of neglect, and of design not taking into account maintenance and lifetime cycles.

Practically no research is being done or sponsored by the civil engineering industry -- except for some highly applied and urgent tasks connected to a specific project. Almost all the research is sponsored by the government -- both at the federal and state levels.

Unlike other industries, there is very limited communication between the industry -- the builders -- and the university, except for some involvement of the builders in academic advisory committees. There have been, for instance, very few civil engineering faculty members, if any, who have spent their sabbatical working in a construction company.

The profession of civil engineering, and, in the first place, the nurturer of the profession--the university--could take a look at each of these problems and say: "It is not our fault or our responsibility. These situations and failure, such as the failure of maintenance or the high cost of housing, are caused by economic and political factors over which we have no control." On the other hand, the profession and the university could say: "We will have failed in our larger responsibilities

unless we produce engineers who, as engineers, as researchers, as commissioners of public works, as politicians and executives-- as some civil engineers become--are able to focus on these problems, refuse to do violence to our professional code by acquiescing in the neglect of maintenance, and are committed--for the sake of our entire society-- to transform civil engineering into a truly modern industry, and to reduce costs by looking at the entire system of design, production and maintenance and operation of civil engineering structures, rather than just on their design.

To make one not very obvious example as to the potential role of civil engineering in solving a very costly social problem, we are spending in our nation some \$250 billion a year for health care--more than for education and, until very recently, more than for defense. The bulk of these expenditures occur in hospitals, that are enormously inefficient. Suffice it to think that for every patient in a US hospital there are over 3 staff members -- an unbelievably personnel-intensive and therefore costly arrangement.

What is needed is a total redesign of our hospitals, and the introduction of intelligent automation, for example through what have come to be called "productivity packagers" to increase the productivity of laundry services, pharmacies, food services and so on. This in turn calls for some specialized robots.

Indeed, robots and automation, are potentially of great significance to all areas of civil engineering. For example, office buildings, where the structural elements are becoming the lesser portion of the cost, need to be transformed into intelligent buildings accommodating "local area office networks" and satellite receivers, using robots for cleaning floors and outside walls, and adopting automated devices to improve energy efficiency, security and traffic flow.

Civil engineers also need to address the primary question of how to excavate more inexpensively for the many telecommunications cable networks that are beginning to criss-cross the land, and how to construct and repair more rapidly -- and inexpensively -- so as to rebuild our infrastructure at acceptable cost and without major interference with its operation.

There can be little question that in activities such as these, robots will play again a significant role. But a close involvement of civil engineers with robots demands a study of their many possible uses, a participation in their design, and the creation of the necessary software -- a task that must be performed by the civil engineer that uses the robot, if necessary in collaboration with the designers of the robot.

On top of all these challenges, there is a most crucial and difficult one that the civil engineering profession and the civil engineering industry together cannot neglect, if they are to fulfill their fundamental role. That challenge is the redesign of our cities in terms of energy costs (because we cannot wish away our dependence on imported and finite sources of fuels,) in terms of more efficient intermodal transportation connections as well as in terms of our ability to rapidly evacuate the cities, either to respond to accidents or to military threats.

A very major challenge for civil engineers is also to address the question of the construction of nuclear power plants. Civil engineers have largely abdicated their larger responsibility to the public by not proposing ways of making the construction of power plants more safe, effective and economical. It is not sufficient justification to view the construction of a power plant as an interdisciplinary activity involving other branches of engineering. There is no reason in the world why civil engineers

cannot assume the leadership in addressing this pressing national problem.

Finally, civil engineering cannot turn a blind eye to the terrible plight of the congested urban population in developing countries. The conglomerates of tens of millions of people cooped up in cities with scant sanitation, inadequate water supply, makeshift shelters and impossible traffic jams are a tinderbox that presents a challenge of the greatest magnitude to the ingenuity of our profession to find workable solutions. Civil engineering is the one profession that has made a tremendous difference in terms of our water supply, sanitation, roads and harbors -- and it now needs to address itself to make those cities into more human habitats, safer and less congested.

To respond to the kind of needs that I have outlined -- and there are and will be many more -- it is imperative that, as civil engineers, we rethink the fundamental goals and mode of operation of our profession. There can be no greater challenge for us to meet.

George Bugliarello

Editor's Note:

George Bugliarello, President of the Polytechnic Institute of New York since 1973, is an engineer with a broad background in research, ranging from computer languages to biomedical engineering to fluid mechanics. He is a graduate of the University of Padua, and holds a Doctorate from the Massachusetts Institute of Technology.

He has been chairman of the Board of Science and Technology for International Development (BOSTID) of the National Academy of Science and, earlier, chairman of BOSTID's Advisory Committee for Technological Innovation, and the chairman of the National Science Foundation's Advisory Committee for

Science and Engineering Education. He is currently the U.S. member of the Science for Stability Steering Group of NATO.

His international experience includes reviews of the science policy of Greece and Portugal for OECD, consultantships for UNESCO in the area of university-industry interaction, assignments as specialist for the U.S. Department of State in Venezuela and Central Africa, on the U.S.-Egypt Joint Consultative Committee of the National Academy of Science.

He is founder and editor of "Technology in Society-- An International Journal," has authored several hundred professional papers, and is the author, co-author or editor of numerous books, including "Computers and Water Resources," "The History and Philosophy of Technology," "Bioengineering--An Engineering View," and "The Impact of Noise Pollution: A Socio-Technological Introduction".

He is a Fellow of the American Association for the Advancement of Science and a Fellow of the American Society for Engineering Education.

SUMMARY OF SESSION

"Civil Engineering Enrollments: Current Trends and Future Concerns" Sponsored By The Committee On Educational Policy.

The session began with George Wadlin (ASCE) presenting results of the annual enrollment survey conducted by his office. After several years of relatively constant undergraduate civil engineering enrollment, a substantial drop of 6.8% was noted in the 1982-83 academic year. Attendees agreed that this trend was sustained in 1983-84 and would probably continue for the immediate future. On the graduate level increases in both M.S. and Ph.D. enrollments have been evident for several years.

Russel Jones (Boston University) discussed the problems associated with declining undergraduate enrollments and in particular presented the concern of ASCE and other professional societies in the face of the evident need for upgrading of our nation's engineered infrastructure. Much of the decline in student interest was attributed to the excitement and market pull of "high-tech" areas such as electrical and computer engineering. Dr. Jones discussed various measures for the civil engineering profession which could potentially allow attraction of appropriate numbers of talented young people into the field.

The major reasons for students selecting civil engineering were discussed by Kenneth Henkel (Cal State - Chico). He conducted an extensive survey of students at his university. Among the factors of most significance were career challenges, interest in science and math, intellectual challenges, ease of finding a job after graduation, high salary, and service to society. Ranking as the least positive influence was the advice of high school counselors.

The effects of various administrative policies on undergraduate civil engineering enrollment were described by Paul King (University of Arizona). Principal concerns are freshman admission standards and requirements for obtaining advanced or upper division standing. Highly selective admission standards and/or college of engineering enrollment caps at the freshman level have evident effects in leading to relatively large decreases in civil engineering enrollment. If advanced standing is given based on a single college-wide GPA requirement, a similar effect will be noted. However, if a variable departmental requirement (i.e. EE 3.0, CE 2.4) is imposed, some enrollment redistribution will occur. In this case civil engineering departments must be aware of the quality implications of such a policy.

Paul H. King
University of Arizona

COMPUTER AIDED ENGINEERING

Computer Aided Engineering is the theme of our 93rd ASEE Annual Conference in Atlanta. You should plan to be there June 16-20, 1985. This note is to inform you of how the plans for the conference are coming along. I attended the Fall Planning Conference in Nashville, Tennessee, October 28 through 30 as your Program Chairman. We will jointly sponsor two miniplenaries: one on "Computers in Engineering Education" and another on "The Evaluation of Engineering Faculty -- Are We Using the Right Criteria?". Speakers for these are being invited.

Your Civil Engineering Division will sponsor four technical sessions. "Innovations in Civil Engineering Laboratories" is being organized by Dr. Noel Tolbert from Tennessee Tech. (Phone: 615-528-3454) and our co-sponsor the Division of Experimentation and Laboratory-Oriented Studies (DELLOS). "Computer Related Disasters -- Who's Responsible?" will be co-sponsored by Architectural Engineering, Agricultural Engineering and Electrical Engineering. Contact Dr. Colby Ardis at the University of Toledo (Phone: 419-537-2640). "Computer Applications and Controversies in Civil Engineering Education" is being moderated by Dr. A. Farah, Laurentian University (Phone: 705-675-1151, ext. 697 or 589). "Should Every Freshman Be Required to Buy a PC?" will be jointly sponsored by the Freshman Programs Division. Contact Dr. Dexter Jameson, Tennessee Tech. (Phone: 615-528-3630) or Dean Barbara Bowman, Wichita State University (Phone: 316-689-3408).

Dr. Mardy Thomas, Iowa State is arranging our software exchange and poster session. Please call her at 515-294-9809 or 515-292-4054. Diskettes must be sent in ahead of time for copying and display. We hope to create a "library" of software available with titles, authors' names and addresses,

etc. A two or three page description of poster displays is expected from all authors for inclusion in the conference proceedings.

A call for papers was included in ASCE News, p. 9, September, 1984, and a special mailing to all ASEE CE Division members went out in mid-October. Since this newsletter may reach you around December 1, we've extended the due date for abstracts to December 7, 1984. The final program with speakers and titles must be completed and at ASEE headquarters by January 5, 1985. Hence, we'll need to make decisions on abstracts of proposed papers no later than December 14, 1984 in order to complete the paperwork and bypass the Christmas period. Thank you.

All speakers this year are also expected to be authors. Accepted abstracts are to be turned into papers for publication in the conference proceedings. Deadline is April 1, 1985.

Our "rap session" next June will be held Monday evening. Plan to come with ideas and topics for discussion to improve civil engineering education. We'll also begin to plan the 1986 conference in Cincinnati -- a call for papers will have been issued in April, 1985 and we should have abstracts in by the time we meet in Atlanta.

The 93rd ASEE Annual Conference in Atlanta will be a winner. I hope to see you there.

Colby V. Ardis, Jr.
CE Division Program Chairman

CE DEVISION BUSINESS MEETING
Tuesday, June 26, 1984
1984 Annual ASEE Conference

Thirty-five members of the Civil Engineering Division met for lunch at the 1984 Annual ASEE meeting at the Salt Palace in Salt Lake City to conduct the business of the division. Ron Eck

called the meeting to order and those present introduced themselves.

Fred Beaufait, Secretary-Treasurer for the Division announced the results of the balloting for offices for this year (1984-85):

Chairman: Roger K. Seals
Louisiana State University

Vice Chairman: Colby Ardis
University of Toledo

Director: Paul King (1987)
University of Arizona

Those officers continuing for this year are:

Secretary/Treasurer: Fred Beaufait
(1985)

Directors: Gerald Seeley (1985)
Greg Mager (1986)

It was reported that the Division used its entire budget allocation of \$680 for 1983-84 for the publication of the Newsletter and the CIVIL ENGINEERING EDUCATION journal, and the balance of the BASS account was \$4,476.20 as of that day.

Marvin Criswell reported on the progress of his committee with the development of an appropriate award for the Civil Engineering Division. He expects to have a final proposal for the Division this fall. Ron Eck reminded the membership of the ASCE Education Conference which is scheduled for April 10-13, 1985 at Ohio State University. The CE Division will be sponsoring a breakfast. Jim McDonough discussed the development of the micro-software exchange; he was disappointed in the set-up provided for the exchange at the Salt Palace but was optimistic about improvements for next year's meeting. He was pleased to see that this idea for an exchange, which originated with the CE Division, was being picked up by other divisions.

Roger Seals reviewed the changes that had been made in the program and reported on his unsuccessful effort to find support from local practitioners for the social/dinner. He indicated that during his year as chairman he hoped to strengthen the committee structure and organize it on a more formal footing with regard to membership and tenure. He issued a general invitation to the membership to join in the work of the Division.

Ron Eck, a chairman of the Division, reviewed the proposed schedule for program development that was approved by the CE Division Executive Board:

August, 1984: Call for Papers for Atlanta meeting in June, 1985.

September, 1984: Preliminary program for Atlanta.

January, 1985: Final program for Atlanta.

April, 1985: Call for Papers for Cincinnati meeting in June, 1986.

June, 1985: Atlanta meeting.

August, 1985: Final call for papers for 1986 meeting.

The Chairman reported on the Executive Board's proposed policy to limit the number of sessions that the division would sponsor at an annual meeting.

Proposal: It should be the policy of the Civil Engineering Division to be the principal sponsor or principal co-sponsor for no more than four (4) prime time sessions, excluding miniplenaries or the micro-software exchange. Cooperative development and sponsorship with other constituent committees and/or divisions is encouraged. A call for papers shall be made for all sessions and speakers selected from the offerings. However, especially qualified speakers may be invited. The outgoing program chairman is responsible for the

April call for papers as specified in the above schedule. Papers from Annual Conference Proceedings.

The proposal was seconded and after some discussion it was accepted by unanimous vote.

Colby Ardis, program chairman for the 1985 meeting discussed plans for next years meeting. The following schedule was accepted by the group:

- 1) Software exchange
- 2) CE Luncheon/Business Meeting
- 3) Executive Board Meeting
- 4) Chi Epsilon Luncheon
- 5) Rap Session
- 6) Social
- 7) Program Planning Session
- 8) Committee 1 (Dexter Jameson, Chairman): The PC Dilema - How Far Should We Go?
- 9) Committee 2 (Dean Parsons, Chairman): Computer Related Disasters - Who's Responsible?
- 10) Committee 3 (Noel Tolbert, Chairman): Innovation in Civil Engineering Laboratories.
- 11) Computer Committee (Anis Farah, Chairman): Computer Applications and Controversies in Civil Engineering Education.

Before closing the meeting the chairman announced that Fred Beaufait would be taking over as editor as the Division's publication Civil Engineering Education effective with the spring '85 issue. The retirement of Peter G. Hoadley as editor of Civil Engineering Education was noted. Peter was the founding editor of the publication and is responsible for making it a success. (Many thanks, Pete)! He also announced the membership's approval of the dues increase to \$5 and indicated that the next step before the increase became effective was approved by PIC I. The increase should be implemented by October, 1984.

Respectfully Submitted by
Fred Beaufait, Secretary

REPORT OF THE NOMINATING COMMITTEE

The nominating committee, consisting of the three most recent past chairmen of the division, Marvin Criswell, Jim McDonough, and Ron Eck, have submitted the following nominations for the division officers for 1985-86.

Chairman - Colby Ardis
University of Toledo

Vice-Chairman: Edward S. Rietz
City Univ. of New York

Gerald R. Seeley
Valparaiso University

Secretary/Treasurer - Ron W. Eck
West Virginia U.

Peter G. Hoadley
Vanderbilt Univ.

Director (1985-88): Thomas K. Jewell
Union College

Mardy B. Thomas
Iowa State Univ.



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