

Division newsletter

American Society for Engineering Education

DIVISION: Civil Engineering

EDITOR: Thomas Mulinazzi, University of Kansas

January 1991

REMARKS FROM THE CHAIR

As these remarks are being written the present world crisis seems to overshadow the important issue facing engineering education. Life and death situations do take precedent over whether the curricula and the first degree in an ABET accredited institution should be four or five years.

Hopefully by the time these remarks are read by the Division membership, the conflicts in Iraq and Kuwait will be history and not current news.

However awkward or unrealistic as it may seem, we, who have a vested interest in engineering education need to address the issue of what the first engineering degree should be. We should not let the business administration, legal, or liberal arts graduates, or for that matter the uninformed decide the curricula for the engineers of the twenty-first century.

We need to take a position and either implement the changes or step aside and continue to let other outside of engineering education make the changes for us. We've permitted this to occur in the past and it will happen again if we don't get ourselves involved and provide the necessary input. We need to ask ourselves what it is that the engineering profession and the educational community consider to be the minimum education an individual needs to be considered an entry level engineering graduate.

There is no question that the graduate today has a different curriculum from those of us who graduated 25 or 30 years ago, or for that matter 15 years ago. What we would consider as a traditional degree has little or no meaning today. The bottom line however, is that we have and are successful in our chosen area of engineering. There are those of us who like classical music and those of us who prefer country western. This doesn't mean that we don't like the arts and the theater. We are all individuals and each of us have choices that we make for ourselves. We even had the choices of which engineering discipline we wanted to practice or work in. We also have the choice to become registered engineers, where we work and who we work for.

The basic engineering education is not tied to registration. It is a requirement of various state statutes if you provide work that effects the life, safety and health of the public. This is a separate issue and needs to be addressed separately and apart from education. The primary tie between education and registration is the ABET curriculum. Those who graduate from non-ABET programs don't meet the standards of most registration boards. The bottom line however, is that those engineering programs who are not ABET accredited can be accredited by providing the basic subjects and having the appropriate faculty to teach the course work.

The individual who chooses to attend a non-ABET accredited program; or for that matter a technology program, has done so for many reasons. The least of which could be the possibility that the institution is close to their residence or its an easy way to become an engineering graduate. Whatever the reason, there are no short-cuts to becoming an engineer.

Where does this lead us in our quest for what's required for the entry level engineering graduate? Good question. Industry advises that they need more of the same and that they will train them the way they want. Consultants advise that they need graduates who are technically sound and understand the basic principals of engineering. Consultants are in no position to train the graduate on how to be an engineer. They need an individual who can step into a position and be productive.

Making the engineering curriculum easier is not the answer. To be an engineer you need a basic knowledge in your chosen discipline. For a Civil Engineering graduate, the simple reduction of surveying notes, or plotting the results of a field survey is needed. The ability to do a simple grading plan with horizontal and vertical curves, storm drainage facilities, curbs and gutters, the knowledge of concrete mixes, types of cement, curing, reinforcing, water-cement ratio, wearing surfaces for roadways, roadbed design just to name a few basics.

I have never known a group of engineers getting together to talk about history, classical music, or theater. Engineers are engineers and they will discuss engineering matters.

If we need to put into place a program that requires five years of subject matter and not calendar years then we should embark on such a program. Many have argued that it now takes approximately 4.7 years to complete a four year program. There may be many reasons for the 4.7 years, but in discussing this with faculty, it is their opinion that students are taking fewer hours per quarter or semester to either give the students more free and/or time to ensure a good grade point average. Whatever happened to the days of 17 and 18 (or more) hours per quarter or semester? It is without question a factor, that the 4.7 years should not be a consideration in whether it is going to take a five year curriculum to provide a technically sound engineering graduate.

There is no going back to what the curriculum used to be as present conditions and technology need to be met. There is reason enough, however, to put back into the current curricula subjects that are basic and essential to each engineering discipline.

There is no question that there will be additional hardships and stress on various educational institutions for space and faculty. This should not be a surprise as this situation currently exists in most educational institutions already.

The problem is compounded by the quality of the graduates from most high schools. At best the basic English skills of reading, writing and oral communication are marginal.

As a unified voice, the educators in primary and secondary schools can be brought to bear their responsibilities. The populace as a whole needs to speak out (and take action). It can start by positive feedback by collegiate faculty. After all, most of us have children or grandchildren who are affected by the low level of education in primary and secondary schools. It has to start some place, why not through ASEE?

There is certainly no argument that in a lot of ways the old adage of "garbage in equals garbage out."

For the past several years we have permitted ourselves to become complacent over what we are producing for engineering graduates. We are under the impression that the graduates are acceptable and satisfactory. They may be acceptable for industry who might train them for research and development, marketing, sales representatives or sales personnel, but not as design or project managers.

We are at the mid-point of the stream where a decision needs to be made. There's no turning back and we cannot continue to take the position that what we've been doing is acceptable.

Your opinion, action and recommendations are needed. We cannot continue to be passive and retreat from controversy. We need to take a stand, your voice and opinion does count and we as a group need to be heard.

M. Dean Parsons, P.E.
Chair

TORONTO MEETING - JUNE 1990

SHOULD THE BSCE CONTINUE TO BE ACCREDITED AS A FIRST PROFESSIONAL DEGREE?

Session Summary

by Ronald W. Eck
West Virginia University

The session format involved invited panelists who explored the pros, cons, and related issues of whether the BSCE, as determined by the minimum standards of the ABET process, should be a professional degree. To set the stage for the "debate," William J. Wilhelm, Dean of Engineering at the Wichita State University, outlined current issues in Civil Engineering Education. Obviously, ABET was a key issue. Bill reviewed the concept of advanced level accreditation and outlined the criteria. He described the task force recently formed to study accreditation and noted some of the issues with which the group will be dealing. These include the level of communication with colleges, changes in criteria, the amount of documentation, and the need for advanced/dual level accreditation, to mention only a few. He noted changes in the 1990 ASCE program criteria, including a minimum of 4 full-time faculty (in at least 4 major discipline areas), majority of faculty teaching design must be P.E., minimum curricular coverage is 4 major discipline areas, a major comprehensive design experience, and transfer credit for design is to be checked by faculty.

Bill also reviewed curriculum and accreditation related recommendations from the 1990 ASCE National Forum. These included defining appropriate education between graduation and the P.E., that ASCE not support dual/advanced level accreditation, an increase in the maximum accreditation period, and support a freeze in criteria. He reviewed both sides of the civil engineering "shortage" controversy.

Alfred Ingersoll, Special Assistant to the President at Northrop University, presented his thoughts on Academic Preparation for Entry to the Civil Engineering Profession. He reviewed several ideas on what is meant by a profession and how the public perceives the civil engineering profession in the United States. Using a historical perspective, Al reviewed the resistance to changing the basic four-year engineering education.

He noted that MIT is considering a totally revamped engineering program wherein a new master's degree would become the first professional degree. This would be the only program at any level that MIT would seek to have accredited and it would be the only master's degree

offered, designed to be appropriate preparation for either an industrial or a research career. While supporting the concept, he cautioned that the transition from the traditional ABET-accredited BSCE curriculum to the proposed curriculum be effected very carefully. To begin with, the transition would be voluntary. Traditional routes for obtaining masters and doctoral degrees should be preserved at least until the new program assumes its appropriate place.

David Van Horne, Professor of Civil Engineering at Lehigh University, addressed the question in the session title. He outlined advanced level accreditation and ABET accreditation. Dave indicated that he is not happy with the current status of professional registration. The road to respect in this area is to improve the profession through the registration process. He reviewed some of the recommendations which had been presented to the ABET Board in April, including strengthening the legal basis for engineering through creative technological leadership and strengthening of registration laws, creating a true pre-engineering baccalaureate program (with ABET accreditation), moving to the masters degree as the first professional degree (with ABET accreditation), and pushing to make the first professional specialty certifications as an add-on to professional registration.

The final speaker, Walter Le Fevre, Department of Civil Engineering, University of Arkansas and President of NSPE, wrapped up any loose ends from the session by addressing a number of key points. He suggested using the outcome measures developed for advanced level accreditation on baccalaureate programs. Perhaps one of ABET's problems is that it does not communicate very well. Design is an ASCE problem since they are the ones who should tell program visitors what it is. Relative to the "shortage" problem, there is no NSF document on what industry thinks they will need in the future; rather, things are based on student data. Walt went into considerable detail relative to professional registration, including what it is, why there is no universal registration, and the new (October 1990) specifications for the exams.

Symposium on International Engineering Practice

Session Summary

by Alan L. Prasuhn
Lawrence Technology University

The three presentations dealt with the role of U.S. and Canadian civil engineering in the international arena as the European Community evolves and as changes take place in Eastern Europe. Both implemented and

proposed cooperative agreements between the U.S. engineers and overseas counterparts were discussed. The changes which are occurring will significantly affect and influence not only the practice of engineering, but educators and engineering education as well.

The session provided a very thorough presentation of what is happening in our rapidly changing world, the progress which has been made in international engineering cooperation, and problems facing the engineering community. The underlining goal of the U.S. efforts is to ensure the international acceptance of qualified U.S. engineers. There are many challenges ahead, but also unlimited opportunities.

Canadian Free Trade Agreement

Robert C. Gibson of Clark, Nexsen, Owen, Barbieri and Gibson

Engineering is attempting to respond and react to the recently ratified U.S. - Canada Free Trade Agreement. One area of contention pertains to engineering registration. Unlike most countries in the world, neither Canada nor the U.S. has a national registration, making international reciprocity difficult. Progress is underway toward the recognition of equivalency of engineering degrees among the U.S., Canada, Australia, Ireland, New Zealand and the United Kingdom. Problems also remain in other areas such as professional experience, standards of practice, codes of ethics, and professional liability, to name a few. The U.S. has established a Council for International Engineering Practice to interface with the Canadian Council for International Engineers in the implementation of the Free Trade Agreement.

Central and South America - UPADI

David R. Reyes-Guerra, ABET

Mr. Reyes-Guerra was unable to attend due to serious injuries suffered in an airplane accident. Comments were made by Walter LeFevre in his place. Progress has been made toward international cooperation in this area as well. The most recent meeting of UPADI (Federation of Pan-American Engineering Associations) was held in Havana. A great interest was shown in forming a Pan-American accreditation group similar to ABET.

Europe 1992 and FEANI

E. Walter LeFevre, University of Arkansas

FEANI (Federation Europeenne d'Associations Nationales d'Ingenieurs) has been charged by the European Economic Community to develop procedures for free interchanged and reciprocity among 21 countries of Western Europe, including Hungary. ABET has signed an agreement with FEANI establishing the equivalency of the European engineering degree to the U.S. ABET-accredited graduate with the EIT, for purposes of recognizing the entry level into the engineering profession. FEANI is moving forward, albeit slowly.

CALL FOR PAPER

The next issue of Civil Engineering Education will be published in spring 1991. Papers are encouraged in areas such as engineering design in the curriculum, curriculum innovation, curriculum content innovation, significant new instructional delivery systems, resource linkages with industries and other universities, et al. The deadline for submitting papers for possible publication is February 15, 1991. Please submit them to:

*Dr. Colby V. Ardis, Editor
Civil Engineering Education
Southern Ill. Univ. - Edwardsville
School of Engineering
Edwardsville, IL 62026-1804*

The fall issue of Civil Engineering Education (Vol. XII, No. 2) was not published. The associate editors felt that only two of the six papers submitted were essentially ready for publication. We expect these two papers to appear in the spring issue after minor revisions. The other four authors were invited to resubmit their papers for further attention after considering the changes suggested by the associated editors.

EXAMINATION QUESTIONS FOR PROFESSIONAL REGISTRATION

The National Council of Examiners for engineering and surveying (NCEES) prepares and scores the examinations for engineering and surveying. Questions are in both essay and multiple choice formats. These questions are prepared by professional engineers and land surveyors.

This year E. Walter LeFevre is Vice-Chair of the civil/sanitary/structural professional engineering examinations. If you wish to participate in question preparation, please contact Walt at:

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Elections here again

It is time to vote for the CE Division's 1991-1992 officers. The ballot for voting is on the last page of this newsletter. Please cast your vote and return it as soon as possible, and no later than February 15, 1991. Short biographies of the candidates follow.

Chair Candidate

Edward S. Reitz

Edward S. Reitz is associate professor of Civil Engineering at City College in New York. He has been a member of ASCE since 1955; a member of ASEE since 1965; ASEE Campus Representative since 1973; chairman of Committee No.2, CE Division; Middle-Atlantic Section Chairman 1985-1988, and a member of the CE Division Board, 1987 to date. Dr. Reitz has presented papers at ASEE Annual Conferences and at the ASCE Education Conference held at the University of Wisconsin, Madison. He is a registered professional engineer and active in P.E. review courses, ASCE student chapter activities, Tau Beta Pi, and student retention efforts on the City College campus.

Vice Chair Candidates

Fred Beaufait

Fred Beaufait is Dean of Engineering at Wayne State University in Detroit. Since earning his Ph.D. at Virginia Polytechnic Institute in 1965, Fred has been on the faculty at Vanderbilt University and West Virginia University. He has held the following positions with ASEE; Southeastern Section Chairman of Young Faculty Delegates; Activities Coordinator for 3 years at Vanderbilt; Southeastern Section-Civil Engineering Division Vice Chairman; Civil Engineering Division Secretary Treasurer 1979-82 and Editor of Division Newsletter 1982-1985; Editor CIVIL ENGINEERING EDUCATION for Civil Engineering Division 1-85 to 8-86; Director, Engineering Research Council 85-87; Chairman, Engineering Research Council FORUM, 1987; North Central Section Board of Directors, 1987 to present; Faculty Pipeline Task Force, 1988 to present. Fred is also active in ASCE, ACI, Order of the Engineer, NSPE and ABET.

Robert Henry

Robert M. Henry is an Associate Professor in Civil Engineering at

the University of New Hampshire. He joined the Department of Civil Engineering in 1980 after receiving his Ph.D. from the University of Pennsylvania. He is a registered professional engineer and has worked for several structural engineering consultants in Pennsylvania, New Jersey and New Hampshire.

Bob is a member of the ASCE Technical Council on Computer Practices (TCCP) Education Committee (secretary 1989, vice-chair 1990). In addition, he has reviewed papers for several ASCE journals and for the ASEE Civil Engineering Division Journal. This past April has been a co-chair of the Computer Track at the ASCE National Forum on Education and Continuing Development held in Las Vegas.

Bob's involvement with ASEE began in 1984. In 1986 he received the DOW Outstanding Young Faculty Award at the ASEE Conference in Cincinnati, chaired sessions at the 1987, 1988, and 1989 ASEE national conferences, and was elected as one of the three directors of the Civil Engineering Division in 1987.

Directors Candidates

Walter LeFevre

Walter LeFevre is Professor of Civil Engineering at the University of Arkansas in Fayetteville. He has taught at Texas A&M, Texas Tech and Oklahoma State universities and has been at the University of Arkansas for 23 years. Dr. LeFevre serves as a member of the Accreditation Board for Engineering and Technology (ABET) and is on the Task Force on Fundamentals of Engineering

Exam Review. He has served as vice president of the Southwest Region of the National Society of Professional Engineers and as chairman of Professional Engineers in Education. He has served as president and national director of the Arkansas Society of Professional Engineers and was named Arkansas' Engineer of the Year in 1980. He was NSPE 1989-1990 president and as one of the three directors of the Civil Engineering Division in 1987.

Anis Farah

Anis Farah is Professor of Engineering at Laurentian University in Sudbury, Canada which he joined in 1968. He graduated with a B.Sc. degree from Queen's University of Belfast, M.A. Sc. degree from the University of Toronto, and a Ph.D. degree from the University of Waterloo. He is a member of ASEE, ASCE, CSCE, EIC, Sigma Xi, and APEO. He is also a member of two technical committees of ACI, Safety and Deflection, and is chairman of two subcommittees. From 1979-82 he acted as a consultant on a major project for the Royal Commission on The Northern Environment set up by the Ontario Government. For several years, Dr. Farah was chair of the Committee on Computer Applications of the C.E. division of the ASEE, and chair of the Computer advisory Committee at Laurentian University. Currently, he is a member of the Lifeline Earthquake Investigation committee of ASCE, and is associate editor of the Journal of C.E. Education of ASEE.

The George K. Wadlin Distinguished Service Award
was presented to
Ron Eck, University of West Virginia

The ASEE Best Paper Award for 1990
was presented to
Roger K. Seals, Louisiana State University
Marry E. Tittlebaum, Louisiana State University

**ASEE CIVIL ENGINEERING DIVISION
BALLOT
Officers for 1991-1992**

CHAIR: (vote for one)

Edward S. Reitz

(write in)

VICE CHAIR: (vote for one)

Fred W. Beaufait

Robert M. Henry

(write in)

DIRECTOR: (vote for one)

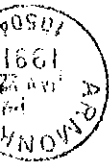
Anis Farah

E. Walter LeFevre

(write in)

Return ballot by February 15, 1991 to

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Lawrence, KS 66045



Tom Mulinazzi
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