

Summer Science School with Professor Brian Cox
St Paul's Way Trust School, Poplar
July 20th 2012

Presentation to parents of the students who attended the Summer Science School, local residents, local business people and partners of St Paul's Way Trust School.

The title I was given was **East London – a great place to do science**, picking up on the phrase “Making Great Britain the best place in the world to do science”, coined by Brian Cox and used increasingly by David Willetts *et al.*

- Thanks for inviting me along.
- I gather it's been a great day – I'm particularly pleased to hear that students from the school stood up and spoke about their science alongside Brian and the other top quality scientists who spoke – that was our dream when we were planning this event.
- As Graeme Price (the Headmaster) said, I work for the LLDC and we're delighted to be able to help sponsor this event.
- The number that the city is focused on tonight is 7 – the number of days before the Games start – but the number up on our wall is 93 – the number of days to go before the organisers of the Games hand us the keys to the Olympic Park. That's when we get to work and start turning that fortress – a beautiful fortress but a fortress nonetheless – into a great international Park that people will come from all over the world to see – but also a great local park for the neighbourhoods on its doorstep, like this one in Poplar.
- Meanwhile, Stratford is hotting up. I've just come from there and it's full tonight of young men and women in tracksuits – some of the world's top athletes – which is not surprising.
- Poplar tonight turns out to be full of some of the world's top scientists. This is also not surprising really because Poplar has always been a great place to do science.
- Has anyone here been up in the cable car? Can you believe that east London has a cable car?
- I haven't. The thought terrifies me but I gather the view is spectacular.
- I did go up the Orbit last week – and Graeme we must get students from the school up there as soon as possible – and the view tells you why east London is the most exciting place to be right now, not just because of the Games but also because of the sheer amount of investment in new businesses and new homes and new places of learning - from Shoreditch to Canary Wharf to the Greenwich Peninsula to the Royal Docks, not to mention Stratford and the Park - and because of the revelation that east London is beautiful, with its river and canals and parks and some stunning new buildings.
- 100 or 200 years ago the view would also have been exciting but in a very different way. The place was full of industry and full of factories, smoke, noise, smell and life; and down there amongst the factories were scientists because industry always attracts scientists.
- I want to tell you about two of them.
- The first is Michael Faraday, after whom the science programme in this school is named. Faraday was born just over the river in Southwark and had almost no formal education beyond the early years of primary school because he had to go out to work to help support his family. He became the assistant to Sir Humphrey Davy. Davy was a kind of eighteenth century equivalent of Brian Cox because he was an important scientist in his own right but also had a passion for explaining science to his contemporaries – not through the telly of course but

through public lectures and demonstrations of the cutting edge science and technology of the day. Like Brian he toured Europe (not quite the whole world) and Faraday toured with him, helping with the public demonstrations but also acting as his valet – maybe the equivalent of Brian’s make-up artist. In the midst of polishing shoes and ironing shirts and making the tea, Faraday learned to do science and he became a wonderful chemist and a wonderful physicist. He asked simple questions like “what is electricity” and “what is magnetism” and his answers, as well as being fascinating, led directly to the invention of ways to generate electricity and of ways to use electricity to drive motors. Without Faraday’s discoveries, the Large Hadron Collider, which you’ve been hearing about today, couldn’t have been built. John Butterworth (Head of Physics at UCL and involved with the ATLAS experiment at CERN) told me earlier that the Large Hadron Collider works because of Faraday plus Special Relativity – and if that sounds as if I know what I’m talking about, I don’t. Anyway, Faraday also asked some very practical questions like “why does the Thames smell so bad” and “why do coal mines keep exploding” and “how can I stop lighthouses from burning down” – and that’s the question that brought him to Poplar. He built a lighthouse at Trinity Buoy Wharf on the Thames, a mile or so from here – it’s still there – the only inland lighthouse in the country - and he tried to figure out how to get an electric light to work in it instead of an open fire. He failed, I think, but as you’ll have heard today, failure is an essential part of success as a scientist.

- The second is Chaim Weizmann, a very different character: born in Belarus; educated at the best universities in Europe; came to Britain to find a better life but also because he was running away from a woman he didn’t want to marry. He was a chemist but evidently thought he wasn’t a very good one because he wondered whether bacteria could be better chemists than him and whether they could manufacture the chemicals he couldn’t. He discovered a bacterium that could make acetone, a completely useless discovery until the First World War when the country needed enormous amounts of acetone to make cordite to keep the guns firing on the Western Front. He came to Poplar, to the Clock Mill at Bromley by Bow, half a mile or so away from here, and set up the world’s first bacterial biotechnology process. He later became the first President of Israel, which proves another point made earlier which is that you never know where a career in science will take you.
- There was a lot of chemistry around here. In a laboratory just about where the Olympic Stadium is now the careful chemistry needed to invent bone china was worked out; and the Yardley soap factory just by the Bow flyover had an army of chemists inventing new perfumes.
- So, there have always been great scientists here, just as there are today ...
- .. for example this school is sponsored by Queen Mary University of London and King’s College London – both with great traditions and present excellence in science – and you are just about to fit out a research laboratory in Poplar HARCA’s new building across the road so that students can wonder about the genes that influence the development of diabetes – a fascinating question that will also have practical applications I’m sure in a part of London that has very high rates of diabetes. For teenagers from this school to be contributing to new original scientific research is a wonderful prospect.
- The developments at this school are just part of a new growth of science and technology in this part of London, including the area in and around the Olympic Park.
- To explain what I mean, and since we’ve got several scientists from University College here, I want you to think for a moment about Bloomsbury, that area of London around Tottenham Court Road where UCL is located, and which is a powerhouse for London’s economy, through the science and technology teaching and research that goes on there and the economic benefit that flows from them.

- 180 years ago, Bloomsbury was the growing edge of central London – just fields. The Olympic Park is at the heart of the growing edge of central London today – from Stratford, through Poplar to the Thames in Stratford, down through Poplar to the Thames. Not fields, but lots of space left over from its industrial past. The excitement in Bloomsbury 180 years ago must have been something like the excitement here now.
- First, they opened a Park; Regent’s Park. It became one of London’s, indeed the world’s, great parks with one of the world’s great visitor destinations and scientific establishments at its heart; the London Zoo. Heal’s and some others built some shops and they became one of the city’s great shopping streets; Tottenham Court Road. George Birkbeck founded something called the Mechanics Institute so that working class men and women could study in the evenings. It became Birkbeck College, one of the world’s great institutions for adult learning. Jeremy Bentham and his mates founded University College London to be at the radical cutting edge of university teaching and research, and to do the early nineteenth century version of widening participation in education, because you didn’t any longer have to be a man and a member of the Church of England to get a university education. They built some great high-end homes for people to buy; the Georgian terraces of Regent’s Park. They also built some great homes that later became Council homes to rent in the blocks around the British Museum. Oh, and they built a museum. They did all this in the space of maybe 25-50 years, and the place became flooded with life and business and study and shopping and relaxation and fun. 180 years later people love to live and work and visit Bloomsbury and it’s a powerhouse of London’s economy and of the science and technology that will drive London’s future.
- A Park, some shops, Birkbeck, UCL, new homes ... sounds familiar!
- This is what we’re doing at Stratford today. We’ve got a Park, the Queen Elizabeth Olympic Park, and we’ve got some shops at Westfield. Birkbeck are building a new building for teaching but soon I hope for research in the field of brain development; UCL are planning a new university district with science and technology research and teaching at its core; LLDC got planning permission a couple of weeks ago to build 7,000 new homes of very high quality over the next 20 years, including homes to buy and for every type of rent. The homes that all sorts of Londoners need. The place is full of life.
- The only difference is that it would take the pioneers of Bloomsbury a couple more decades to build an international station, St Pancras, and we’ve already got one, albeit without any Parisian trains stopping yet. That’s what Stratford feels like today - the most exciting place in London, the UK, Europe, wherever.
- Of course, Stratford will develop very differently from Bloomsbury, but we are in the process of bringing a new piece of London to life and if we can start something that people still love in 180 years’ time we will have done well.
- Outside Stratford, at the Royal Docks, Siemens have built a spectacular new building, the Crystal, which will showcase the world’s brightest and best ideas in inventing low carbon technology and will house a research institute focused on how to make cities more energy efficient – a subject that Faraday would be throwing himself into if he were still working in his lighthouse a few hundred yards away.
- It’s appropriate that the Royal Docks should host such a place because it has always been a place that gathered new ideas from across the world and then used them in the service of commerce and society – ideas that used to travel at the speed of sail or the speed of steam, but that now travel at the speed of light.

- So, this is an exciting place, and so much of what's happening is happening because the Olympics has speeded up change and brought new investment and – in the spirit of the Olympics – made us dream of being the very best we can be.
- It's exciting, but we also face enormous challenges and we will have to continue dream and to work extremely hard if we are to succeed, and occasionally fail, as the experiences of the scientists here today teach us.
- So, the meeting of these scientists and these young people at this Summer Science School today has been another an important step along the way and a pointer to the kinds of relationships we will need to nurture if east London is to become once again a great place to do science.
- Thank you.

Paul Brickell
Professor

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