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Campaigning for change

“The situation is improving very slowly, but it’s glacial.” This is Professor Dame Jocelyn Bell Burnell’s (Oxford) depressing assessment of the effects of the many and varied initiatives to increase the number of women working in science, technology, engineering and maths (STEM) research careers in the UK.

Speaking at CERN as part of the laboratory’s own drive to increase diversity, the astronomer and passionate campaigner for increasing the number of women pursuing STEM careers emphasised the importance of tackling the problem at government level, “For decades, we have had very committed people doing great things in isolated initiatives but there’s not much to show for it. We need political pressure and we’ve got to think about changing the science culture.”

Dame Jocelyn discussed many of the issues that she and her Oxford colleagues raised when submitting evidence to the recent House of Commons Science and Technology Select Committee inquiry into Women in STEM careers.

In Dame Jocelyn’s opinion, getting both recognition and ownership of the problem at the highest levels of government is essential. She cites parental leave following the birth of a child as one extremely influential change. Evidence suggests that male scientists in Finland (where parental leave is shared between both parents on a ‘use it or lose it’ basis) who return to work after three months leave to care for a new baby advance faster in their careers. It’s not clear why this happens, but Dame Jocelyn suggests that this break from the daily work routine allows additional thinking time, and the brain to be more creative. But she acknowledges that cultural and legislative changes on this scale require commitment from the top of government.

Changing science culture is not easy and Dame Jocelyn talked about the importance of overcoming unconscious bias in recruitment, and the benefits of embracing diversity in project teams - many of the measures that she believes will encourage more women to pursue or remain in STEM careers will also benefit other minorities.

One national initiative that is having a positive effect in the UK is the highly successful Athena SWAN charter scheme in which organisations analyse their statistics and work practices and identify practical and cultural improvements that will promote women’s careers in STEM. The UK’s Chief Medical Officer has stated that in several years’ time, organisations applying for medical research funding must demonstrate that they have achieved at least the Silver award. As researchers in every field know, future funding is a powerful incentive for change!

As a committed campaigner Dame Jocelyn acknowledges that the UK’s problems are shared by many other countries. She concluded her talk by saying that CERN could be a
powerful agent for change by ensuring or encouraging its partners and suppliers to be inclusive organisations.

Science in Parliament

Myfanwy Borland (Liverpool and LHCb) is taking three months away from her PhD to see how science in Parliament works, from the inside. She is the latest student to join the STFC-Parliamentary Office of Science and Technology (POST) Postgraduate Placement Scheme.

UKNFC: What inspired you to apply for the STFC POST Fellowship?

MB: I have always had a keen interest in science communication and outreach. I was an early member of the Liverpool Physics Outreach Group, and spent a lot of time in schools and colleges with science workshops. In fact I missed doing this when I went out to CERN, and became a tour guide for the visits service. I saw an email from the STFC, and after having a look at POST and what they do in Parliament, I couldn’t wait to start the application. It was also forwarded to me by my group leader as a good idea to apply for. And as you need the blessing of your supervisors to take three months off it is a huge help to have colleagues that understand the value of outreach activities.

In addition to that, the application process was quite interesting, as all that was needed was to write a POST-style briefing note on a scientific topic. I chose to write mine on Dealing with Intermittent Energy Generation and it was fun to get my teeth into something completely different to Particle Physics.

UKNFC: Your Fellowship has coincided with the House of Commons Science and Technology Select Committee Inquiry into Women in STEM Careers. What is your role and did you expect to get an opportunity to see how the process of Parliamentary scrutiny works at such close quarters?

MB: It has indeed been fortunate timing. While working with the Select Committee I have taken on the role of a committee specialist managing inquiries for the Members and providing advice and guidance on the science and policy. I am managing the Women in STEM Inquiry (under supervision). As such it is my responsibility to analyse the written evidence, identify other relevant publications and to help the Members structure the evidence sessions. You need to have an in depth knowledge of the issues highlighted by the evidence and of the Government policy. During evidence sessions I also sit at the table next to the Chair of the committee to provide additional information when needed.

I was delighted to be offered the chance of a fellowship at POST, and I am sure I would have had an interesting time there but the access that I have working with the Committee is a very rare opportunity, even for POST fellows. I have the chance to see the day-to-day life of Parliamentary scrutiny. I sit in private meetings with the Members and get to hear their private views on the issues we deal with. I am seeing every part of the scrutiny process, from scoping out potential new topics, to evidence sessions and finally to the drafting of a report and recommendations which I will be helping with for the Women in STEM careers inquiry over the rest of my time here. I also regularly find myself on the phone with Dames and Chief Executives which is quite a change from my PhD!

UKNFC: What has been the highlight of your time as a POST Fellow?

MB: I would have to say that pretty much every day there is something new going on. Meeting people who are passionate and motivated about their work and that provide expert advice to MPs on both the Parliament and Government side has been very rewarding. In terms of the work, it is an amazing feeling to work on a topic like Women in STEM careers and helping to give a voice to the people who work hard to improve the under-representation of Women in science.

UKNFC: What is the most interesting/surprising thing that you have discovered during your time in Westminster?

MB: It is the first time in a very long time that I have not been surrounded by scientists and...
have fully been able to see the lay-perception of the work we do. While I have been heartened by the general enthusiasm towards science, the level of understanding and awareness of current theories and experiments still has some way to go. We have certainly been doing a better job at communicating recently – especially about CERN but I am now more acutely aware that public communication has to be ingrained within every level of scientific research. It is far too important to be missed, especially in this financial climate.

**UKNFC:** How will your time as a POST fellow influence your research career?

**MB:** I think this will be hugely beneficial to my career. Firstly, the turnaround times for briefings and reports here make it feel like conference season every week. I will have no problem writing up my thesis after this. It has also taught me a lot about being grammatically precise – something that had never really been an issue in physics but in policy, every word matters. It’s felt a little bit like a crash course in scientific writing, but as something I’d like to pursue in the future, it has been great for me.

Personally, working through the evidence on the Women in STEM careers inquiry has sometimes felt like reading a horror story of your own future career but I think that being aware of the gender issues certainly goes part way to tackling them, and it is nice to be in a position to hopefully inspire some change.

**UKNFC:** Would you recommend the scheme to others?

**MB:** I can’t recommend it highly enough! For anyone who is interested in science communication or science policy, it is both a valuable insight and experience but also a remarkable networking opportunity.

**Croft takes the lead**

The first company to join the STFC CERN Business Incubation Centre has just moved in. Croft Additive Manufacturing Ltd successfully applied to be part of this new initiative that enables small companies to benefit from STFC and CERN know-how as they develop new applications for technologies developed for ground-breaking physics experiments.

Croft is a developer of revolutionary 3-d metal printing technology to produce highly specialised and bespoke metal filters applicable to all industries, including the aerospace, automotive and energy sectors.

"The successful application of AM techniques in filter manufacturing demonstrates the potential wider industry benefits of AM production across multiple sectors," says Neil Burns, director at Croft Additive Manufacturing. “Being selected as the first incubatee at the STFC CERN BIC allows us access to important technical, financial, and business support, as well as a number of valuable innovation networks, all of which will fit together to play a key role in our success”

Located at the STFC Daresbury Laboratory, the STFC CERN BIC will nurture up to ten companies over the next two years, offering each one an exceptional support package. In addition to direct access to CERN’s technologies, expertise and intellectual property, the package includes up to £40k funding, a dedicated STFC business champion and 40 hours of free access to technical expertise and facilities across STFC. It also includes valuable networking and collaborative opportunities with more than 100 other innovative high-tech businesses and entrepreneurs based on the Sci-Tech Daresbury campus as well as with the universities of Lancaster, Liverpool and Manchester through the Cockcroft Institute.

“We wanted to make sure that the companies working with the STFC CERN BIC would get the maximum benefit and support by tailoring the programme from the beginning,” says Ian Tracey, STFC Head of Entrepreneurship. "It has involved close collaboration between the knowledge transfer teams at CERN and STFC.

“From initial meetings, either through the open call or at networking events, we worked with potential businesses that might need the kind of expertise that the partners can provide, or
entrepreneurs who might have the right skills to develop CERN’s IP. Even the companies whose BIC applications were unsuccessful have benefited from the process by gaining a better understanding of how to work with CERN or how to become a CERN supplier.

“After discussions between the CERN technical experts, the prospective incubatees each submitted a more detailed proposal for how they wanted to develop their idea. The applications were thoroughly evaluated and I’m delighted that Croft, the first of our successful applicants, is now working in the BIC.”

British companies are already benefiting from CERN explains John Womersley, STFC’s Chief Executive, “UK companies already secure more than £15m each year in contracts with CERN, and this new initiative provides further potential to generate major economic and societal rewards for the UK economy, particularly in terms of innovation, job creation and economic growth. Sci-Tech Daresbury is a vibrant hotbed of world leading expertise and facilities teamed with the best business and networking opportunities – the potential for partnership and collaboration here is second to none. It is therefore the ideal home for the STFC CERN BIC and for Croft Additive Manufacturing to turn the significant commercial potential of its product into market reality.”

More information about the STFC CERN BIC, and how to apply, is available on the website

**Christmas is coming….**

With just over a month until Christmas, it’s time for UKNFC’s annual gift guide for the discerning CERN fan.

If form and function are important to you, the CMS umbrella is the perfect Christmas gift; elegant rain protection provided by a Compact Muon Solenoid. The umbrella is available from the gift shop at the Science Museum in London.

You’re never too old for a pop-up book! The new Higgs Edition of ‘Voyage to the Heart of Matter’, the Large Hadron Collider pop-up book is a must for big kids. It’s packed with facts, and the pop-up models are almost as cleverly engineered as an LHC experiment. Order your copy now from Amazon.

One way to find out whether Santa thinks you’ve been good this year is to put the 1:50 ATLAS Lego model on your Christmas list. It’s an awesome present but comes at quite a price (c. £1750). The campaign continues to persuade Lego to produce kits for the smaller (and more affordable) version of ATLAS. Follow the link to find out how to build your own particle detector.

Even Nobel Laureates like Lego
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**Diary dates**

- **Public Engagement Symposium** – 25 November
- Brits@CERN meeting – 12 December
- CERN Council – 9 – 13 December
- **Collider exhibition** runs until 6 May 2014