06/13

Engineering Professors' Council: newsletter

Feedback

A selection of this year's work

Submitted responses and evidence to:

- ✓ House of Commons Engineering Skills Enquiry
- ✓ Government consultation on A level reform
- ✓ Institute of Public Policy Research's Call for Evidence on the "Future of Higher Education in England"
- ✓ Government consultation on National Curriculum Review
- House of Lords Science and Technology Committee review of national scientific infrastructure

Engaged with:

- ✓ Director of Office for Fair Access on data availability and the value of foundation degrees
- ✓ Minister for Universities and Science on on-going impact of Visa regulations
- ✓ Chief Regulator of OfQual on A level and GCSE reform
- ✓ HEFCE on the impact of the Visa regulations plus funding of Master's degrees and Strategic and Vulnerable Subjects
- ✓ Director General for Knowledge and Innovation on priorities for the Science Budget

Delivered:

- ✓ HESTEM report on graduate employment
- ✓ Engineering Council's KIS and accreditation support toolkit to members
- Enrolments 2012/13 survey, resulting in impactful press coverage and engagement with HEFCE
- Report on membership poll, with press coverage, on impact of Visa regulations to underpin further lobbying
- ✓ New website
- ✓ Extensive data digest for members



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President's Report

I'm proud and privileged to have been elected President of the EPC which will celebrate its 20 year anniversary next year in its current guise, having been formed in January 1994 by a merger of the Engineering Professors' Conference and the Committee for Engineering in Polytechnics, both of which had been established for much longer. It seems that, despite the "interesting times" in which we live, or perhaps because of them, we are an enduring, inclusive and well-regarded organisation. This was emphasised to me during this year's highly successful Congress hosted by the University of Portsmouth when I was struck by the enthusiasm and energy of our members in volunteering for our new working groups - more of which later - and delighted that we attracted such a packed programme of high profile speakers. If you couldn't come, you can download the plenary speakers' presentations as podcasts via our website: http://epc.ac.uk/congress-2013/. Just make sure the date is in the diary for next year: 8/9th April in Glasgow, when it would be great to say we celebrated our 20th anniversary with representatives of *all* of our member institutions.

It's been a busy year at the EPC (a selection of our activities is listed in the sidebar) and next year isn't shaping up to be any less so. We are increasingly feeling the impact of the visa regulations on recruitment of both staff and students – you can read more about this in this newsletter – and it goes without saying that preparations for the REF will be taking up the majority of our waking hours (and many of our sleeping ones, too, no doubt!). One person who will be working ever-longer REF-related days will be Tony Unsworth of Durham University – former EPC President and third member of the EPC Committee (in addition to Stephanie Haywood of Hull and Sarah Spurgeon of Kent) to be invited to sit on the REF Panel for General Engineering. You can rest assured that we'll be working hard on your behalf in both of these areas and many others. But we want to hear from you about what YOU think our priorities should be. You can tell us what you think by participating in the short membership survey you can find here: http://www.smartsurvey.co.uk/s/78580DDDKH.

Finally, I want to thank Helen Atkinson for her leadership and wise counsel during her time as President. In particular, her work in raising the profile of the impact of the visa regulations on engineering and on investigating how we might better prepare our graduates for employment are both issues on which we will build. It only remains for me to wish you well for the remainder of the academic year.

Professor Simon Hodgson

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There was a distinct theme emerging at **Congress**2013...

"The importance of engineering to the world is often overlooked. It is engineering in all of its many and varied forms that enables the world to work. We engineers are our own worst enemies – too busy delivering solutions to talk about them !"

Paul Westbury FREng, CBE, Chief Executive, Buro Happold."

...but on this occasion, representatives of nearly 60 of our member universities spared the time to travel to Portsmouth to discuss the impact of engineering and its future in UK higher education. We heard from senior members of the funding councils, academic and industry leaders and Government; and the first day ended with the Public Lecture, this year, given by **Professor Jim Al-Khalili**,



Outgoing President Professor Helen Atkinson with Session Chairs Professors Phil Bowen (Cardiff University) and David Barton (University of Leeds)

University of Surrey and presenter of the BBC Radio 4 series "*The Life Scientific*") who told us about his journey into the world of science communication. And therein lay the emergent sub-theme of the Congress. Just about every speaker talked of the importance of making time to communicate with politicians, the public, schools and businesses about what we do, as well as doing it ! Jim was also careful to tell us, though, that as well as delivering his highly successful radio and his latest book, he is also REFready...



Keith Attwood, CEO of e2v technologies and Chair of CBI's Education and Skills panel with session chair, Professor Mike Bramhall, Sheffield Hallam University



Professor Jim Al-Khalili signs copies of his latest book at Congress2013

A number of our speakers talked about experience implementing their of different aspects of the Wilson Review of business-university collaboration: Professors Helen Higson and Cliff Hardcastle both indicated that in some ways, it's "Back to the Future" - no, not on a skateboard - but that the current times are perhaps demanding a return to the roots of the civic universities and technical colleges when philanthropic business owners established institutions that could educate the sort of employees and develop the innovative technologies they needed. Our business leader speakers outlined the successful research collaborations they have with universities and what makes them work. And we couldn't have held such an event in the run-up to REF2014 or the Comprehensive Spending Review without workshop sessions on "what makes a good impact case study" and managing change and finances in departments with high cost subjects...

In short...



Paul Westbury FREng CBE, CEO of Buro Happold

A particularly popular session at Congress2013 was the "Audience With ... " slot, when Bellingham, Kate former Tomorrow's World presenter and prominent **STEM** advocate, interviewed Paul Westbury of Buro Happold, fresh from his experience as a judge on the Queen Elizabeth Prize Panel. Asked who his engineering hero was, he responded without hesitation "Steve Wozniak - Woz - at

This is just a flavour of what went on at Congress2013: we haven't provided our usual Congress session round-ups this year as you can download podcasts of all of the plenary sessions at: <u>http://epc.ac.uk/congress-</u> 2013/

Apple". He soon went on to underline. though. that engineering solutions are invariably developed by teams and this is why we often have difficulty highlighting a single engineering hero, adding that we "need to move heroes away from people to product: the internet is an engineering hero". He indicated that this was one of the first challenges to be faced by the QE Prize panel - the maximum size of team that could be awarded the prize. The response to whether this was a difficult decision was "no, you could run a country on the kind of decision-making that emerged from this panel..."

Do you blog (or tweet) ?



In the spirit of "getting the message out there", some of our number have taken to blogging and tweeting....

There may be some concerns out there about these forms of communication but, as Jim Al-Khalili said in his public address at <u>Congress2013</u>, "I'm a confirmed "tweeter": you just need to follow the right people".

You can now follow the EPC on <u>Twitter</u> and <u>Linked-in</u> and there's a <u>Forum</u> on the website where we'd love to have some guest bloggers...or maybe just submit a comment about something that you think would interest your colleagues and get a debate going (as there was following the announcement of the TechBacc and the latest in a long line of Government consultations on examination reform). If you'd like to submit something, please do drop us a line:

http://epc.ac.uk/contact/.

After all it shouldn't take long...according to Essex University, which has held workshops recently in "Extreme Tweeting," conveying ideas in small number of words can improve skills in reading, writing, and managing assignments... And as Paul Westbury told us at Congress, "if it's wonderfully wordy but no-one gets it, the *battle is lost..."* Over to you.

The Engineer's Guide to Being Cool

Professor Anthony Finkelstein is Dean of Engineering Sciences at University College, London but is also known in the blogosphere as "<u>profserious</u>"

I know, ridiculous. The very idea of the profserious guide to cool. Allow me however, to make some observations, standing as I do very much beyond the outside edge of anything that could be deemed cool or zeitgeist-y. My only claim in this regard is as somebody who was a teenager in the seventies I can speak confidently about just how badly 'cool' can go astray. If you wish to challenge this I can offer in defence contemporary photographs of my red glasses, pink patterned shirts and highlighted hair.

My own status then, as an icon of the slightly-crumpled-Professor-look ('its soooo Bloomsbury, darling') means I worry when I hear that we need to make science, maths and engineering 'cool for kids'. The whole point of cool is, as I understand it, that you cannot make yourself cool. You cannot, to choose a hopeless analogy, make yourself the Fonz, you have to be the Fonz. I can place in evidence some truly appalling engineering raps from which even the spirit of irony has fled in embarrassment. Nor can you be cool by association. Simply hanging out with cool kids does not make you cool.

I understand the point of wishing to be cool, I can understand why it might make engineering attractive. If however, you wish too hard, you do not get cool, rather you appear desperate, which is an unattractive quality. In engineering, the 'miserabilist' tendency - 'we are under-appreciated' - particularly when combined with a fitful puppy-dog desire



This article first appeared on 16 March, 2013 on <u>http://blog.prof.so/</u> and is reproduced here with the permission of "profserious"

to be loved, will get us nowhere, culturally and politically. So all this being said, I sense that science, engineering and maths are actually acquiring (is that the right word?) cool. There are the distant signs of a cultural change in the air, difficult to pin down but evident nevertheless. I would suggest that this has not been the product of efforts, however well intentioned, to 'get-it'. Rather, it is about relaxing and being ourselves. When we are geeky, absorbed, enthusiastic, passionate, engaged, in all the ways scientists and engineers can be, then young people want to identify with us. When we speak confidently, with our own voices, about our subjects, we are attractive. When we do not care whether we admired or understood but engage openly on our own terms, then the cool people want to hang out with us. When we stop hiding away the real-world of engineering, with its complexities, trade-offs, approximations and rules of thumb and say honestly 'this is what we do', then we strike up new relationships.

If you think that what I am arguing for is less engagement and less communication, I have failed to make my point. Inevitably, anxiety over how we might appear to others has constrained our efforts to communicate. If we shed that anxiety we will communicate more and better. We do however, have an alternative, I think that at the bottom of my wardrobe I still have my red glasses and pink patterned shirt (the hair, alas, is gone beyond retrieval), that, at least, should sort our 'image problem'. While the message about the impact of the visa regulations is getting through, the tangible actions to change the situation are much slower to come...

"Recruitment at undergraduate and postgraduate level has suffered in the last 2 years. We have also noted that we are not getting the same high calibre applicants amongst students at postgraduate level. 2012/13 was particularly poor." Anon: EPC poll April 2013

In 2012, the EPC joined with the President of the Royal Academy of Engineering, Sir John Parker, in welcoming the Chancellor's move towards a modern industrial strategy, signalled in the Autumn Statement. Currently the UK produces only 46,000 engineering graduates each year: an Engineering UK report published recently found that this number needs to be doubled if the near term demand projected for graduate engineers is to be met. It is therefore critical to the success of this emerging Industrial strategy that the demand

from applicants for UK university engineering Programmes and the onward progression to postgraduate study and professional or high academic



All postgraduate students (excl. engineering and technology) at UKHEIs)

status is maintained; indeed increased.

Ident FTE

As we are all very well aware, producing engineering graduates of the

standard and in the numbers required by industry is an expensive business. The current maximum chargeable tuition fee for UK and EU students attending HEIs in England and Wales does not in all circumstances meet the cost of delivery the Strategic and Vulnerable and Subjects (SIVS) premium within our teaching grant is an essential contribution to this: long may it continue. However, employers expect engineering graduates to be well trained in the use of the latest equipment, software and techniques. And worldclass researchers need such equipment if they are to continue to discover new techniques and innovative products and This has required us to processes. generate sufficient surpluses over the basic cost of programme delivery to maintain such investment. Doing this has often required hugely entrepreneurial responses in a range of ways from collaborating with business in sharing equipment to attracting more students from overseas.

Primarily, we need the talent from both overseas staff and students to keep programmes vibrant and innovative and meeting the demand from employers cannot easily be achieved by increasing demand from UK students alone: not only are the demographics against us but admissions tutors continue to report that they are fishing in a relatively small pool of good UK applicants (a significant



technology students studying at UKHEIs

entry to undergraduate and postgraduate engineering programmes. Around one third of the 83 departments

figures for the

2012/13

What you told us...

"We've lost some excellent candidates because they are afraid that they cannot stay after they finish the fixed-term contract."

"We are having particular problems with activities such as exchange students - where a student might visit our labs for 3-4 months or so. These are vital to maintaining international research links and collaborations. It is getting almost impossibly difficult to make them work anymore."

"Very slow provision of visas, partly due to the concentration on very few visa processing centres. Great differences in the treatment of applicants with the same background."

You can read this report in full at: http://epc.ac.uk/occasional-papers/. It was also the subject of an article in *Times Higher* Education on 30 May, 2013 "Funded young researchers refused entry to UK..."

"We seem have lost ground attracting high calibre applicants. These seem to be heading to USA or Canada. UKBA restrictions postgraduation appear to dampen the desire for high achievers to study in UK. This is real shame. If this policy continues, it is likely some postgraduate programmes could close, as the outputs are not in-line with expected norms."

"It proved to be impossible for an overseas student who was registered at one UK university to do a sixmonth placement at another UK university!"

"Recruitment of taught postgraduate students from overseas. and particularly, has India been particularly difficult since the poststudy work visa reduced the time students are permitted to seek work UK following within the on completion of their studies from two years to four months."

Anonymised verbatim comments from EPC Members' Poll April 2013

Results of the members' poll in short...

A further poll of engineering departments in UK universities carried out by the Engineering Professors' Council in April 2013 told us:

44% of those participating in the survey reported difficulties with recruitment of non EU staff with almost all of the respondents reporting that the posts remain unfilled.

66% of survey participants difficulties reported with recruitment of non EU students, with a fifth of these reporting difficulties at all levels of study and half reporting difficulties with postgraduate recruitment in particular.

In summary, the verbatim responses can be categorised into the following main issues:

- The processes introduced with the regulations have made it harder for genuine fee-paying applicants to come to the UK; there are long waiting lists and complicated, inconsistent and opaque processes in which it is easy to make mistakes
- Applicants don't feel they are with treated dignity and respect and receive the negative message that genuine applicants are being mixed crudely with economic migrants.
- The rules are inflexible and not appropriate for staff on the sort of short-term contracts or work exchanges that are essential to research programmes and are often at odds with the requirements of cross-border research grants: the sort of grants in which the Government encourages academics to participate.
- Staff and students are put off by the uncertainty of being allowed leave to remain to work following their programme or fixed term contracts.

responding to the poll reported a reduction in overseas postgraduate taught students for the current academic year. Three quarters of these. (mainly the largest UK Engineering departments) reported a reduction of more than 10%. Furthermore, half of all respondents reported fewer overseas undergraduates compared with 2011/12.

Various agencies, including the British Council, UUK, the Mission Groups, the Campaign for Science and Engineering and the EPC have called for students to be excluded from the immigration statistics, as they are in other countries such as the USA and Australia. The lobbying culminated in February 2013 with the chairs of five Parliamentary Committees of MPs and Peers writing

Despite this impassioned

compelling evidence, there

has been limited tangible

continuing to engage with

lobbying and, it seems,

response. EPC will be

to the Prime Minister to demand that overseas students be removed from the official immigration target. The letter from the chairs of the

Commons Science, Home Affairs and Public Accounts the influencers and highlight Select Committees, and the the issue. Lords Science and European

Union Committees, said that student needs to visa policy encourage international university students to study in Britain, arguing that current policies create the perception that overseas students are not welcome in Britain and warning of potential damage to an export business. The joint letter says that encouraging overseas students has the potential to support economic growth, support jobs in university towns and increase export earnings, which are projected to rise to £17bn a year by 2025.

Despite this impassioned lobbying and, it seems, compelling evidence, there has been limited tangible response. In February, a new report was published from the Migration Advisorv Committee (MAC) responding to the Government's proposed changes to the Shortage Occupation List (SOL).

It recommended a reduction in the overall number of jobs covered by the SOL but to increase in the number of engineering jobs on the list. Most importantly, it recommended not to adopt the "sunset clause" proposed by Government which would allow jobs to be removed automatically from the SOL after two years. This is important for both student and staff applicants in considering where to work and study. The sunset clause had previously caused concern within the science and engineering community, with two years considered too short a duration in which to deliver the skills required in the strategically important STEM positions presently included on the SOL (for example, it can take 12 years for someone to achieve Chartered Engineer status, assuming they started by taking the correct A levels).

> However, alternative suggestions still

being considered include a four year sunset clause with the option for a case to be made to retain particular jobs on the list for a longer duration. In April, stating that the **UK** Government is "committed to

encouraging the brightest minds to come to study in Britain", the Home Secretary announced that, from April 2013, all PhD students will be allowed to stay in the UK for 12 months following the completion of their studies in order to find skilled work or set up as entrepreneurs. She also announced an extension to the Tier 1 (Graduate entrepreneur) route, which will now include additional places for MBA graduates from UK HEIs. Neither of these changes really help undergraduate or the majority of postgraduate taught So, together with the applicants. backdrop of uncertainty around future responsibility for implementation of the regulations following abolition of the UKBA, there has been no real change that will demonstrate that UK HE welcomes overseas staff and students: even if there were, it seems that it will take some considerable time to change the perception that has been created.

Three new Committee members for EPC

Professor Mike Bramhall, BSc, PhD, PFHEA, FIMMM

Mike is a Professor of Engineering



Education and is the Assistant Dean for Academic Development for the Faculty of Arts, Computing,

Engineering & Sciences at Sheffield Hallam University. As well as being a National Teaching Fellow he is also a Principal Fellow of the Higher Education Academy. Until recently he was the Associate Director of the UK Centre for Materials Education at the University of Liverpool, where he was also a Visiting Professor. Mike was also an Associate Director of the Centre for Promoting Learner Autonomy at Sheffield Hallam from 2005 to 2010. Mike has taught for the last 26 years in metallurgy and materials science at Hallam. He has interests in student retention, learner autonomy, enquiry based learning, the use of media and technology in teaching and learning, and the personal and professional development of engineers, and has published widely in all these areas.

Dr Colin Turner

Colin is currently the Head of School of Engineering at the University of Ulster. The School focuses on teaching and research in the areas of Electrical and



Mechanical Engineering as well as Manufacturing, Renewable Energies, Product Design and Bioengineering. His particular academic focus is in the areas of Engineering Mathematics and Software Development used in Engineering, including how these impact on allied research areas, particular cardio-vascular medicine. He also has a keen interest in the technologies underpinning teaching and learning and learning support, particularly in the areas of employability where he has produced an internationally used software system for handling the placement process.

Professor Peter Excell

Peter has a research track record in Telecommunications Engineering with a strong element of computer simulation: this has been applied principally to



computational

electromagnetics, antenna design and electromagnetic compatibility. He has published over 400 papers (over 100 in major journals). From 1971 until 2007 he worked for the University of Bradford, rising to a personal chair and Associate Dean for Research in the School of Informatics. He believes strongly in the linkage between Electrical Engineering and Computing and in 2000 he switched from a pure engineering department to a multidisciplinary communications and digital media department - a radical initiative at Bradford at the time. In 2007 he opted to make another relatively radical move to the North East Wales Institute of Higher Education (which soon became Glyndwr University): this decision was driven by his Welsh ethnic heritage and his belief that this area of Wales deserves a fully functioning University: the challenge of developing a long overdue new University was also invigorating. Initially, Head of the School of Computing and Communications Technology, he subsequently became Dean, covering Engineering, Computing, Science, Business and Creative industries. Despite this role, he retains a hands-on approach to engineering through student project supervision and hobby interests and also enthusiastic is about Technological Forecasting (or "Futurology"), having given many lectures on this topic. In these, he seeks to inspire students to realise that technology is the dominant driver of what are likely to be massive changes through the current century.

Members' area



http://epc.ac.uk/membersonly/

We've established а password-protected Members' Area on the new website. While some sections are still under (we'll construction be with consulting the membership on some of these this coming year), we have now made available a of range detailed engineering-specific HESA, UCAS and HEFCE data and benchmarking tools which we hope will be useful to members, particularly for departmental and university planning purposes. You should have received your password when vour subscription payment was acknowledged for this year. If not, please contact us.

Also available - a range of useful policy papers and other publications plus the Committee and Working Group papers.

Stop Press

As we go to press, we're collating the results of the poll we conducted in May, 2013 attempting to ascertain the time it might take for UK universities to double their capacity to teach engineering students...

EngineeringUK through its annual report EngineeringUK 2103: The State of Engineering, identified that in order to meet the future UK demand for engineers with Level 4+ skills, the UK needs to roughly double its output of students with Level 4 +qualifications via universities and FE Colleges. The Department of Business, Innovation and Skills (BIS) had picked this up and is in the process of feeding this issue into the development of their Industrial Strategy. The unanswered question now "bubbling under" amongst those in the know is - if the number of students applying for engineering at university doubled (and we know there are a lot of caveats around that...), would universities actually have the capacity to recruit them? And if not, how long would it take for build departments to the able capacity to be to accommodate a doubling of numbers?

The short answer was "3-5 years" but there were of course many thoughtful, qualitative, contextual responses, so we're currently working with Engineering UK to write a full report. We'll be reporting back via our regular *infodigests* and via the website.

Huge thanks to the unprecedented number of members who took the time off from marking exams to participate...over 100 during the week it was live. The more responses we receive to policy questions like this, the greater the weight of our evidence.

EPC working groups

As long-standing members will know, much of the work of the EPC is carried out via its working groups. At its last meeting, the Committee decided to restructure and re-invigorate these. The three main groups are now: Recruitment and Admissions (under the chairmanship of Dik Morling) - the Maths Working Group will become a sub-committee of this Group, Qualifications, Assessment, Curriculum and Employability (under the chairmanship of Clive Neal-Sturgess) and Research, Innovation and Knowledge Transfer (under the chairmanship of Stephanie Haywood).

The Groups take primary responsibility for advising the Committee on matters within their scope through horizon scanning, and take the lead on drafting consultation responses, providing evidence to enquiries and making nominations to other national committees and panels. As well as this reactive response work, the Groups will also work proactively on developing research and other materials on which the membership can draw.

We were delighted by the response received to the call for volunteers to serve on these groups and inaugural meetings are scheduled to take place over the coming months.

The **Research**, **Innovation and Knowledge Transfer Group** will have some particularly knotty issues with which to deal in the coming year or two, not least a "post match" analysis of the REF and developing responses to the practical issues arising from the growth in open access publishing...

If you have any burning issues which you think the working groups should be addressing, let us know by logging your views here: <u>http://www.smart-</u> <u>survey.co.uk/s/78580DDDKH</u>

THE JOURNAL OF ENGINEERING

IET Open Access Research

And talking of "open access", the Institution of Engineering and Technology (IET) has launched "The Journal of Engineering" (JoE), its first, "fully gold", online-only open access journal. Now accepting papers for publication, the journal, from this not-forprofit organisation, provides authors with a new home for scientifically sound engineering research across a range of topic areas.

Eight section editors, from the UK, mainland Europe, the USA and China, have been assigned to each of the broad topic areas that the journal will initially cover: biomedical engineering, computing and software, civil engineering, materials engineering, energy engineering, micro and nano-technology, mechanical engineering and electrical and electronic engineering.

Keen to harness the expertise and international spread of the editorial team, the IET says it seeks to broaden the scope in line with author requirements as time progresses. This new journal will work on a similar model to the PLoS One journal, placing emphasis on scientific soundness rather than significance and, following rigorous peer-review, decisions will be a simple yes/no to acceptance with no revision stages allowed, leading to faster publication.

JoE will be a "pure gold" open access journal with authors of accepted papers paying an article processing charge (APC) of \$1,150 USD. Discounts are available for IET members, together with fee waivers for researchers in developing countries.

All accepted papers in JoE will be published under one of four offered Creative Commons Licences and will be freely available on the IET Digital Library. For more information go to www.thejournalofengineering.org.

The IET's existing portfolio of research and letters journals will also be adopting open access options, making them hybrid journals, with authors offered the choice of how to disseminate their work and, at the same time, ensuring they are fully compliant with funders' licensing requirements. All open access authors will also be able to deposit their papers in repositories.

For more about the IET, visit <u>www.theiet.org</u>

Get involved in...

Upcoming events



There are interesting opportunities for universities to get involved as supporters or exhibitors at The Big Bang Fair 2014, which is held being at the Birmingham NEC between 13th and 16th March 2014, as well as regional Big Bang Near Me events happening later in the year. This could be а great opportunity to increase the profile of anv existing outreach and widening participation activities, while also awareness raising of engineering as а programme of study at UK Universities.

For further information: visit the website:

www.thebigbangfair.co.uk

or for information about the regional programme:

http://www.thebigbangfai r.co.uk/nearme/new_near _me.cfm





EPC members and guests relax over dinner at Congress2013 in Portsmouth's spectacular Spinnaker Tower



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