

# AUSTRALASIAN ASSOCIATION FOR ENGINEERING EDUCATION

## NEWSLETTER

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*The 8th Annual Convention and Conference of the Australasian Association for Engineering Education (AAEE) will be held at the University of New South Wales (UNSW), in Sydney, between 15 and 18 December 1996, with Professor Mark S. Wainwright, Dean of Engineering and President of the AAEE, chairing the Conference. The AAEE President and Members of the AAEE Executive Committee cordially invite you to attend the Convention and Conference. The picture above shows an aerial view of the UNSW.*

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## 8th ANNUAL CONVENTION AND CONFERENCE

### *KEEPING PACE WITH SOCIAL AND TECHNICAL CHANGE*

#### AN INVITATION TO ATTEND THE CONFERENCE

Venue: The University of New South Wales, Sydney, Australia

Dates: Sunday 15 to Wednesday 18 December 1996

Conference General Chair: Professor Mark S. Wainwright

Program Committee Chair: Professor Ian Morrison

On behalf of the Organising and Program Committees we have great pleasure in inviting you to attend the 8th AAEE Annual Convention and Conference at the University of New South Wales. Over the past seven years the conference has become firmly established as the premier meeting on engineering education in the region, and has increasingly received international recognition. As in the past, the 8th AAEE Conference provides us with the opportunity to share ideas and experiences for the benefit of our clients, the undergraduate and postgraduate students in our institutions.

The Program Committee has arranged an excellent program of more than 100 papers, which include invited keynote and plenary addresses. The papers have wide ranging appeal to all of us involved in engineering education and will stimulate discussion on how we can provide programs of teaching and learning that will ensure that engineering education in Australia is world-class. The contributed papers cover topics including:

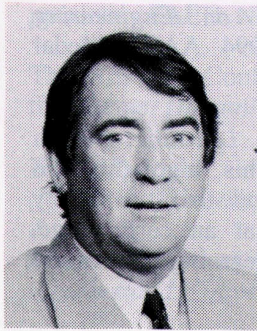
- \* Resource-based learning in engineering courses
- \* Contribution of new technologies to teaching and learning in engineering
- \* Gender issues in engineering education and the profession
- \* General issues in engineering education
- \* Teaching professional ethics and the social impact of technology
- \* Quality assurance in engineering education
- \* Engineering management education
- \* Continuing engineering education
- \* Teaching engineering science
- \* International experience and perspectives in teaching engineering
- \* Interface between industry and engineering courses
- \* Innovations in engineering curricula
- \* Environmental engineering education
- \* Learning styles in engineering education

As in the past, the Program Committee has organised an event that includes ample time for discussion and sharing of ideas during the three days of technical sessions and panel discussions. This, of course, will not be our only opportunity for sharing ideas. The Organising Committee has provided an excellent social program which commences with drinks on Sunday evening, continues on Monday evening with a cocktail reception, and culminates with a harbour cruise dinner on Tuesday. All will take advantage of Sydney as a premier venue for conventions. We are sure you will greatly benefit from, and enjoy, attendance at the conference.

We look forward to seeing you in Sydney, in December.



## FROM THE PRESIDENT



It is that time of year when Deans and Heads of Schools study with interest the University entrance preferences of students completing Year 12 of secondary school. Increasingly, we also concern ourselves with the number of applications and acceptances from international students. With decreasing numbers of students in Australian secondary schools wishing to enter universities, and those studying science and mathematics dwindling, the numbers of students qualified for entry to BE programs are decreasing. This will result in greater competitiveness between universities in attracting students into their programs. This will have several outcomes that should be looked at positively.

*Prof. M. Wainwright* Firstly, the quality of the degree programs must increase as students have a wider choice of institutions in which to study, and the competition will result in better teaching and learning strategies. Many degree programs that are not able to attract students will be disestablished and, as a result, some Faculties of Engineering will be disestablished. Rationalisation of teaching between universities in the major cities will be another outcome. Whilst the diversity of programs should not be diminished, sharing of facilities and cross-university teaching will occur. Students at one university will be encouraged to undertake electives at another.

The downturn in interest in degrees in physical, chemical and mathematical sciences is even more marked than in engineering. The greater dependence on *service teaching* of engineering students by Science Faculties to generate load and income will provide a greater incentive for quality of teaching and learning in the basic sciences. It is now more important than ever before that integrative mechanisms be introduced that will ensure that Science and Engineering Faculties work together to provide quality teaching and learning in all subjects. If this does not occur, the outcomes from the Review of Engineering Education to be released in December will be greatly diminished. The term *service teaching* should be removed and the science subjects should be made more relevant for our engineering students.

The 8th Annual Convention and Conference of the AAEE will provide an excellent forum for informal discussions on topics including recruitment of undergraduate students in these increasingly difficult times, as well as relationships with the providers of science subjects within the BE programs.

We look forward to seeing you at UNSW from 15 to 18 December.

*Professor Mark Wainwright*  
*Dean, Faculty of Engineering*  
*The University of New South Wales*  
*President of AAEE*

## SEFI ANNUAL 1996 CONFERENCE IN VIENNA

The 1996 Annual Conference of SEFI (Société Européenne pour la Formation des Ingénieurs), the European Society for Engineering Education, was held at the Vienna University of Technology from 11-13 September 1996. The Opening, on 11 September, was in the theatre that Mozart's *The Magic Flute* was first performed 205 years ago to the day. There were 85 papers presented at the conference and a registration list of 267 delegates, including four from Australia.

SEFI was created in 1973, so has a much longer history than the AAEE, with its objectives including *to contribute to the development of engineering education in Europe as well as to*



the improvement of engineering professionals. In 1996, SEFI had 175 individual members and 251 institutional members with an annual turnover of around \$A240,000 (AAEE is about \$A18,000). Among SEFI's publications is the *European Journal on Engineering Education*, whose Editor-in-Chief, Jean Michel, was the recipient of the 1994 AAEE Medal (International).

The theme of the Conference was *Educating the Engineer for Lifelong Learning*, which fitted in with the declared European Year of Lifelong Learning 1996. This highlights the challenge for individuals to achieve and maintain their own development and that of society through lifelong learning. Clearly, there is an important need for students, at an early stage, to realise the significance of, and their own responsibility for, lifelong learning to ensure this development and their own employability.

It is clear from attending such an international conference that similar concerns about engineering education, and similar initiatives in engineering education, to those in Australasia are also being carried out in other countries. These concerns and initiatives include the declining standard of mathematics in new students, the falling numbers in engineering, the low number of females in both undergraduates and staff in engineering, the low level of motivation of engineering students, particularly in first year, the role of assessment in student learning, and the ever increasing use of technology in teaching, learning and assessment.

The Conference parallel sessions were broken into 8 strands, including Lifelong Learning as a Continuum; Knowledge Skills Capabilities and Competencies for the Engineer; Preparing the Engineer for Lifelong Learning; Continuing Professional Development and Co-operation and Networking for Lifelong Learning, so that the conference theme, *Educating the Engineer for Lifelong Learning*, permeated much of the conference. This differs from other engineering education conferences with a theme sometimes bearing little relationship to the actual sessions.

At SEFI'96 the keynote papers were also related to the strands and themes, with some of the more significant keynote papers being:

- \* *Research and Reflection on Professional Practice as a Personal Goal in Continuing Education* by C Padfield, Cambridge University Programme for Industry, UK. Padfield suggested that universities need to move from teacher-centred to learner-centred education and that lecturers should facilitate a process of learning rather than teaching a subject.
- \* *The Computer as a Tool and as an Obstacle for the Practical Engineer* by H Zemanek, Technical University, Vienna. Zemanek, whilst covering the effective uses of computers in engineering, highlighted that the computer also raised some obstacles, such as the computer often removing the thinking of the engineer from reality. He suggested that in the future, when computers have saturated a society, we may need brain thinking zones where computers are admitted only for certain services and in cases of urgency!
- \* *Leadership in the Process of Change; A Role for Engineering* by W Phillips, University of Florida. Phillips questioned whether many PhDs are restricted to university positions because academic staff produce PhD graduates *in their own image*, and whether inter-disciplinary engineering degrees are the future, not the compartmentalisation into chemical, civil, electrical, mechanical etc.

Of particular significance, from an Australian viewpoint, were two presentations in the strand on *Preparing the Engineer for Lifelong Learning*. These were papers dealing with first-year, and were given by Doug Hargreaves of QUT (co-authored with John Liston) on motivating first year students, and by Caroline Baillie (formerly of Sydney University, now of the Imperial College, UK) on using first year to create a base for better learning in an engineering degree. Both papers were well received and generated informative discussion.



Incidentally, the book *Professional Engineering: Teaching for Better Learning, An Introductory Course*, co-authored by Caroline Baillie, was reviewed by David Parnham in the previous AAEE Newsletter.

The SEFI'97 Conference is to be held in Cracow, Poland, from 6-10 September 1997, under the theme *Humanities and Arts in a Balanced Engineering Education*.

Terry Berreen  
(Monash University)

&

Doug Hargreaves  
(Queensland University of Technology)

## A DISCUSSION DOCUMENT: AAEE TOWARDS 2000



AAEE has changed a lot in the years since it was formed, but not as much as the external world of higher education within which it operates. As we approach the tenth anniversary of AAEE, it is an appropriate time to institute a searching and open review of AAEE and a discussion of its future form and operation. This is just one input document.

### BACKGROUND

The AAEE was formed in December 1989 and it is now useful to review fundamentals based on:

- Prof. T.W. Cole      \*      the reality of the AAEE experience;
- \*      the changed university environment;
- \*      changed relationships with associated bodies;
- \*      changed industry.

Currently, AAEE has:

- \*      189 financial members, 96 non-financial members and 6 institutional members (comprising 73 academics);
- \*      annual cash turnover of the order of \$18,000;
- \*      a very effective Annual Conference;
- \*      newsletters and an electronic Bulletin Board;
- \*      Associated Journal (separate subscription) with 187 paid subscriptions;
- \*      Two prestigious Medals (Australasian and International) not limited to AAEE members.

This is in the context of:

- \*      about 2000 engineering academics across 36 faculties and approximately 150 engineering departments;
- \*      an almost unlimited, but totally untapped, industry pool;
- \*      a greatly enhanced university focus on the quality aspects of their teaching programs and the relevance of the graduate to the workplace;
- \*      an increasing involvement of the IEAust in educational delivery;
- \*      an increasingly common interest with the Australian Council of Engineering Deans;
- \*      an alignment with government policies in the education arena;
- \*      the imminent release of the Review of Engineering Education.

### MISSION:

The original mission was ... *to improve the supply and quality of those engineering skills*



*needed to develop and advance Australasia.*

I suggest that there is little reason to change this!

#### OBJECTIVES:

It is worth repeating the original broad objectives, which include to:

- \* Quantify and make more visible within Australasia the increasing need for specific advanced engineering skills.
- \* Increase the participation rates of high school leavers in engineering education and training, especially of women and non-traditional sources of students.
- \* Enhance the quality, relevance and performance of engineering education in Australasia.
- \* Promote the development and use of new teaching techniques and tools, and promote measurement of teaching effectiveness.
- \* Provide assistance to the engineering educators, especially to new members of the teaching staff.
- \* Make the Association the focal point for information on all aspects of engineering education within Australasia.
- \* Develop co-sponsorship of the Association by other engineering professional institutions and associations in Australasia.
- \* Develop global links with similarly minded organisations in other countries.

Again, I see little reason at all to modify these broad objectives. If anything, they are more relevant and admirable now than in 1989. (The writers of the constitution were very prescient people!)

#### STRATEGIES

The strategies to achieve these broad objectives MUST, however, be critically reviewed.

#### MEMBERSHIP

There are many potential target markets for AAEE, including:

- \* Engineering Academics (as well as service course providers) as individuals;
- \* Deans;
- \* Heads of Departments (of engineering and also *Learning Centres*);
- \* Industry;
- \* Students;
- \* The Engineering Profession;
- \* School students, teachers and career advisors;
- \* TAFE;
- \* Graduate Engineers for Continuing Education;
- \* Institutions - government and professional.

Currently, AAEE reaches less than 15% of academics in membership and, more or less, about the same number (not identical people) through the conference and journal.

Benefits of individual membership are not necessarily large: Newsletter and the *good feeling* of Membership. The Conference, Bulletin Board and other activities are all open to non-members.

AAEE has not had great success with Institutional membership.

However, possible alternatives do exist:



- \* Membership ONLY by DEPARTMENTS, with a capped fee for each department depending on size. For this, newsletters would go to all academics and others. This would be more attractive with some of the staff/department development activities outlined below.
- \* NO PAID MEMBERSHIP as such, just a Liaison Group and Secretariat to organise the annual Conference and Newsletters funded by a first call on Conference subscriptions and donations from professional bodies and industry. (Similar to the ILG-EE and the World Conferences). There is left open the possibility to create Honorary forms of membership for those contributing to the activities and objectives.

A suitable TARGET could well be for AAEE to have direct contact (*membership*) with at least 60% of academics and departments by the end of 1998.

## FINANCES

If the AAEE is to achieve its objectives, it must have strategies in place to increase its cash resources. A minimum target might be \$50,000 per year. This represents:

- \* for a subscription of \$40 each for 60% of academics - \$48,000;
- \* for a department (AVERAGE) subscription \$500 for 60% of departments - \$45,000;
- \* for an annual conference of 200, a subscription levy of \$50 - \$10,000.

As far as donations are concerned, note that the IEAust provides a \$20 subvention for IEAust members indicating AAEE as the Society of first choice. There should be no reason for this NOT to continue even if individual membership is discontinued. This could raise several thousand dollars.

A suitable TARGET could well be for AAEE to have an income base of at least \$30,000 by the end of 1998.

## JOURNAL

The Journal is a very important and visible manifestation of the professionalism of AAEE and its constituency. Of some concern is the low number of subscriptions and lack of penetration of libraries. It should be as widely disseminated as possible. Decisions need to be made on the relative roles of a paper version and publication via the Web.

## ACTIVITIES

Many activities and facilities can be envisaged to enhance achievement of the broad goals. Some which might be considered include:

- \* mid-year residential workshop courses for younger/newer members of staff on teaching and learning and facilitated by excellent more senior lecturers drawn Australasia-wide;
- \* workshops for department academic leaders on quality issues and strategic planning of university departments;
- \* training workshops on specific learning concepts and tools;
- \* clearinghouse for departmental strategic plans and operational procedures and computer-based administrative tools;
- \* provision of administrative support for other groupings including the Australian Council of Engineering Deans and, perhaps, department-specific groupings such as the meetings of Department Heads and/or Professors;
- \* co-ordination of Australasia-wide support for highschool activities enhancing the quality and flow of engineering undergraduates;
- \* organisation and running of an Engineering School for high school students, not dissimilar to the International Science School run by Physics at Sydney University.



## ***The Application of Computer-Assisted Training Programs in Engineering Education***

**edited by Zenon J Pudlowski and Roger G Hadgraft**

This is the third volume in the *Monash Engineering Education Series*, established by the UNESCO Supported International Centre for Engineering Education (USICEE) in the Faculty of Engineering at Monash University, Melbourne, Australia.

Publication of *The Application of Computer-Assisted Training Programs in Engineering Education* is the culmination of a successful UNESCO sponsored training course designed for young academic teachers conducted by the USICEE in November 1994. Twelve academics from eight countries in South-East Asia and the Pacific region attended the course which focused on fundamental principles of the teaching/learning process, development of computer-assisted teaching programs and hands-on training in the application of a wide range of the latest computer software utilised in engineering education.

Development of the course was a collaborative effort on the part of several academics from various units within Monash University, carried out under the leadership of the USICEE. The material was then further refined for publication, based on research on the effectiveness of the course conducted at its conclusion by USICEE.

This course, and indeed this book, are the direct result of a UNESCO initiative to disseminate highly specialised teaching materials to science, technology and engineering educators worldwide. The book is therefore highly recommended to everyone interested in the most recent innovations in computer-aided teaching and learning.

To obtain a copy of this book (@ \$A70), draw a cheque in favour of Monash University - USICEE, adding \$A10 for postage within Australia and \$A20 for overseas postage, and send to: USICEE, Faculty of Engineering, Monash University, Clayton, Victoria 3168, Australia.  
Tel: +61 3 9905 4977 Fax: +61 3 9905 1547.



### **3rd East-West Congress on Engineering Education**

under the theme:

#### ***Re-Vitalising Academia/Industry Links***

edited by Zenon J. Pudlowski

The *3rd East-West Congress on Engineering Education* was held at the Gdynia Maritime Academy, Gdynia, Poland, between the 15th and 20th September 1996. It brought together more than 170 delegates from academic institutions from 33 countries, east and west, under the general theme of *re-vitalising academia/industry links*. The Congress papers are assembled, in order of presentation, in this comprehensive volume.

Two principal issues at the centre of the global dialogue between engineering educators are furthered in the papers collected in this volume. The first concerns common problems within the discipline in an age of rapidly changing technology. The second issue involves the restructuring of university engineering education in Central and Eastern Europe, in the context of the new economic conditions prevailing in the former socialist block. This latter can properly be considered to be an underlying theme, objective in fact, of the Congress. Australia's participation, second only to that of the host nation itself, is evidence of the USICEE and AAEE's success in fostering the international involvement of engineering educators in Central and Eastern Europe.

To purchase a copy of the Proceedings, make out a cheque for \$A100, adding \$A10 for postage within Australia, and \$A20 for overseas postage, payable to Monash University - USICEE, and send to: Administrative Officer, USICEE, Faculty of Engineering, Monash University, Clayton, Victoria 3168, Australia. Tel: +61 3 990-54977 Fax: +61 3 990-51547



The organisation and running of specialist and training meetings in the middle of the year would permit more institutions (especially the more geographically remote) to be involved as AAEE hosts.

## REVIEW OF ENGINEERING EDUCATION

The draft version of the review which was issued for comment contained just one simple mention of the Australasian Association of Engineering Education by name. The draft did not reveal that AAEE is the second largest such body in the world and has a specific focus on the engineering education process in quite clear distinction from the focus of the organisers of the review - IEAust, ACED and ATSE. The report does reveal the central role played by the American Association for Engineering Education (AAEE) within the USA.

The point which was made in a submission commenting on the draft review was that Australia is in an excellent position to build on the start which AAEE has made in improving the focus on the quality of the education process and curriculum within Australasian engineering undergraduate education. And AAEE has done this without significant external support.

The potential of AAEE to carry forward the intent of many of the Review's recommendations exceeds that of the often inappropriate IEAust, ACED and ATSE. It could become the central focus for improvements in the engineering education process and curriculum in Australia.

## NEXT STEPS

This article is simply meant to commence the process of discussion and strategic planning which must take place over the next year.

At the Annual General Meeting at UNSW in December, a period of open discussion on the future of AAEE will be introduced. We look forward to the inputs and assistance of all members in order to make AAEE the powerful influence and support for engineering education of which it is capable.

*Professor Trevor W. Cole*  
28 October 1996

## A 1996 ENGINEERING 2000 AWARD TO DR JEAN ARMSTRONG



*Dr Jean Armstrong*

Jean Armstrong, senior lecturer in engineering at La Trobe University, and a member of the AAEE Executive, has been honoured with a 1996 Engineering 2000 Award for the Advancement of Women in Engineering.

These Awards, which are sponsored by the Institution of Engineers Australia and were announced this year during IEAust's National Conference in Darwin, are open to industry, educational institutions and individuals who have encouraged the participation of, and have helped to advance and retain women in engineering. The award won by Jean was



the Community Sector Personal Initiative Award for her *commitment to encouraging and supporting women engineers*.

Jean Armstrong has been involved in the advancement of women in engineering over a period of 25 years through a number of activities which have included acting as a role model, pursuing research on women in engineering issues, work on gender inclusive engineering education and lobbying to encourage changes to policies which disadvantage women engineers. The very positive results of Jean's work have included involvement in the introduction of the *Women in Engineering Forum*, which now precedes the AAEE Annual Conference and which, in Melbourne last year, received sponsorship from eleven different bodies and was attended by 150 people, and the forming of an e-mail network for information about scholarships and job vacancies. Jean has been particularly active in encouraging women postgraduates in engineering and, for example, was responsible for the amendment of conditions for postgraduate scholarships awarded by the Australian Telecommunications and Electronics Research Board to allow part-time study for those with family responsibilities.

Jean has given prominence to such matters through presenting papers at the AAEE Annual Conferences in 1990, 1993, 1994 and 1995, as well as chairing a panel session on *Women in Engineering* at the 1995 AAEE Conference. She is to be congratulated on receiving this Award and for her past and continuing work in this challenging and important area of engineering education.

Of interest to AAEE members: in the same Awards, is that Central Queensland University won the higher education category for its ENGender change program, and the University of Ballarat was highly commended in the same category.

Terry Berreen  
(Monash University)

#### FORTHCOMING CONFERENCES ON ENGINEERING EDUCATION

**India, Madras, 3-4 March 1997** - International Conference on Engineering Education - An Asian Perspective. Organised by: The Indian Institute of Technology. Contact person: Prof. A. Janaki Rao, Department of Civil Engineering, College of Engineering, Andhra University, Fax: +91 891 555-547 or 552-804.

**England, Sheffield, 24-27 March 1997** - 2nd Working Conference on Engineering Education, Professional Standards and Quality in Engineering Education. Organised by: The Engineering Education Research Group of Sheffield Hallam University. Contact person: Dr M. Bramhall, Tel: +44 114 253-3255, Fax: +44 114 253-3306, e-mail: ENG.EDF@shu.ac.uk

**Denmark, Odense, 5-9 May 1997** - 2nd International Symposium of the Association of European Civil Engineering Faculties. Organised by: Department of Civil Engineering, The Engineering College of Odense, Odense, Denmark. Contact person: Prof. Soren A. Hansen, Tel: +45 6613 0827, Fax: +45 6611 7803, e-mail: s-a-hansen@bret.iot.dk

**Russia, St Petersburg, 10-12 June 1997** - International Conference on Engineering Education. Organised by: The Russian Association for Engineering Education (RAEE) and the St Petersburg Mining Institute, in collaboration with the USICEE. Contact person: Prof. M.R. Liberzon, Tel: +7 095 200-2727 or 200-5032, Fax: +7 095 200-2606 or 209-6010, e-mail: mark@stc.asdi.msk.su or mark@inteh.msk.su

**Sweden, Stockholm, 14-17 June 1997** - Teaching Science for Technology at Tertiary Level. Organised by: Centre for Educational Research and Development, Royal Institute of Technology, Stockholm, Sweden. Contact person: Dr Soren Tornkvist, Tel: +46 8 790-8429, Fax: +46 8 790-6030, e-mail: tornkv@admin.kth.se



**Australia, Melbourne, 6-9 July 1997** - 1st Asia-Pacific Forum on Engineering and Technology Education. Organised by: USICEE, Monash University, Clayton, Melbourne, Australia. Contact person: Assoc. Prof. Zenon J. Pudlowski, Tel: +61 3 990-54977, Fax: +61 3 990-51547, e-mail: ZJP@eng.monash.edu.au

**Philippines, Manila, 17-20 August 1997** - 5th International Conference on Engineering Education. AEESEAP. Organised by: College of Engineering, University of the Philippines, Diliman, Quezon City 1101, Philippines. Contact person: Dr Jonathan D.L. Salvacion, Tel/Fax: +632 928-3144 or +632 922-4714, e-mail: jonats@engg.upd.edu.ph

**Republic of South Africa, Cape Town, 8-11 February 1998** - First Pan-African Forum on Engineering and Technology Education: Building Human Resources for Africa. Organised by: The University of Cape Town, Cape Town, in collaboration with the USICEE. Contact person: Assoc. Prof. Kevin Rochford, Tel: +27 21 650-2763, Fax: +27 21 650-3489, e-mail: kr@education.uct.ac.za

**Poland, Cracow, 6-11 September 1998** - Global Congress on Engineering Education, incorporating the *5th World Conference on Engineering Education*, the *4th East-West Congress on Engineering Education* and the *1998 International Congress of Engineering Deans and Industry Leaders*. Organised by: USICEE, Monash University, Clayton, Melbourne, Australia. Contact person: Assoc. Prof. Zenon J. Pudlowski, Tel: +61 3 990-54977, Fax: +61 3 990-51547, e-mail: ZJP@eng.monash.edu.au

## USICEE NEWS

Much has changed in the Australian academy since the March federal election. Their success in the election gave the Liberal National Party coalition a strong mandate for carrying out policies to restructure the Australian economy and, in consequence, to change the entire social infrastructure. After 13 years of Labor government that resulted in an enormous national debt, the Australian population was eager to pass the management of the country on to other hands and, hence, was willing to make some sacrifices in order to improve the balance of payments. The new government, however, has taken its mission so seriously that several sectors of the community are going to pay much too heavy a price. The hardest hit by the new budget are obviously the assistance programs for Aborigines, national education and foreign assistance programs.

The USICEE's level of activities depends very much on support grants, and these will now be very difficult to obtain. One of the USICEE's immediate losses in this area followed from the recent decision of the Coalition Government to axe the Australian Program of Training for Eurasia (APTEA), which apparently was Australia's only program aimed at assisting new democracies in Central and Eastern Europe in their struggle to restructure their education systems. It has always been our conviction that a Liberal government would commit its support to democratic movements and democratic ideas, especially where such support is of tremendous importance.

The APTEA Head of Mission Fund (HOM) enabled the USICEE, during the past two years, to pursue two inexpensive and highly successful projects, involving 11 countries in Central and Eastern Europe. The objective of these two projects has been to transfer information on engineering education from Australia, thereby assisting academics at technical universities in their endeavours to restructure and improve their engineering education. Over 700 individual academics particularly involved in engineering education were identified and received our publications. Also, over 70 libraries in those countries received books, conference proceedings, journals and other printed materials published by the USICEE, thereby establishing much needed collections on engineering education. It was also envisaged that the



projects would assist these countries in their efforts to develop market-based economies by means of the promotion of specialist skills which, in turn, would foster business contacts between developed countries and countries in the region.

On the international arena, the important goal of the USICEE for the period 1997/98 is to place emphasis on the development of human resources in science, technology and engineering education in Africa. A comprehensive plan of action has been set up to pursue this objective. Some of the activities envisaged under this plan have been in place for some time already.

In accordance with UNESCO's resolve to place increasing emphasis on the development of human, technology and infrastructure resources in African countries, the USICEE, under the general direction of UNESCO, has begun work on a number of important initiatives for Africa. An *Australian-Nigerian Library on Engineering Education* has been established at Lagos State University, and the USICEE has donated books, conference proceedings, journals and other material to this library.

The USICEE Director has contacted a significant group of African engineering academics, and arrangements are well in place for the establishment of an Association for Engineering Education in Africa (AEEA). It is expected that the USICEE will assist in the publication and distribution of the AEEA Newsletter, at least in its early stages.

The USICEE intends to coordinate the transfer of engineering education publications to as many African academic libraries as possible, and will also establish a *Pan-African Conference on Engineering Education* to be held at the University of Cape Town, South Africa, in February 1998. This Conference will offer important input into the development of the AEEA.

The Director is confident that the USICEE's African initiatives will prove to be as successful as those undertaken over the last two years for universities in Central and Eastern Europe.

### **UNESCO Committee**

On 3 June 1996, Dr Federico Mayor, Director General of UNESCO, drafted a memorandum in which he advised that the General Conference and Executive Board had requested that he ensure the involvement of UNESCO in essential long-term activities relating to the strengthening of engineering education in member states. In addition, it was requested that special emphasis be placed on the needs of developing countries. Accordingly, Dr Mayor has decided to establish a UNESCO International Committee on Engineering Education (ICEE) whose function will be to advise him on relevant issues involved in these areas of UNESCO activity.

The International Committee will replace the UNESCO Steering Committee on Technical Human Resources Development, and comprises a number of distinguished engineering academics. Our members will be pleased to learn that AAEE 1st Vice-President & Executive Director, A/Prof. Z.J. Pudlowski, was also appointed to the UNESCO ICEE.

Dr Mayor has established the following priority areas for the ICEE: investigation into the educational applications of technological developments such as the Internet, distance learning and electronic publishing, and the tendering of advice on issues relating to the recognition and equivalence of engineering degrees and the accreditation of engineering programs.

### **Global Congress**

The next couple of years will witness some exciting developments in international engineering education. The USICEE is planning a *Global Congress on Engineering Education*



to be staged in Cracow, Poland, between 6 and 11 September 1998. This Congress will incorporate three other major international gatherings: the *4th East-West Congress on Engineering Education*, the *5th World Conference on Engineering Education* and the *1998 International Congress of Engineering Deans and Industry Leaders*.

The Director has invited several leading international organisations involved in engineering and technology education to become Global Congress co-sponsors.

A number of regional conferences on engineering and technology education will be organised as forerunners to the Global Congress. This series of conferences will seek to build up linkages among international engineering educators, to address prevailing problems and issues falling within the compass of engineering and technology education and, more broadly, to raise the profile of engineering and technology education in individual regions. Emphasis in these initiatives will be placed on Africa, Central and South America, the Arab world, the Asia-Pacific and countries of the former socialist block.

### APHEN-EE

The Centre is continuing to expand its database of contacts for the Asia-Pacific Higher Education Network (APHEN-EE), and is looking forward eagerly to the *1st Asia-Pacific Forum on Engineering and Technology Education* to be staged between 6 and 9 July 1997 at Monash University, under the Honorary Chairmanship of Professor Michael L. Brisk, Dean of the Monash Faculty of Engineering. To date over 40 proposals for the Forum have been received. Interested parties may request from the Centre a copy of the call for papers, which was circulated earlier this year, and may join the APHEN-EE database through the USICEE electronic mailing lists.

Proposals for contributions to the Forum should be received by the USICEE by the end of 1996. The *Asia-Pacific Forum* will be one of a series of important regional gatherings of engineering and technology educators that will take place in 1997 and culminate in the *Global Congress on Engineering Education* to be held in September 1998 in Cracow, Poland. AAEE members are encouraged to propose papers and attend the Forum.

### 3RD EAST-WEST CONGRESS ON ENGINEERING EDUCATION

The *3rd East West Congress on Engineering Education* was held in Gdynia, Poland, between 15 and 20 September 1996, and was attended by over 170 delegates from academic institutions of 33 countries. Australians formed the second largest national group; Poland, the host country, sent the largest delegation of any country. The Congress was included in the official program of celebrations of the 70th anniversary of the foundation of the city of Gdynia.

Two major addresses were presented at the Congress Opening Ceremony. Professor Adnan Badran, Deputy Director-General of UNESCO, spoke of *Current Developments in Engineering Education at UNESCO and Their Relevance to the Situation in Central and Eastern Europe*. The second address was delivered by Professor Michael L. Brisk, Dean of the Faculty of Engineering at Monash University. Professor Brisk offered his insights on *Engineering Education for 2010: The Crystal Ball Seen from Down Under (An Australian Perspective)*.

In addition, various keynote addresses were delivered during the course of the Congress, expanded versions of which will be published in a forthcoming issue of the *Australasian Journal of Engineering Education*. Over 100 regular paper presentations were delivered, covering almost all aspects of engineering education and industrial training. These are included in a hardbound volume of Congress Proceedings, copies of which are available for purchase from the USICEE.



The Congress focused its deliberations on the theme *Re-vitalising Academia/Industry Links* an appropriate point of departure given that several countries in the Central and Eastern European region are at present enjoying a period of economic and academic expansion and restructuring. A particularly encouraging outcome of the Congress is the evidence of a burgeoning of interest in international engineering education among Central and Eastern European academics. We witnessed a significant increase in the number of Congress participants from this part of the world, as well as a clear improvement in the quality of academic papers submitted by these participants. Such important advances bear out the success of the Australian Program of Training for Eurasia (APTEA), through which the USICEE was able to coordinate the transfer of publications on engineering education to libraries and academics in Central and Eastern Europe.

Additionally, the USICEE was fortunate in being able to attract funding in order to facilitate the attendance at this year's Congress of about 80 engineering academics from Central and Eastern European countries. In view of the important role played by the USICEE's government-funded projects in stimulating international awareness of the importance of engineering education, the Federal Government's decision to terminate APTEA beyond this year comes as a great disappointment. The USICEE Chairman, Professor Peter Darvall, has written to the Prime Minister, asking him to reconsider the demise of APTEA.

The Congress received several support grants. The most significant of these included a grant from the APTEA Head of Mission Fund, through the generosity of His Excellency M. Jonathan Thwaites, Australian Ambassador to Poland, the Czech Republic and Slovakia, and an Australian Counterpart Fund grant administered jointly by the Australian Embassy in Warsaw and the Council of Ministers of the Republic of Poland through the Directorate of Education, Science, Environment and Social Programmes. Dr Badran generously made available a UNESCO grant enabling the attendance at the Congress of academics from developing countries. The Congress organisers express their appreciation to the granting bodies for their support and encouragement.

For the first time, the USICEE has presented awards in celebration of academic excellence. These were presented to the authors of the papers included in the volume of Congress Proceedings that were considered, by popular vote of the Congress participants, to offer the most significant contribution to the field of engineering education.



*Prof. Yolanda Guran receives the USICEE Diamond award from Prof. Michael L. Brisk, Dean of Engineering at Monash University.*

The five award categories were Diamond, Platinum, Gold, Silver and Bronze, and were presented to the following outstanding authors:

- \* Diamond - *Woman in engineering in the age of information technology* by Prof. Y. Guran (USA).
- \* Platinum - *Issues related to the use of peer assessment in engineering courses using a problem-based learning approach* by Mr I.D. Thomas, Mr R.G. Hadgraft & Mr P.S. Daly (Aust.).
- \* Gold - *Building creative, people-oriented departments* by Mr R.G. Hadgraft (Aust.).
- \* Silver - *A hypertext-based interactive teaching system for designing integrated circuits with VHDL* by Mr J. Frickel, Mr U. Heinkel, Mr M. Padeffke & Prof. W.H. Glauert (Germany).
- \* Bronze - *A comparison of the problems facing higher education in the United Kingdom, Ukraine and Australia* by Mr T.G. Oliver (UK), Mr K. Travers (Aust.) & Prof. A.A. Minayev (Ukraine).



It should be mentioned that the paper titled *USICEE - Building East-West bridges through engineering education* by A/Prof. Z.J. Pudlowski and Prof. P.LeP. Darvall (Aust.), had also been voted for the award, but was withdrawn from the competition by the authors.

It is pleasing to note the continuing involvement of Australian academics in international engineering education; once again the Congress presentations of the Australians were of a high standard, and demonstrated Australia's position as a world leader in many facets of engineering education. The USICEE awards are the best evidences of our achievements.



*The picture above shows the Congress General Chairman, A/Prof. Zenon J. Pudlowski, presenting the opening address at the 3rd East-West Congress on Engineering Education. The Congress was held at the Gdynia Maritime Academy in Poland, between 15 and 20 September 1996. Seated are (l-r) Prof. J. Lisowski, Prof. M.S. Wainwright, Prof. M.L. Brisk, His Excellency M. Jonathan Thwaites, Prof. A. Badran and Prof. B. Mitin.*

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For details of the Association and membership applications write to the Editor:

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*Association members and academic institutions are invited to contribute to the Newsletter on matters relating to membership and engineering education.*

*Send contributions to the Editor at the address above.*