De-gendering science: Alice Roberts on engaging everyone in research

Professor Alice Roberts is one of the most recognisable faces in science today, appearing regularly on television programmes since the early 2000s and bringing subjects as diverse as dinosaurs and ancient human anatomy to a huge audience. As such, she is well placed to be the first Professor of Public Engagement with Science at the University of Birmingham. In this interview, Alice tells us more about inspiring people to engage with the research carried out at the university and on encouraging academics to connect with a community beyond the university walls.

As Professor of Public Engagement and Science at the University of Birmingham, Alice Roberts is committed to her role as a figurehead in science, not just in engaging, but involving the general public in science and research. More than that, she would like to see a diversification in the demographic of career scientists.

In this interview with Research Features, Alice discusses gender roles at work, and how more equal representation in the sciences might be realised, as well as the cultural issues and patterns that typically lead men and women on to separate and opposing paths in terms of careers, aspirations and achievements.

Hi Alice! Can you tell us more about your role as Professor of Public Engagement with Science at the University of Birmingham?

I have been at the University of Birmingham since 2012, in a role that is focused on encouraging and supporting public engagement, not just with science, but with research and teaching more generally. I quickly realised that this challenge needed a strong team, and we came together originally as the public engagement working group, which has now evolved into the Public Engagement with Research Committee (PERC). We work on developing the university’s portfolio of engagement activities, on identifying and dismantling institutional barriers to public engagement, and raising the profile of engagement within the university. We focus on interdisciplinary projects – bringing together academics from different disciplines to spark new ideas and perspectives, and working with partners outside the university, including museums.

As well as that strategic role at the University, I lecture undergraduates on anatomy and embroylogy, and engage with research in biological anthropology, exploring links between form and function, and the development of osteoarthritis in humans and other apes.

Outside the university, I am involved with discussions about public engagement at a national level, through membership of various boards or more informal contacts with organisations and institutions such as the Wellcome Trust and the British Science Association.

Less than 20% of professors are female – what can be done to address this issue of women reaching professorial levels? We need to tackle unconscious bias, which can impede promotion and progression; the Athena SWAN charter has proved very useful in this area. Much of that comes down to awareness as well as effective training and mentoring. But I think there is a wider, deeper problem which relates to the structure of academic jobs, and which was picked up by the Science and Technology Committee’s 2014 report on Women in Scientific Careers: current career structures and provision of parental leave do not promote equality. One pertinent quote stood out: “the academic career system was developed when most faculty members were men (with stay-at-home wives)”. If we are to achieve anything near equality, we need to make it easier to share parental leave and childcare and look for ways to support women (and men) coming back to work after periods of leave – that sort of flexible approach would help with other types of caring too. Part-time work needs to be seen as both normal and valuable. Many employers are not grasping the opportunities for flexible working that modern communications technology offers us. For those parts of jobs which were previously office-based – we just don’t need to be tied to those rooms and desks any more. It’s up to employers to make sure that there is support for achieving a good work-life balance – they have a moral obligation to do that. But it also makes good business sense to lay foundations for a happy, productive work-force.

What or who inspired you to pursue a career in science?

I was particularly inspired by great science writers like Steven Jay Gould, Richard Dawkins and Steve Jones. David Attenborough was an inspiration to me too, of course. But my dad was also an important inspiration to me – he’s an engineer and taught me a lot about critical thinking and questioning the world around me, as well as instilling a love of tinkering and taking things apart to find out how they worked. Now I am fascinated by the way the human body is put together, and the best way to understand
that is to take it apart! My local museum and the hands-on science centre were places that inspired me as a child.

You have been versatile in your various roles, from TV presenter, to author and professor. What has your experience been as a woman in a leading and very successful career?

It’s always hard to know, but I think I experienced a certain level of institutionalised sexism early on in my academic career, when I was passed over for promotion and told I “lacked gravitas” (which I took as meaning: a beard and other male accoutrements). In my department, it was clear that women were channelled more into teaching and administrative roles.

I’ve enjoyed a long career in television, as an expert presenter covering areas as diverse as evolutionary anthropology, biology, medicine and archaeology, which I did not pass over for promotion and told I “lacked gravitas” (which I took as meaning: a beard and other male accoutrements). In my department, it was clear that women were channelled more into teaching and administrative roles.

When I look at the balance of science presenters on television, despite efforts to achieve diversity, there’s still a definite male bias. I suspect that the idea that men naturally have “more gravitas” runs very deep indeed.

We are in the midst of a Golden Age of science on TV, but women are arguably mostly absent: “Girls are crying out for a female scientific role model! Do you think it is true that there is a lack of women in the media? Do you consider yourself to be the female Brian Cox?

I don’t think I’m the female anyone! I’m me. Could Brian Cox be the male Alice Roberts? After all, I had a landmark science series on BBC2 before he did – but perhaps nobody noticed.

I do think there’s a problem with ‘invisibility’ of women. Even when there are women scientists prominent on television, we don’t seem to be noticed as much as men. When science minister Jo Johnson gave his speech about the “Future of British Science” in January 2016, he mentioned ten men – and not a single woman. When it came to “STEM capital”, he said, “We have come a long way in the last decade in mainstreaming science, thanks in no small part to stars such as Brian Cox and Jim Al-Khalili and the important work of organisations like Science Girls.” Science Girls does excellent work, but it’s odd to mention an organisation alongside those two male examples, rather than any of the prominent female scientists on television. Having mentioned two male physicists and broadcasters, he could have mentioned Maggie Aderin-Pocock, Helen Czerski or Danielle George. In terms of public engagement with science, and gender stereotypes, I felt that this speech rather successfully promoted the idea of science as an exclusively male endeavour – whilst laying bare that problem of invisibility.

I think it’s important to have a range of potential role models out there – not just one or two. And it’s not just gender diversity that we should be aiming for.

In 2013, you argued that pink Lego for girls helps reinforce gender attitudes that see boys performing better in science – can you explain this idea of breaking down gender stereotypes in more detail and also explain why the gender divide is so prevalent in the UK in comparison to other countries?

I only singled out Lego as an example of how toys had become more gender-differentiated over the last couple of decades. It may be a neat device by toy manufacturers to make sure that we buy twice as many toys, but the effect is insidious and potentially very damaging. From a very early age, we’re sending out signals that certain areas of life, certain careers eventually, are more suited to boys than to girls, and vice versa. While boys can expect to build towers and bridges, girls must lower their ambitions to assembling three Duplo blocks into a cake.

There are so many examples – in toys and clothing – where girls are directed to be interested in ponies, fairies and unicorns while boys are associated with trucks, space exploration and dinosaurs. What about the boys who’d like to be equine vets, nurses or dancers – or the girls who want to be engineers and palaeontologists?

We need to make sure that such gender stereotyping isn’t narrowing horizons and lowering ambitions, and the easiest way to do that is to avoid it entirely. I was delighted to hear that John Lewis introduced gender-neutral clothes for kids last year. Let’s stop labelling our kids and wait to find out what they’re interested in, rather than restricting their choices from the start.

Engineering is the subject with the smallest proportion of women – why do you think this is? How should the subject gender imbalance be addressed?

It’s not a problem, so again it’s down to social and cultural influences. With physics and engineering, the problem lies not only in the leaky pipeline of careers, but with attracting a good balance of students to start with. There’s nothing inherently masculine about physics, just as there’s nothing inherently feminine about psychology, but somehow that’s how it’s portrayed and viewed. From a national, economic perspective, this means we’re not tapping into the widest pool of talent in these areas. We often talk more concerned with the personal perspective – where individuals are being turned off subjects and careers that they might have found wonderfully fulfilling.

What challenges do women face in science, technology, engineering and mathematics (STEM) education and careers?

I hate the acronym ‘STEM’! It’s used so much in the literature, and yet poorly understood outside that educational bubble. It is too narrow in some ways, and too broad in others. It’s narrow because it doesn’t include medicine – but then it’s also too broad because it lumps sciences together.

Some of the challenges women face in such careers are there in many professions, and have to do with career structures which assume the support of “stay-at-home wife” – society has changed, and jobs need to catch up. Other problems involve gender stereotyping and low uptake of subjects by young women – such as physics and engineering. Biology, psychology and medicine don’t suffer from such an issue, instead, we should be worried about the lower numbers of young men applying for these subjects.

What needs to be done to ensure that women continue to enter science education and pursue a career in science?

We have plenty of young women entering study and careers in medicine and biology. Focusing more on specific areas and specific challenges will help to pave the way for workable solutions. In summary, solutions range across: tackling stereotypes where these create barriers or disincentives; schemes to raise aspirations focused on certain disciplines; schemes such as the Athena SWAN charter – to raise awareness and encourage training and mentoring; radical career re-structuring – especially for early and mid-career researchers in universities; more equality in national policies on parental leave; equal pay.

What would happen if universities provided low-cost, on-site childcare?

And perhaps most radically – what could free childcare do for the equality of women in our society?