Jim Al-Khalili

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Welcome to Media Masters, a series of one-to-one interviews with people at the top of the media game. Today I'm joined by the leading physicist and award-winning science broadcaster, Professor Jim Al-Khalili. Jim was born in Iraq, moving to the UK as a young adult, and began his science career studying physics at the University of Surrey before specialising in nuclear reaction theory at PhD level. After a brief stint at University College London, he returned to Surrey and quickly established himself as a leading expert on mathematical models of exotic atomic nuclei. Alongside his academic work, Jim got involved in science engagement, and in 1999 published his first popular science book Black Holes, Wormholes and Time Machines, which was quickly followed by others. His big break as a presenter came in 2007 when he was chosen to present Atom, a three-part series for BBC4. This was followed by landmark documentaries on science and Islam, the history of chemistry, and electricity. A well-known figure on our TV screens and radio, he is a regular contributor to a number of programmes and presents The Life Scientific on Radio 4, now in its third year. He was awarded the Michael Faraday prize for science communication in 2007, received an OBE in 2008, and was appointed president of the British Humanist Association in 2013.

Jim, thank you for joining me.

You're welcome. Pleasure to be here, Paul.

So I think we'll start at the beginning, Jim. Were you always interested in science? How did you get into it?

Not always! I have a younger brother, and I think he was the one who was more 'geeky' in terms of science – he had the telescope, he was into dinosaurs – but by the age of 10, 11, 12 I was much more interested in football and girls!

Rightly so! Priorities in the right order...

Quite. It must have been around the age of 13 or 14 that I suddenly... I fell in love with physics in particular. As is always the case with people going into science, there was an inspiring teacher, and I decided physics is all about answering the big questions: "What's out there?" "Does the universe go on forever?" and so on, and it's all basically common sense. I found it much easier to do physics than chemistry or biology, which for me was remembering the names of things that I wasn't very interested in.

So it was just a natural affinity, as it were, straight for physics right at the beginning.

Very much so, and from then, from the age of 13 or 14, that was it – that's what I wanted to do. I wanted to do physics and I wanted to become a physicist. I wasn't quite sure what that entailed, I didn't have an academic career in mind, I just knew that's what I wanted to always do.

So what did you do with that desire at that point?

I just kept at it at school, I took the right subjects... you mentioned in the introduction that I grew up in Iraq and came over to the UK when I was 16, so I had taken my O-levels in Baghdad, at the British Council in Baghdad, because we knew we were coming over to Britain, so that I could hit the ground running and start my A-levels when I arrived.

So incredibly serious, committed and disciplined even at that age.

Well, with the encouragement of parents who knew that that's what I would need to do, and so I took A-levels in physics, chemistry and maths, and that was it. I applied to do physics at university and never looked back.

What were your goals at this point? Obviously you wanted to be a physicist, but did you think you might get involved in science communication, or did you consider yourself to have a purely academic career, were you going to be a teacher and lecturer?

Actually I don't think I had a clear idea what I wanted to do. I certainly didn't think I'd be getting into science communication; I certainly had no inkling that I wanted to be in front of a camera, presenting TV documentaries. I don't think I even had an academic career in mind. In fact, even up to the final year of my undergraduate

degree, I assumed I was going to graduate, get a job, you know, get a mortgage and so all the things that grown-ups do. My wife, Julie, I was already dating her when I was at university, and we had planned to get married after I had graduated, so I even had a job lined up as a scientist for the civil service at the National Physical Laboratories in Surrey. So that would have been it. That's not an academic career, that's a job!

That's an actual job.

Exactly. But in my final year, I did a research project with a professor of nuclear physics, this was at Surrey, at university. Obviously I must have impressed him, because he invited me to stay on and do a PhD with him in nuclear physics. I thought, "Ooh, a PhD! But I can't – I've got to get a job and a mortgage, I'm getting married..." Talking it over with Julie, we realised that actually, she would be prepared to support me if that's what I wanted to do...

Wow!

I'm still paying her back! I'm not quite sure when we're quits...

It's an undefined repayment.

Exactly! Exactly. So that was it. Then having decided to do a PhD in the subject, that's when I decided the academic career was what I wanted to do. I wanted to do research.

So at that point, once you had finished your PhD, in your mind's eye, were you going to be a full-time academic, a researcher, and stay in academia?

Exactly. So there's a sort of well-trodden route up the ladder in academia that you do your PhD, then you become a post-doctoral researcher – a research assistant, essentially – working for a professor somewhere. After a few years you can then possibly apply for a junior lectureship position, and then you sort of move up – lecturer, senior lecturer, reader, the heady heights of professor – but that was it. That was what I had on the road in front of me to aim for.

What prompted you to move into science communication? Because there are many professors of physics that consider any kind of popular science

communication to be an anathema. They think it's a waste of time communicating with the public.

Absolutely. And 20 years ago, when I started science communication, that was very much the established view, that you don't sort of sully your reputation with the masses by going out... leave that to those who are not research active, or who are retired and have nothing better to do with their time. My social group of friends were, on the whole, not other physicists, which is somewhat unusual, so I was very used to explaining complicated physics ideas to people who didn't have a background in science. I was used to that translation of technical jargon into everyday language, and the analogies and so on, and I had... I got a particular pleasure out of doing that, watching the penny drop, when I explained something that fascinates me in science, and explain to someone else who doesn't have my years of training, but also 'getting it' in some sense.

It's also enjoyable to have it explained as the recipient of that. When I went to school and learnt science, it was about memorising the periodic table – it was so disengaging, and it was only through magazines like BBC Focus that I got into it, and watching Atom, for example, where it explained quantum physics in plain English! It really is a joy.

That's the thing that a lot of scientists, and indeed people in the media, still don't appreciate – that the wider public, the non-scientists, are not less clever than the scientists! They just don't have the benefit of speaking that language.

We're ignorant in the proper sense of the word, aren't we? We just don't know.

Yes, exactly. But that doesn't mean that it can't be explained. Of course, there are more difficult concepts that you can't explain in two minutes. It's taken me 10 years to learn quantum mechanics, why should you feel you have the right to understand it in a conversation? But as a young lecturer, I began giving talks to local schools. I became the go-to person in my department when journalists were enquiring about science stories, so I would go and talk to the local radio station, or write an article for a popular magazine, and it gradually developed from there. I was warned off! I was told by senior colleagues not to get involved in science communication because I was very research active, and attending conferences and writing research papers in journals, but I ignored that advice. I said, "Why can't I do both? Why can't I be a research scientist and be someone who communicates the science?"

Because it adds to the credibility of both fields, quite frankly.

It does now! But in the 90s, no. It was very much something that... I was even introduced by a colleague to someone who was visiting the department, "This is Jim Al-Khalili – he used to be a physicist," as though somehow I had sold out. I had become a media tart. But these days I think it is certainly possible to do both, to have that academic reputation and do science communication and broadcasting.

Once you actually dipped your toe in the water with media, as it were, did you realise that this was something that you liked as well as, clearly, you are good at?

I did. I found I derived as much pleasure explaining science as I did doing the research myself. That's not the same for everyone; a lot of researchers are quite happy doing the research, and then the only people they tell are the other specialists in that field, through a conference talk or through a paper that's read by half a dozen people, other experts, in a very specialist field. I got as much pleasure standing up and talking to a wider public, because I could see that they were fascinated, they wanted to know. It's a different level, and for me it's a challenge of using the right language, empathising with the audience and saying, "Put myself in their shoes – how do they see the world? How much do they understand? What phrases should I use? What analogies would make sense to them?" For me, that was a challenge, and interesting and exciting in the same way that my own research was.

I'll ask you about that in a second because that fascinates me. But in terms of when you start in academia, there was a point where you kind of professionalise that approach, when you decided to get on the ladder and go public. Was there a point with your media career, as it were, where as and when you captured some attention and you realised you enjoyed it, you kind of professionalise that as well, to think, "I have to get an agent, I have to produce a book, I have to get on the radar of producers and programme planners, etc."?

I don't think I was ever actually particularly proactive in trying to build up my media career. To this day, I don't have an agent to do my broadcasting work. I have a literary agent for my writing, you know, you can't really survive in the publishing world without a literary agent. There are many other science communicators, friends of mine – Brian Cox, Alice Roberts and so on – who of course do have agents, but for me, because I didn't want to proactively do as much media as possible, I wanted to do one series a year, do my radio, but wanted to keep that space available for my academic life as well, I thought, "I can control this." And indeed I think I can.

That's my next question really. Do they amplify and feed off each other, and complement one another, or do you often feel a tension when sometimes you might be shooting all day and you're behind marking papers or whatever?

Well, it can be a challenge sometimes, and my time has to be very carefully organised so that I know that at a particular time of year when I've got exam scripts to mark, I make sure I'm not away filming. When I'm teaching, during my teaching semester, there are days of the week that I am just unavailable for outside stuff. But then, when I am not teaching, or during holidays, that's when I block in my broadcasting stuff, and my writing fits in around everything else. So it's just a case of... not juggling, but just carefully making sure everything slots in together.

How does it work to produce a science show? Does the BBC4 commissioner come to you and say, "We want to make a programme on quantum physics," and then you say, "Right, it needs to be three parts, we're going to do A, B and C..." How does it work in terms of where's the creativity led?

Well, sometimes it will come from me, I'll say, "I'd really like to do a programme about such and such," but then I wouldn't write it up as a proposal that goes to the commissioning editor, I would work with the producer and exec producer either in-house – I mean, most of my stuff is for the BBC, so either part of the in-house science unit at the BBC, they have a designated group of producers and directors that put together a programme of science documentaries and they look after everything across the whole of the BBC – or I would work with an independent production company and say, "I'd like to do a programme about this." Or they might come to me and say, "Have you thought about...?" We're thinking about putting together a documentary about Einstein, let's say, would you be interested in fronting it and presenting it? And I'd say yes. Then putting the proposal together might involve me a little bit, I'll say, "You really should tell this story," or, "You should interview so and so," or, "Maybe we can describe this particular bit of physics, that would come across very well, it hasn't been done before." But once it's then green lit, once the proposal has been okayed by the commissioning editor for the BBC, then very often the producer would come back to me, and we sit down and decide what we would cover – but not in detail. I then stand back and let the producer and director put the story, the narrative, together. Because what works on TV is not necessarily what would work in a lecture or in a popular science book.

How does it work in terms of when you are visualising these things? Is it led by the budget or the creativity? Because I've seen documentaries, for example on the double slit experiment where someone pours a bucket of sand through two slots, and then I've also seen it with very sophisticated computer

graphics. Are you told, "Look, we need to explain the double slit experiment but you've got £8,000 to do it."?

Well, it's pretty much that. I think very often, particularly for the stuff that I do forBBC4, it's budget-led. We've got this much to do, so we'd better decide do we want that trip to America to visit that laboratory and interview so and so, or do we want to blow our budget on sophisticated CGI? So we have to decide, we have to juggle how to best use the money. And sometimes, a particular concept which we think might be quite difficult to explain, the director finds I do a pretty good job of waving my arms around and getting the right language, and he'll say, "Great – we don't need anything else, you've just explained it very well." Sometimes it's difficult and we'll say, "Okay, what we're going to do here is, later on in the production, we're going to add some CGI so you can see spinning electrons," or whatever it is – if they think that helps, and budget permitting. But it's that way round – how much money have we got, what do we want to do, where can we go, what locations can we visit? Of course there are other bigger budgets on BBC1 and BBC2 where that's not such an issue.

How does it work in terms of the thoughtfulness of visualising these things? For example if you're told to Heisenberg's Uncertainty Principle, for example. Do you literally sit in a café and think how best... or do they present an idea already, or do you just come up with it from scratch? Are you in the shower when you think of these ideas? How does it happen?

Very often I will think of them, because I'm having to think of them when I'm writing. So I enjoy writing probably more than anything because it's entirely down to me. It's my... conjuring up my images, my analogies, the way I will explain things, but with television it could be me, it could be the director or the producer who comes up with it – and I have been very fortunate in that almost all the documentaries I've made for the BBC, I've worked with other people who are also scientists, directors who've got degrees I physics, even PhDs in physics, and so these are smart people, and they very often will come up with a really nice way of explaining something like, say Heisenberg's Uncertainty Principle, because that's a nice example, because that's exactly what I did in a documentary a few years ago called Everything and Nothing.

I remember it – it was a two-parter, wasn't it?

That's right, that's right. And we explained –

It was absolutely fascinating. The first one was Everything and the second one was Nothing.

Right. Well, in Nothing, we explained Heisenberg's Uncertainty Principle as a game of pool, and I say... because the whole thing about Heisenberg's Uncertainty Principle is you can know where a particle is but you don't know how fast it's moving, or you can know how fast it's moving but you don't know where it is. And we had this game of pool, and we used the example of, "I can either have a snapshot of the game of pool, a photo, a high resolution image...

And then it becomes increasingly pixelated. I remember it.

Right. So if it's a very sharp image, I know exactly where every ball is, where the cue ball is, at a moment in time, and that image may be 10MB, but I could also use up that 10MB of information on a low-resolution video, where you see how fast all the balls are moving, but they're fuzzy and you don't know where they are. And it was such a... and this was an idea that didn't come from me, this came from my producer, the exec producer, a chap called Paul Sen (corr), who I've worked with a lot, and it's beautiful. It's the most brilliant, for me, explanation of the Uncertainty Principle I've ever come across, and it's not come from a quantum physicist, it's come from my exec producer.

It actually annoyed me, that. Because I read loads of popular science books, that's how indeed I got into reading your books, and I thought I understood Heisenberg's Uncertainty Principle, and when it was explained there, I'd actually got it in my head wrong for all these years! I thought it was something completely different, and that slightly annoyed me, as well as being enlightened.

Yes, yes.

So would it be fair to say there's a kind of renaissance at the moment in terms of science in the media? Because it's everywhere. Would you have got a documentary on electricity 20 years ago at that level of detail?

No. I think that's for sure. I mean, it began probably... 2010 was when the Royal Society was celebrating its 350th anniversary, and the BBC decided to sort of piggyback on that and designate 2010 the BBC's Year of Science. So they commissioned a lot of science documentaries then. The documentary obviously that was most successful, that most touched a nerve was Brian Cox's Wonders of the Solar System. Tremendous success! Way beyond all expectations. Something like six million viewers. He was reaching audiences way beyond those who'd switch on and say, "Oh, there's a good Horizon on this evening about black holes," partly because of his, you know, boyish good looks and pop star sort of background, the

Mancunian accent, whatever it was, it captured the imagination – and on the back of that, the BBC could see just how marketable a lot of these science documentaries were, and they commissioned a lot off the back of that. My Atom series, as you mentioned in the introduction, my big break, I guess, as a presenter, was 2007 – and even that was... I think hadn't been done before. I remember Mark Thompson, the ex-controller of the BBC, coming to me, congratulating me personally, saying, "I never thought I'd see the day when we'd have a documentary on the BBC where a professor of physics writes an equation on a blackboard, and doesn't need to wear a white lab coat and, you know, turn it into some sort of, 'Oh, you boffins!'." It was all part of the documentary – it became acceptable to get across complicated ideas, and that's really taken off since 2010. Whether it carries on, who knows.

Actually that leads to a better question than the one I was going to ask! Do you think it will carry on?

I'm not sure, I think is the honest answer. There have been a lot of changes in the BBC, and it's not clear, with budget cuts, what's going to survive and what isn't, and also – and I can sort of understand this – you can only make so many documentaries where Jim Al-Khalili walks up a hill, or Brian Cox gazes up at the stars, or Alice Roberts jumps in a boat and heads off to discover some new fossils, you know, or Iain Stewart talks about volcanoes. We can carry on doing these, but at some point we've done it and said it – and we need something different. And I think I can sort of feel the BBC and the powers that be are looking for something different and something new. That doesn't necessarily mean that they won't commission science any more – I hope not – it might just be a different kind of programme that we'll be making.

I'm not a BBC basher by any means, but clearly they have a large budget, and it's just a question of priorities. Do they spend those millions on EastEnders, or do they cut a tiny slither... I mean, when you actually look at a pie chart, and look at the overall burden of, say, BBC4, on the BBC's overall finances, it's barely a slither.

I know. I know. I have to say, I am a fan of Top Gear...

As we all are!

As we all are, but I do... when I think that one episode of Top Gear is more than the whole annual BBC4 budget on science documentaries, probably – I mean, I haven't done the sums, so don't quote me on this – but you're right. But then that's life. I mean, BBC4 has a smaller audience. In fact, my current series has done very well,

so we've got something like 600,000-700,000 people watched that programme at that slot. That's not EastEnders proportions, you know, multimillion, but it's still very good, and then probably the same number again will have watched it on iPlayer, so over a million people...

If you put that in a room, I mean, or in a stadium for example, that's a lot of people.

And in this day and age, with so many channels available, and also the changing culture of people not watching TV live, kids are watching it on their laptops, people are watching Netflix and so on, numbers are going down all the time.

I've never listened to The Life Scientific live; I always listen to it on the podcast.

Exactly. So things are changing anyway.

I don't even know when it's broadcast! Is it on at 9.30am on a morning? I literally wouldn't even know when it's broadcast.

Well, thank you, Paul! It's on a nine o'clock on a Tuesday morning. It's off air at the moment.

That's right, it is. But again, you must have lots of people like me that are loyal listeners, that listen to it on iPlayer or the podcast or whatever.

Exactly. And the BBC must take that into account, so I'd like to think that they can see that there's still an audience out there who want intelligent programmes. I hear it all the time, people saying, "Oh, great!", stuff that you're doing on the radio or on BBC4 for intelligent viewers and listeners, but then of course I am in a bubble – I am surrounded by... people who follow me on Twitter are likely to be the people who have watched my programmes, so this sort of self-congratulatory feeling that you get is because you're living in a bubble, and there's a big world out there where there are pressures from other corners.

Indeed. Another question I wanted to ask is: do you think there's a cultural bias in terms of science reporting? Because one of the things I've got directly from your activism in this is the huge influence of Islam and Islamic countries

throughout history in terms of number theory, science etc. and that's something that I didn't know about until you started to talk about it.

Yes, well when you say bias, what, you mean in terms of...?

Because when you think of scientists, you only tend to think of a kind of western influence.

Well, yes, and everywhere in the world... the way science is taught is a very Euro-centric view. There were the Greeks, who were European, they were very clever, and then nothing happened. And then there was the renaissance, and, you know, for a thousand years, and then Copernicus and Vesalius and Kepler, Galileo, Newton... so the whole history of how we've understood the world and how it works has all been done by men from Europe. Well, it's true, science... because of cultures and societies, is very male-dominated. There's no getting away from that. But certainly, the fact that all science was created in Europe is silly and I have this passion of, although I'm not religious, I have this passion for telling the story that there are other cultures, particularly the Islamic empire in the medieval period, that produced great advances in scientific knowledge.

And that's kind of an extra string to your bow, because it's not just merely, if I can say that... talking about Heisenberg's Uncertainty Principle is actually about educating people about the history of science.

Yes. I've always been interested personally in the history of ideas and the personalities. Not all scientists find that appealing; they don't care about the person... they don't care who Schrödinger was, who came up with Schrödinger's Equation of Quantum Mechanics, they are interested in that equation, and how you solve it mathematically, and what it tells us about atoms. They don't care that Schrödinger came up with the equation while having an affair with a young woman, and on a skiing holiday in Switzerland.

But that's the bit that adds colour to it; that's the bit that makes it memorable.

Yes, exactly. For me, it brings it alive that these scientific ideas, these concepts, were in the heads of people, other people who had other interests, or were fallible, or had quirks of personality – that brings it alive. So I have always been interested in the history of science, and in my writing I talk about the history of science. The history of Arabic science is something that I just became very passionate about. In fact, the way it started, I'd just finished filming my Atom series, and Paul Sen, the very clever exec producer who came up with the Uncertainty Principle, with whom

I've worked quite a bit, said, "What should we do next? I think the BBC are going to like this series, what else should we do?" I said, Well, I'm interested in x, y and z programmes, and one of the suggestions was Arabic science, because of my background, my cultural heritage, it's quite an interesting story to tell – and it's an untold story. So I made the BBC series Science and Islam, and off the back of that I went off and did a lot of research for two or three years – I didn't do physics research, I was doing history of science research, culminating in writing a book on the subject, Pathfinders (corr).

I found that incredibly interesting, that series, because if I watch a documentary on electricity, I know it's about electricity, and I expect a few eyebrow raises of stuff I didn't know, but with that, with the Arabic stuff, to be honest, all of it was completely new – it was what Donald Rumsfeld would call 'the unknown unknowns'!

Exactly, yes.

It was a real mind-blower.

Yes, I'm surprised it didn't, I guess, make more of an impact, you know? It didn't make it to BBC2 for instance, it stayed on BBC4, and I often wonder why did they not deem it sort of okay for BBC2. It certainly wasn't too advanced intellectually – because the BBC has these different levels of difficulty: "Oh, no – you can't explain that." Brian Cox gets very frustrated when he wants to explain some concepts, "Oh no, this is BBC2." You can do it on BBC4, but on BBC2 it has to be a bit... softer. And then if he does something for BBC1, suddenly the things he was allowed to do on BBC2 have to be sort of repackaged. But the Science in Islam series, I would have thought that would have made a nice BBC2 series.

So you were a trouble-causer in the academic world by bothering to get into science communication, and then you've moved on there, but in a sense you've gone a step further by causing actual trouble in politics generally, by getting involved in the British Humanist Association. What was the rationale behind that?

Like many people, I haven't been involved in the sort of rationalist movement as long as you have, for instance. Like many people, when you hear about humanism, you think, "Okay, that's what humanism is, I guess that's how I feel..."

It's an 'ism' – isn't it?

It's an 'ism'. But those are the things that I believe in, I find important, oh, therefore I'm a humanist. And it was something that came to me only a few years ago, so when the chief executive of the British Humanist Association, who you know very well, Andrew Coxon...

Great guy.

He came to be and asked me if I would consider becoming the next president of the British Humanist Association. And he said, "Jim, be aware that anyone we would ask to do this is going to be very busy." Don't flatter yourself mate, sort of thing.

That sounds like Andrew!

Yes, exactly. And so really, that was my first introduction to humanism in a big way, and certainly the British Humanist Association, by being invited to be its president! It's not as though I'd been active in the movement, in the secular movement, in this country before, I was sort of thrust into the limelight.

Unwittingly but willingly.

And thinking, "Oh, I hope I don't say the wrong thing," you know, what is our view on this, what are the arguments for and against this, so I don't get caught embarrassed in any interview. So it wasn't a case of going out and looking if I could stir up trouble or push the secular movement in this country forward, and fight against... although I certainly believe in that now, the fight against the injustice of discriminating against people who don't have a religious belief, I just thought, "This is now my role, as president of the BHA, to make these pronouncements." So I'm not saying I'm a reluctant revolutionary, it's just that this was never planned.

It's interesting though, obviously being president is the top job – so you've moved from not campaigning in this secular space to being the figurehead of the campaigners.

Absolutely – and that's quite scary.

And the language must change as well – before, you had been explaining and reporting on, whereas now you are actually calling for things.

Yes. So what is nice is that the BHA have a great team. Andrew Coxon and the team that work with him are so on the ball, they are so... they understand the issues and the policies and the campaigns, and I'm led by them – and so, if I'm asked to make a pronouncement or have an interview, I will talk to them and say, "What is it? What is our main point here? What are the main things that you want me to get across? What shouldn't I say?" and fingers crossed, so far I haven't embarrassed them – or I don't think I've embarrassed them, they haven't told me that I have – so I am led by the professionals, I guess. These are the guys who do it full time.

What I like about the fact you're president is that almost overnight you became the top guy in this particular space, and actually you have the credibility, the science background...

I may have the science credibility, and my family were certainly pleased, my son and daughter said, "We're the first family of British atheism all of a sudden!" I quite liked that! Yes, but when I do look at people who have spent so many years campaigning and putting so much of their lives into the secular humanist movement, for me to be suddenly catapulted to the top of the pile, I do feel like a bit of an imposter sometimes!

I couldn't think of a better person! But if I could ask a final question, because I'm mindful that we're running out of metaphorical tape, as it were... what's next for you? Because clearly you've pushed the envelope every time – moving from academia into science communication, into campaigning... what's the next leap?

Well, I think the next thing for me is obviously to get onto Strictly Come Dancing. I say that only half-jokingly...

Well, if it's good enough for Vince Cable...

Yes, exactly!

Are you a good dancer?

I think I am, but doesn't everyone?

Oh, no – I am aware of my own failings.

Well, if there is a dance move that involves moonwalking, then I'm their man!

Do you think you'll be able to... do you see it continuing? Balancing your writing and your broadcasting with the academic stuff?

I do, yes. At the moment it's roughly half and half; half of my time I'm an academic professor of physics, I do teaching, I have PhD students, I publish papers, and I'm interested in research, I've got a new area of research, quantum biology, that I'm involved in, and the other half of my time is my public engagement. Now, that also includes my BHA activities. It's my persona as a public scientist. So my BHA activities, my writing, my broadcasting, my radio, my public lectures and so on, and that balance I would like to maintain. Now, I don't know if the TV stuff might dry up, The Life Scientific might stop being funded. I'll still like to write, and I'll still like to be plugging away, campaigning for rationalism, I guess, in some form or another.

Final, final question then. Does you campaigning on rationalism create some enemies on Twitter? I mean people who like you as a science broadcaster, but might object to the fact that you are now campaigning on issues, because it gives them something to disagree with you on?

Sometimes, but surprisingly few. I did think, when I took on the presidency of the BHA, I would be opening myself up to attack from various quarters. After all, my mother is Christian, she is very religious, and I respect her right to have her faith, which is very important to her, and my father is a Muslim. So technically, if you were to follow the religion of your father in Islam, unlike in Judaism, where you follow your mother's religion, technically I'm a Muslim, as perceived in the eyes of maybe some Muslims, so I thought I would get some issues, as an apostate and so on, but no, I haven't. I haven't. I will now that I've made it quite public on this podcast! But the attacks I've had have been few and far between, and the great thing on Twitter is you can just block people anyway, so...

And long may they remain blocked! But I think it's probably best that we bring the podcast to a close. It's been a fascinating interview, and I've learnt an awful lot. Jim, thanks ever so much.

My pleasure.