



# UNESCO International Centre for Engineering Education



## Newsletter

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### From the Director

On 7 July 2001, I celebrated the 20<sup>th</sup> anniversary of the day when I commenced my employment in Australia, when I started in the then School of Electrical Engineering at the University of Sydney. Indeed, I have been fortunate in my entire professional life to be employed by three outstanding educational institutions; two of them being so-called *sandstone* universities. The first institution is Jagiellonian University of Cracow, Poland, established in 1364. The other is the University of Sydney, founded in 1850, where I spent 12½ years, between 1981-1993.

Then comes Monash University, which commenced its teaching in 1961. Although a relatively new institution, Monash University can be characterised as one of the most dynamic, advanced and global institutions in the world. There are seven campuses on Australian soil, one in Kuala Lumpur, Malaysia, and one in Johannesburg in South Africa. These are complemented by dedicated centres in London, Prato in Italy and Potsdam in Germany. It can clearly be seen from this how Monash is gradually stepping up its campaign to operate on all continents. The work of the UICEE, and my position as its Director, has to be seen against this background, where the geographical expansion and the modern entrepreneurial approaches to its management are fully supported by the University Management Team.

The past 20 years of my work may be characterised as a constant and perpetual pursuit of excellence through a wide range of activities with the philosophy of total commitment, when many, many working weeks exceeded 80 office hours.

However, during these 20 years, I was indeed very fortunate to encounter, and on several occasions befriend, outstanding Australian academics. My first *mentor* in Australia was the distinguished scientist and eminent academic the Emeritus Professor Hugo Karl Messerle, who was then the Head of School of Electrical Engineering at the University of Sydney. I was able to absorb and learn from Hugo the *skills of the trade* of how to run an academic unit efficiently and skilfully, and, even more importantly, how to generate support funds to survive in this difficult world. Then, I have had the pleasure and privilege to work with such

outstanding academics and individuals as Prof. Trevor W. Cole (UniSyd), Prof. Peter LeP. Darvall, presently Deputy Vice-Chancellor at Monash University, and last but not least with Prof. Michael L. Brisk, Dean of the Faculty of Engineering, also at Monash University, who have provided me with their support and encouragement.

On this memorable occasion, I would like to express my sincere thanks and gratitude to the persons mentioned above, as well as to many others who have

influenced my professional career and personal development, for their kindness, friendship, support and above all patience. May God bless you all.

### Gottlob Frege Centre

June 6 saw the official signing of an agreement of partnership between the Hochschule Wismar – University of Technology, Business and Design, in Wismar, Germany, and the UICEE. Under the agreement, the Gottlob



The photo shows (r-l) Prof. Norbert Grünwald, Prof. Burckhard Simmen, Prof. Zenon J. Pudlowski and Prof. Dieter Schott after the signing of the Memorandum of Agreement.

#### UCEE Partners



Frege Centre has become a satellite centre of the UICEE, extending the network of satellite centres to seven.

It is envisaged that the partnership will facilitate a wide range of collaborative ventures to be carried out jointly by the two institutions, including the annual publication of a German issue of the *Global Journal of Engineering Education* (GJEE).

It is hoped that this new venture will further enhance the range of research and development activities of the German Network of Engineering Education, initiated in conjunction with the 2<sup>nd</sup> *Global Congress on Engineering Education*, held in Wismar in July 2000.

The Frege Centre was originally established in November 2000 by a group of 12 professors engaged in basic engineering education. The Centre seeks to strengthen, update and raise basic science education to an advanced international level in tertiary education.

The picture on the previous page presents the happy moment in the exchange of the signed Memorandum of Agreement by Prof. Burckhard Simmen, Rector of Hochschule Wismar, and Prof. Zenon J. Pudlowski, UICEE Director. Party to this are Prof. Norbert Grünwald, Dean of the Department of Mechanical and Environmental Engineering, and Prof. Dieter Schott of the Faculty of Electrical Engineering, both Co-Directors of the Frege Centre.

## UICEE World Transactions

The UICEE has established a new publication series called the *UICEE World Transactions on Engineering and Technology Education*, which seeks to fill the gap between conference transactions and journal papers. This will publish high quality international, fully refereed papers on engineering and technology education and cover a wide and diverse range of issues including case studies, regional and country issues, pedagogical issues, etc, thereby facilitating the transfer of information, expertise and research and development on engineering education and thus realising the UICEE's mission. The *UICEE World Transactions* will contribute to the publication of engineering education papers globally, essential for academic life and the continued growth and evolution in knowledge and understanding.

A definite need has been identified for the publication of refereed papers by engineering and technology educators

who are unable to attend conferences due to cost restrictions that inhibit international travel. Such cost factors can unfortunately lead to excellent papers being neglected and may result in grossly reduced involvement from less privileged nations. However, the *UICEE World Transactions* will counter this by providing a forum for engineering debate where authors will offset the production of publication costs, similar to conference registrations, but without the further time and travel expenses.

High quality will be maintained through peer referee evaluations by distinguished academics, language correction, editing, as well as standard formatting, as with all UICEE publications. Furthermore, it is envisaged that the authors

of the best three to five papers in each issue, based upon the referees' reports, may be invited to revise and expand their papers for inclusion in the UICEE's *Global Journal of Engineering Education* (GJEE).

A call for papers is made for the inaugural edition, with the deadline for submission of papers on 12 October 2001. Standard formatting details and submission forms, covering copyright, will be supplied on request. Please e-mail Mr Marc Riemer

on [marc.riemer@eng.monash.edu.au](mailto:marc.riemer@eng.monash.edu.au)

## Asia-Pacific Forum

The 3<sup>rd</sup> *Asia-Pacific Forum on Engineering and Technology Education* was held at the National Changhua University of Education (NCUE), Changhua, Taiwan, between 8 and 11 July 2001 with over 70 persons participating in the Forum.

An innovation at this Forum included involving the large number of postgraduate students from the NCUE who took advantage of this international Forum being held at their university and participated in the Forum. It was an excellent experience for distinguished international professors to have the opportunity to interact with postgraduate students. We hope that this format will be continued in future UICEE conferences.

The volume of Forum Proceedings included 46 fully refereed papers, of which over half were represented by overseas contributions.

Apart from the formal activities, the NCUE provided an excellent social programme. The hospitality received was exceptional and was certainly one of the best that a UICEE conference has ever experienced. It may be characterised



The photo shows (l-r) Prof. T-L. Kang, President of the NCUE in Changhua, Taiwan, the UICEE Director, and Dr Inna Cheremissina of the Tomsk Polytechnic University in Tomsk, Russia, engaging in the friendly atmosphere of the 3<sup>rd</sup> Asia-Pacific Forum banquet, which included old, traditional Chinese cuisine and strong beverages.

by old culture and Chinese tradition, and hence by personal, warm characteristics of the Taiwanese hosts. All overseas participants were astounded and overcome by the warmth of the reception in Taiwan.

In his welcoming speech, Prof. Tze-Li Kang, President of the NCUE, underlined the importance of such a meeting being held at this University, which is currently undergoing substantial expansion with the new College of Engineering being recently established under the deanship of Prof. David W-S. Tai. We wish to thank Prof. T-L. Kang and Prof. D.W-S. Tai, in particular, for the support received in the organisation of the Forum.

## Badge of Honour

On the occasion of the 3<sup>rd</sup> *Asia-Pacific Forum on Engineering and Technology Education* held in Changhua, Taiwan, the UICEE awarded Prof. David W-S. Tai the Silver Badge of Honour for *distinguished contributions to engineering education, outstanding achievements in the globalisation of engineering education through the activities of the Centre, and, in particular, for remarkable service to the UICEE.*

This was a pleasant and memorable occasion through which the UICEE recognised the enormous contribution that Dr Tai has made to engineering and technology education, locally and internationally.

It should be pointed out at this moment that Prof. David Tai's leadership of the School of Industrial Technology has resulted in several hundred postgraduate students who undertook projects leading to the award of Masters or doctorate. This would be regarded as an exceptional achievement in any respected university in the developed world.

Staff, students and associates of the UICEE congratulate Dr Tai on the occasion of receiving this prestigious award.

## Best Paper Awards

The 3<sup>rd</sup> *Asia-Pacific Forum on Engineering and Technology Education* eventuated in numerous exceptional papers being presented. On this occasion again, participants were invited to select the top papers for the UICEE best paper awards.

This time, two papers received these awards. The Diamond award (1<sup>st</sup> grade) was bestowed upon Mr C.W. Caulfield and Assoc. Prof. S. Paul Maj of the Edith Cowan

University in Perth, Australia, for their paper titled *A case for system dynamics*. The paper was presented by Assoc. Prof. Maj and was skilfully illustrated by some Chinese characters.

The Platinum award (2<sup>nd</sup> grade) went to Prof. Fong-Ming (Franklin) Lee, Dean of the College of Engineering at the Chinese Culture University in Taipei, Taiwan, for his paper titled *The impact of materials science and engineering on engineering education and environmental issues in Taiwan*. Due to the spread of votes dispersed over a large range of papers, the award committee decided not to give Gold, Silver or Bronze awards.

## Visit to the CCU

After the 3<sup>rd</sup> *Asia-Pacific Forum on Engineering and Technology Education*, several participants took advantage of the chance to see the Chinese Culture University (CCU) in Taipei. The CCU is a Sponsor member of the UICEE, and its College of Engineering is led by an extremely active dean, Prof. Fong-Ming (Franklin) Lee.

The University is beautifully positioned in the Yang Ming Shan National Park in the mountains about 15km from Taipei. It offers spectacular views, clean air, plenty of trees and beautiful Chinese architecture.

The visitors were hosted by Dr Tsai-Mei Lin, President of the CCU, over lunch and had the opportunity to discuss various issues related to the collaboration between their home universities and the CCU.

After the lunch, they visited various university facilities such as the Centre for Information and Communication and the University Library, which houses several exhibitions, including a collection of ancient Chinese artefacts and contemporary arts.

## 3<sup>rd</sup> Global Congress

The 3<sup>rd</sup> *Global Congress on Engineering Education* will be held at the Glasgow Caledonian University (GCU) in Glasgow, Scotland, United Kingdom, between 30 June and 5 July 2002.

It is envisaged that the Congress will address a wide selection of global issues relating to engineering and technology education, which will also concern matters relating to the changing times and the nature of higher engineering education in the 21<sup>st</sup> Century.



The photo shows (l-r) Prof. D.W-S. Tai from the National Changhua University of Education receiving the UICEE's Silver Badge of Honour from Prof. Z.J. Pudlowski.

The Congress is a key UICEE activity and the GCU will be the host and principal co-sponsor, with the other UICEE Partner Institutions as co-sponsors.

It is envisaged that the Congress Committee will include outstanding international academics, industry and government officials, representing many countries that are the leaders in engineering and technology education.

It is anticipated that Glasgow will provide an excellent host, not only for the academic programme, but also for a variety of social and tourist attractions.

## Temple's Visit to RCEE

Dr Bryan Temple, Coordinator of the Caledonian Centre for Engineering Education (CCEE) at the Glasgow Caledonian University in Glasgow, Scotland, UK, visited Ryerson Polytechnic University in Toronto, Canada, from 7-9 March 2001. The purpose of the visit was to explore opportunities for collaborations in science and engineering research, in engineering education (including the effective use of new media technologies) and to potentially share strengths in integrated experiential learning in design engineering.

Dr Temple was hosted by Prof. Derek O. Northwood, Dean of the Faculty of Engineering and Applied Science, and by Prof. William White, Director of the Ryerson Centre for Engineering Education (RCEE). The CCEE and the RCEE are each satellite centres of the UICEE.

During the visit, Dr Temple met with several key people at Ryerson and toured research and teaching facilities in the Electrical and Civil Engineering Departments and in the School of Computer Science. As well, Dr Temple toured the modern facilities of the Ryerson Rogers Communication Centre, which covers all forms of communications, including print media, radio and television arts, image arts, and information and computer technologies.

The picture shows Dr Temple discussing research and graduate studies opportunities with Prof. Northwood, Prof. White and Dr Steven Liss, the Associate Dean for Research and Graduate Studies, displaying trans-Atlantic cooperation under the auspices of the UICEE.

A reciprocal visit by Dr Northwood and Dr White to the CCEE is planned for September 2001. It is anticipated that a Memorandum of Understanding will be developed and executed to enable the two satellite centres to undertake student and faculty exchanges and to collaborate in

research areas of mutual interest for the benefit of students and staff at the two universities.

## Polish Celebrations

At the end of May, the UICEE Director was invited as the Guest of Honour to the celebrations of the 40<sup>th</sup> Anniversary of the Polish Society for Theoretical and Applied Electrotechnics (*Polskie Towarzystwo Elektrotechniki Teoretycznej i Stosowanej - PTETiS*).

The membership consists of over 600 professors involved in Polish electrical engineering institutions. The society is currently headed by two distinguished UICEE members: Prof. K. Kluszczyński of the Silesian Technical University as President, and Prof. S.A. Mitkowski of the University of Mining and Metallurgy in Cracow as Vice-President.

The successful Seminar covered a diverse range of

topics related to electrical and electronic engineering, including educational issues, and was organised in conjunction with the Anniversary activities. The UICEE Director had the pleasure of presenting the UICEE, its work and achievements to close to 60 participants.



The photo shows discussions on trans-Atlantic cooperation in graduate education undertaken by (l-r) Prof. Derek Northwood, Prof. Bill White, Dr Steven Liss and Dr Bryan Temple.

## Meeting in Glasgow

In early June, the UICEE Director spent a few days at the Glasgow Caledonian University in Glasgow, Scotland, United Kingdom, discussing joint activities and the operation of the Caledonian Centre of Engineering Education (CCEE), which is a satellite centre of the UICEE. His counterparts included Prof. Colin U. Chisholm, Dean of the Faculty of Science and Technology, and Dr Brian Temple, Coordinator of the CCEE.

The discussions formulated new approaches to the running of existing projects, as well as the *modus operandi* of the forthcoming 3<sup>rd</sup> *Global Congress on Engineering Education*, which will be held at the Glasgow Caledonian University in June/July 2002.

## Next Issue of the GJEE

The next issue of the UICEE's *Global Journal of Engineering Education* (GJEE), Vol.5, No.2, will be a Special Edition focusing on engineering and technology education in Taiwan. This will provide a spotlight on the current issues and trends affecting one of

the most technologically advanced nations on this planet as it progresses to a knowledge-based culture.

Prof. David W-S. Tai of the National Changhua University of Education in Changhua, Taiwan, has been appointed Guest Editor of this Edition. The publication of this Edition is fully sponsored from Taiwan.

## Partnership with Aalborg

We are delighted to announce a new partnership between Aalborg University in Aalborg, Denmark, and the UICEE. Under this partnership, yet to be officially signed, Aalborg University will establish a UICEE satellite centre called *Problem-Based Learning Centre for Engineering Education (PBLCEE)*.

It is envisaged that this Centre will develop academic and research related activities in engineering education within the sphere of problem-based learning and will be the extension of the UICEE mission to further the globalisation of engineering education.

It should be mentioned at this point that the UICEE and executive members of its network have envisaged the development of two kinds of satellite centres. The first group would have its emphasis on activities carried out in certain geographical regions or countries, whereas the second group of satellite centres will be dedicated to some specific topic in engineering education. The Aalborg Centre will fall into the second category.

Aalborg University is an excellent university that is at the forefront for academic and research activities in Europe in the fields of engineering, natural sciences, social sciences and humanities, and will provide an excellent base for a satellite centre with the theme of problem-based learning.

The entire enterprise has been conceived of, and instigated by, the Dean of the Faculty of Engineering and Science, Prof. Finn Kjærdsdam, in order to expand the international activities of Aalborg University, which is located at the northern tip of Denmark.

## New Partner: GMA

We have just received news that Gdynia Maritime Academy (GMA) in Gdynia, Poland, has decided to join the UICEE as a Partner. The GMA's Senate unanimously approved the Agreement between the UICEE and the GMA to this regard. It is envisaged that the Rector of the GMA, Prof. Piotr Przybyłowski and the UICEE Director will sign the Agreement at the forthcoming *5<sup>th</sup> Baltic Region Seminar on Engineering Education*, to be held at the GMA between 17 and 19 September 2001.

It should be pointed out that the whole idea was conceived by the longstanding supporter of the UICEE, Prof. Romuald Cwilewicz, Dean of the Faculty of Marine Mechanical Engineering at the GMA. This was as a consequence of numerous activities in engineering education,

including the development of interactive multimedia programmes for the training of maritime personnel, which have been carried out at the GMA and presented at several UICEE conferences and seminars.

Under this agreement, the GMA will establish a UICEE satellite centre, appropriately titled *Centre for Maritime Engineering Education (CMEE)*.

The CMEE will provide the focus for the development of academic and research related activities in engineering education within the sphere of maritime education. This new Centre will operate within the network of UICEE satellite centres and will cater for the needs of maritime engineering education globally.

The GMA is a highly specialised technical university that has over 80 years of history and tradition. The main aim of the Academy is to train highly proficient marine officers for the fleet, as well as fully qualified shore-based personnel.

Over ten thousand students per year take part in various educational training activities at both undergraduate and postgraduate levels at the GMA. The teaching process is being carried out by more than 300 well-regarded professors and instructors and is supported by excellent teaching facilities.

Partners, staff, members and associates of the UICEE cordially welcome the Gdynia Maritime Academy to the so-called *UICEE Global Family of Engineering Educators*.

## Mathematics Network

Shortly after the Gottlob Frege Centre for Engineering Science and Design (GFC) was founded at Hochschule Wismar in Wismar, Germany, a new series of workshops was initiated on *Mathematics in Engineering* to tackle declining levels of study in basic mathematics and to improve and update mathematical teaching.

About 30 people from Northern Germany and Scandinavia participated in the first workshop in mid-May 2001 and a wide range of topics was covered.

The most important contributions to the Workshop will be published in the next German issue of the *Global Journal of Engineering Education*. This series of workshops are set to continue and the announcement on the Internet led to further cooperation with other institutions with similar intentions.

One prime objective of the GFC is to stimulate the sharing of good practice and innovation in learning and teaching and to connect the mathematics teaching community in higher education at an international level, especially within the UICEE Network.

High quality learning and teaching practice in mathematics is promoted through a network of academics, the exchange of new ideas, good practice and innovation in mathematics teaching, learning and assessments and benefiting from new technologies and integrating them in new teaching concepts. As such, the GFC invites all

academics working in mathematics education (especially from the UICEE community) to share new and innovative ideas with the GFC by e-mail at:  
n.gruenwald@mb.hs-wismar.de  
Visiting academics are also invited.

## The New DTU

At the end of 2000, the Technical University of Denmark (DTU), a UICEE Partner member based in Lyngby, Denmark, assumed the status of a proprietary institution with an external board of governors. At the same time, the departmental structure of the university was trimmed down to 16 departments, compared to the previous level of 33. Furthermore, the structure of the educational system has been changed in such a way that pedagogical changes are unavoidable.

In accordance with all this, the Centre of Engineering Educational Development (CDM), which is a satellite centre of the UICEE, has adjusted the strategy used to inspire and support the staff in implementing methods for the improvement of student learning.

The goal is to activate the students by utilising didactic and methodological research and development already undertaken at the CDM, and on knowledge gained from the DTU's Partner status with the UICEE. These elements have facilitated acceleration of the staff development programme at the DTU in spring 2001.

## Taiwan Gov't Meetings

While in Taiwan, the UICEE Director visited the Ministry of Foreign Affairs in Taipei, where he briefed Mr Ssu-tsun Shen, Director General of the Department of International Organisations, and Mr Michael C.L. Huang, Section Chief, First Section (UN Affairs) of the same Department, on the recent activities of the UICEE, as well as interactions between the UICEE and various universities in Taiwan. The UICEE Director hopes to elicit support from the Taiwanese Government for the establishment of a UICEE satellite centre on Taiwanese soil.

Both parties expressed particular interest on the issue of education for small and medium sized enterprises, so vital for the economic development of Taiwan, as well as other countries.



The picture shows (l-r) Dr Chen-ching Li, Director General of Taiwan's Bureau of International Cultural and Educational Relations, enjoying an amicable moment with the UICEE Director.

Also, the UICEE Director met and spoke with Dr Chen-ching Li, Director General of the Bureau of International Cultural and Educational Relations at the Ministry of Education in Taiwan. Issues covered in their frank discussion included engineering education in an international setting and building human capacity.

The UICEE Director's comments on the high importance *soft skills*, including indispensable variables of engineering education such as social skills, communication skills and international skills, were particularly well received.

His comments were translated into Chinese and posted on the Website of the Ministry of Education of Taiwan.