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Outreach at the match: a cautionary tale

John Baruch, Ulrich Kolb, Helen Fraser and Jen Heyes share some of the pitfalls they encountered when combining outreach with football; they advocate a different sort of wow factor.



1 Football fans were the target market, but Science in the Stadium failed to score.



2 The Science in the Stadium logo, expressing our idea of a wow factor.

Science is a passion for most of us in the profession; we cannot comprehend that everyone else is not equally enchanted. When we venture out to engage with the wider world through our rose-tinted spectacles, we can fail dramatically.

The UK government started to take science seriously half a century ago, after Sputnik 1 burst into the skies. Despite national investment in the science base, it took a long time before the science community began to consider the democratic dimension and put significant effort into outreach work and public engagement. Forty years ago, one university head of department expressed a common academic opinion about public lectures on physics and astronomy: “We shouldn’t be telling the public what we do, they might stop us.”

Today we recognize that the taxpayer has a right to know and influence or at least comment on its direction. For a long time it was considered enough to engage with the enthusiasts. But now we recognize that we need to look beyond those who are already interested, and talk to everyone. In the Science and Technology Facilities Council Public Engagement Strategy “Inspiring and Involving”, one objective is “Working with appropriate partners to increase the proportion of our activities that reach low science capital audiences”.

The jargon may be discouraging, but the

goals are important. Science capital, like social or economic capital, can be seen as the resources you have to engage with science, including your personal science environment, how many scientists you know as friends or family, and the level of science that your family is involved in. They also include the degree to which you involve yourself in science, how much you read science books or magazines, watch science on TV or other media, and visit museums or science centres.

Low science capital

Among communities with low science capital there can be few better examples than the typical 38 000-strong Everton football crowd. As a group, these fans have the lowest average earnings of all the UK league clubs; they include many families with children and retired people. The crowd is also local to Liverpool, with more than 25 000 of their season-ticket holders living within 30 miles of the centre of Liverpool. Liverpool is the fourth most deprived city in England, with 8.6% of the city population living within the 1% most deprived areas in England, and 45% living within the 10% most deprived areas nationally.

Everton Football Club prides itself on being a leader in the community, with one

of the first free schools and sixth-form colleges in the country. Its charity Everton in the Community has a wide range of activities, including mental health initiatives, and works with Edge Hill University in a healthy living for veterans programme. It

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“We were all convinced that this topic was as good as it gets for excitement in science” has a football youth academy and a notably positive approach to employing people with disability. When we first suggested that Everton in the Community might be

interested in a programme to bring science to the Saturday match crowd on the back of Tim Peake’s space trip, the executive director expressed a strong interest and put us in touch with all the key Everton people we would need to work with to realize such an event. A successful application was made to the STFC small awards for public engagement with science, for delivery in 2016.

Our project, Science in the Stadium, focused on the search for life in the universe; we were all convinced that this topic was as good as it gets for excitement in science. We planned a 90-second video on the big screens at half time, leaflets for all the attending fans, a slot in the programme and a range of activities and displays at the ground on the day. The video would be introduced on the pitch by the winner of a local schools competition. A phone app linking to our website (<http://www>.



3 Science in the Stadium organizers were left feeling blue after Toffees fans refused to bite.



4 Project member Ulrich Kolb on the Science in the Stadium day at Goodison Park.

scienceinthestadium.org) would lead on to The Open University Open Learn modules and *60-Second Adventures in Astronomy* films. The Liverpool Robotic Telescope and The Open University's robotic telescopes were made available for fans and local schools. Our success would be judged by the numbers of people we were reaching at the stadium and beyond, particularly those who engaged with the follow-up activities.

Jen Heyes and her company Cut-to-the-Chase Productions in Liverpool, which specializes in bringing together innovative ideas, culture, audiences and world-class artists, donated a considerable amount of her time. She worked closely with Robot Foundry to produce our video with the academic team, exploring how best to immerse the science in the football environment. We learnt a lot; did you know, for example, that a football pitch has about a billion blades of grass? But when we met the key outreach and community people at Everton, we discovered that their main focus was the celebrity status of Tim Peake. The search for life went down like a lead balloon and leaflets had to be abandoned as a fire risk.

Real life versus Star Wars

On the day, we delivered a presentation to the crowd (attendance was 36691) as fans arrived. We also had a stand at the Everton Free School, where many fans assemble before the match. We invited space teams from The Open University, the UK Space Agency, the National Schools Observatory at Liverpool John Moores University, and the Faulkes Telescopes. We showed our video and we filmed the whole thing. Tim Peake helped us, tweeting: "Science shouldn't be alien to any of us, that's why I'm really excited about the Science in the Stadium event happening at Goodison Park today. Science helps us in all walks of life, both on Earth and here in space." He also shared on his Facebook page the video we had generated linking football with the search for life in the universe. The tweets and the video went out with a reach of 670,000, but we did not feel that it was a

success. On Twitter, #Scienceinthestadium got 579 likes and 207 retweets; <http://Scienceinthestadium.org> recorded just 157 hits on the video. In fact, the value of the event can be measured primarily in what we learned from our failure to engage with this low science capital crowd.

One of the things we strive for in science outreach is the wow factor. But what is a wow factor for an audience steeped in science fiction, aliens and zombies, without the science capital to assess where reality ends and fiction starts? The question of whether there is life elsewhere in the universe may simply not be interesting to those who have grown up with *Star Trek*, *Star Wars* and the like.

Perhaps this is where science has got it wrong. Perhaps the appeal of the science in which we are immersed is drowned out for other people by daily worries, especially among young people facing a life of zero-hours contracts, university debt, food banks and no pensions. Science needs to find ways of talking to a public whose main focus for their children is a decent job. A study by Kings College London assessed science capital as high for only 5% of UK young people, medium for 68% and low for 27%. For those young people, understanding and engagement with science is taking on a new importance, as robots and artificial intelligence systems increasingly take over established jobs. Andy Haldane, chief economist of the Bank of England, has predicted that technology will take over 15 million jobs in the UK – 50% of the total. PricewaterhouseCoopers predicted a similar result, 38% for the USA between 2025 and 2030. The jobs that will go are in occupations focused on process, whether a truck driver, a doctor sorting out a diagnosis, a lawyer building a case from precedent, or a surgeon following an operating procedure. New jobs will ride on the explosive growth of science in all aspects of our lives. We need a society that is scientifically literate and able to engage with science at all levels.

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"We need a scientifically literate society that is able to engage with science at all levels"

At the start of the 19th century in Britain, 95% of the workforce were in agriculture; by the end, 95% worked in mines, mills and factories. We are facing a similar social and economic upheaval, but compressed into a dozen or so years. The first industrial revolution imposed an educational threshold for jobs: no education was needed to follow the plough or milk cows, but operatives in the coal mines, the steel mills, the factories and railways needed to be able to read and write and do sums. It may be that there is an educational threshold for the current industrial revolution, and one that we need to cross to deliver a workforce of technological innovators. Practical science – including astronomy, space science and geophysics – can deliver the thinking behind innovation, equipping people to grapple with a problem, define it with a model or theory and test it out before implementing it. This is the same thinking that is behind entrepreneurship. So how do we deliver practical science? How do we inspire our communities, especially the young and the hard to reach, with science? How can communities with low science capital be reached?

On the stands, talking to the Everton fans, science jobs and careers were a recurring issue – perhaps the only common concern. Can we guarantee their children a career with a secure and rewarding future? One of the reasons the UK government funds our sciences is in the belief that doing so will drive industrial, commercial and economic advantages for the country. We need to do more to demonstrate this link, and do so on a level that highlights the future-proof jobs that science can bring to the next generation. And then we have to find ways to insert into education the experiences, practical science and imagination that will help our young people to envisage millions of new products beyond the vacuum cleaners and iPhones of James Dyson and Steve Jobs. That would bring much more of a wow factor to the people we spoke to at Everton. ●

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MORE INFORMATION

Enterprising Science is a five-year study conducted by King's College London, and the Science Museum and funded by BP: <http://bit.ly/2wAQ9GO>
Open University 60 Second Adventures <http://bit.ly/2x4GEmw>
PricewaterhouseCoopers report <http://pwc.to/2okzPom>
Speech by Andy Haldane, Bank of England <http://bit.ly/2gcubU6>