

Numberphile Podcast Transcript

Episode: Quiz Shows and Math Anxiety - with Bobby Seagull

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School teacher Bobby Seagull is well-known for appearing on a quiz show - but there's much more to his story.

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[gentle piano music]

Brady Haran [BH]: Today's guest is the London based school teacher Bobby Seagull. Bobby's known to many people in the UK for a star turn on the quiz show University Challenge.

[Clip from University Challenge]: this is their captain, hello my name's Bobby Seagull, I'm from East Ham, The London Borough of Newham.

BH: His initial moment in the spotlight has led to a part-time career in the media, fronting tv shows and becoming something of a mathematics cheerleader. But there's much more to Bobby's story, which includes all sorts of fascinating twists and turns.

[gentle piano music]

BH: It's not uncommon when I do these podcasts for the person I'm interviewing to send me a few kind of little briefing notes and a few things to look at just to help with my research. You sent me [chuckles] six pages of bullet points, totally two thousand three hundred and ninety-two words. What does this say about you? What can I learn from you from this fact alone?

Bobby Seagull [BS]: I think I'm someone that likes to be prepared. Again I'm a school maths teacher, I always tell my students do your homework, do your research. But actually party I've had some negative experiences on podcasts and interviews where I've turned for an interview but they literally didn't know who I was. Who are you? You're Bobby Seagull? Oh we're gonna talk about what? Physics, is it? No... maths. So obviously different but I've got into sort of the habit of... form is a podcast or a tv interview giving them some notes that might help them assess my interests and background. But the only thing was this was it was meant to be a few bullet points. Maybe ten bullet points. But I got carried away.

BH: [laughs]

BS: And it's actually quite nostalgic for me, because during the process of writing I started asking my dad oh where's the old stamp collection? Where's the old magic set? I tried find my brothers and I we created a fantasy football prediction in the mid-90s. So actually it was a road trip for me. So i'm sorry that you sorry that you sort of saw my brain splurge on paper.

BH: I found it fascinating though reading all about you. And like we can't possibly cover all these points you've got here but...

BS: It was almost like a chance for me to reflect on my life. You know, lockdown was there, you know term is approaching in a couple of weeks, normal school term. And a chance for me to take a step back and oh why do I really love maths? So actually it's given me sort of a spring in my step. I am doing the right thing.

BH: Bobby, you're a young fella, you shouldn't be reflecting on life already.
[laughs]

BS: [laughs]

BH: So let's first deal with the elephant in the room. Or the seagull in the room, and that is your surname. Which I just thought oh that's an unusual surname. You know people have unusual surnames but reading your notes there is quite a story behind it. The surname Seagull.

BS: Oh yes there is Brady. So my family's surname, my Dad's surname is actually José, like the football manager José Mourinho. Because my family are originally from a state called Kerala in South India, and the language they speak there is Malayalam. Which is actually is cool because Malayalam is the longest proper noun which is a palindrome. So it's Malayalam, Malayalam.

BH: nice.

BS: Same backwards and forwards.

BH: Hey, I was born in Glenelg which is a palindrome.

BS: oh so we could have the palindrome battle, like a palindrome rap battle.

BH: Yeah!

BS: [laughs] so they were...

BH: Yeah, okay.

BS: They're from Kerala and I think in the 1600s the Portuguese came, converted people from I think... I presume my ancestors would have been Hindu. So my family are actually Roman Catholics so hence the José. So by rights if you believe in the multiverse theory there is another Bobby José talking to Brady Haran but in this particular universe that we occupy Brady, it's Bobby Seagull.

BH: Yeah. So why Seagull then? I mean José's a perfectly serviceable surname, Bobby José's a pretty cool sounding name. How have you ended up Seagull?

BS: To be honest I'd be very happy with José but my Dad read a book growing up in the Seventies called Jonathan Livingstone Seagull. And it was an inspirational quite a short novella, a book you get through maybe in an hour, hour and a half max by Richard Bach an American author, and it's all about the life of a particular seagull called Jonathan Livingstone. We think of seagull's, you think of irritating birds that are gonna peck at you and eat fish and steal your chips and they're just irritants and in this book seagulls are no different, all they do is they eat to live, live to eat. Very subsistence living. But Jonathan Livingstone, he thought hey guys I've got these set of wings and he explored flying and you know soared tremendous heights. A bit of metaphor in the book and some people think it's a bit wishy-washy Sixties, Seventies hip hop, not hip hop, hippy culture rather. But actually he discovered a greater meaning and then tried to teach other seagulls that too. So my Dad was so inspired he thought actually he would love his kids to be educated and then help inspire others so in

a bizarre sort of way like I've ended up becoming a teacher and there's like that nominative determinism where my surname has influenced my sort of life mission of trying to inspire others. But yeah it's a totally made up surname but in Britain for birth certificates you can put any surname you want. So yeah you can do anything and they picked Seagull for me.

BH: So I know you've got three brothers, are they all Seagulls as well? Or do they all got random surnames?

BS: [laughs]

BH: How did he... what happened?

BS: The plot thickens. So I'm one of four boys.

BH: Yeah.

BS: So the first one, so let's put it this way, so my dad loved the idea of the Seagull as a surname and thought it was inspiring. My mum's like... Dad it can be a middle name, it doesn't have to be a surname. So brother one, Davey, my dad wanted to put a Seagull but he had my mum actually changed it last minute to Seagull being a middle name. So he's a Seagull middle and then Jose's his surname. And then number two, me, I just have Seagull. So my dad won out.

BH: yeah [laughs] right.

BS: Then sibling number three, John, Dad put Seagull, Mum came in last minute so he's Seagull middle name, Jose's the surname. And the last one Thomas, or Tommy, uh, my dad won the day so he's a Seagull. So we got two Seagulls and two Seagull-Joses. I mean we're all biologically a hundred percent from the same parents but different surnames.

BH: So it alternates. What do you think about that? [laughs] I mean obviously you just get used to it, was it ever a pain in the backside growing up, or hard to explain? Or was it just like, you know?

BS: So I'll tell you, there've been perks and cons. The perks like at school, primary school, I remember the dinner ladies they would say, What's your name? you know they'd have little token, very few to join the queue, and I'd say my name's Seagull and they say oh that's a lovely name why don't you go to the front of the queue. So it definitely had perks, but then there was some negatives as well. I'm pretty certain, you know your memory can sometimes mislead you, but I'm pretty certain I have a memory of us being four, of me being four or five around that sort of age, and we went to an airport and my mom's surname is José and they saw me with my passport, it said Seagull. And they said is this your son? And I said, I don't know this lady, and do not [laughs] oh my god

BH: [laughs]

BS: They had to separate us and they had bring my uncle or someone to come pick us up at the airport and it was a bit of disaster and I've learned not to play jokes on my mum, because she was in tears and it was all because I thought it'd be funny.

BH: And you don't play jokes at airports!

BS: I know, a four year old Bobby Seagull wasn't aware of that. But he is aware now. [laughs]

BH: [laughs] Oh wow. One last question about the Seagull issue then. How do you feel about seagulls themselves now when you go to the seaside and see them? Do you have a warmth and affection towards them, or a resentment towards them? Because seagulls are very polarizing animals.

BS: The only thing is as a school teacher, when my students see Mr. Seagull's their teacher, they often, you know the first day of term they want to laugh. And I'll be like I'll get it out all the way, I'll just say Hi I'm Mr. Seagull! Cacaw! Cacaw! Look you can see my cousins in the playground. That's my auntie. I get all the seagull jokes out the way with young people. Myself, like, yeah, I guess I've grown to not love seagulls. But I've grown to... not indifferent that's an unfair word. Accept them. Accept that they'll always be part of my life in some shape or form. [chuckles]

BH: [chuckles] Well that was Bobby Seagull, people, join us next week, no [laughs]

BS: [laughs] Bobby José from the next dimension, in another dimension!

BH: So tell me a little bit about childhood, I get the impression you four boys were pretty clever lads.

BS: When people use the word clever, I always say that of course there's like a spectrum of talent, innate talent, but I think we become clever or not clever as well in sort of traditional terms by our upbringing. You know by the stimulation, in terms of reading books, discussions, having people around you. You know with my family there was definitely the case of being around people that really were interested in things. And my dad in particular. So like one routine that we had, and in fact it's probably been the defining feature of me is that every Saturday after lunch, so my mum would make a delicious South Indian lunch with biriyani, some chicken, some yogurt, some Indian dessert, we'd go off, cart off to the library, all of us. The number of us depending when people are born but eventually all of us would go to the library and we'd sit there and a beautiful red bricked, I think it's an Edwardian building, in East Ham, called East Ham Library, not surprisingly, and sit there on that library floor sprawled for hours reading books on anything. And again it could be Mayan Civilization or could be books on Victorian engineering marvels or fiction of Roald Dahl and we'd sit

there for hours and hours reading books. And our dad occasionally say oh what are you reading and we'd go on oh I read this about the Aztecs about their calendar and about their culture and we'd have these discussions and I think those Saturday afternoons and again having siblings and you're trying to outperform them and get cooler facts than them, that really made us who we were, so yeah I owe a lot to East Ham Library for making me the person who I am.

BH: Bobby, do you think your Dad was being really strategic and thinking if I do this the boys are gonna be are gonna grow up smart and interested and curious. Or was that just him? He just wanted to go to the library with the boys and read books?

BS: [laughs] I think there's a combination involved. One it was nice for him to get out of the house, to go and sit there and read the newspapers, but secondly I think, again my parents came from Kerala, like many people in Indian that sort of time not a great deal of wealth. But coming to Britain he was very grateful for the fact that it's a country that offered people the chance to lift themselves not necessarily poverty but we grew up in council estate. Really challenging council estate in East London, and a lot of students, in fact I think some of my peers that I saw there, the next time I heard about them was in a newspaper, ah, lad X Y Z, in for previous bodily harm. Okay, that was you I used to play with. So yeah I grew up in a challenging council and my dad saw the library reading as a chance for us to see a wider world. When you're growing up in a difficult place and you're surrounded by kids that maybe from backgrounds where education isn't valued, it can be easy to fall into those traps, and again when I was four or five, about age four to six, I'm pretty certain I was part of a gang without realizing it. These little kids going around on bicycles causing mischief and I'd be their lookout guy not knowing what I was doing. Had my dad not been interested in taking us to the library, there's another Bobby out there that's also causing mischief and mayhem, perhaps in and out of jail. I don't think that would be the case but I'm just saying...

BH: That's Bobby Jose!

BS: That's Bobby Jose! Cut ties with him, change identity to just not be associated. But yeah I'm a big believer obviously there's the element of the nature but nurture is so much a bigger factor for me.

BH: Bobby, what did your father do? What was his, how did he earn money himself?

BS: So professionally he qualified as a chartered accountant in India. But when he moved from India to Britain like late Seventies, early Eighties, back then qualifications weren't really transferable. So you know you turn up for a job in Britain, I am an chartered account, in an Indian accent you would say that, nope nope, you're from India, we can't accept the qualification. So he had to start from scratch as it were, so he moved into IT programming, hence like myself and my older brother in particular when we were young we were very much into coding and programming because that was my Dad's... he had to retrain himself from scratch to be a programmer, because that was a profession, well an area that was growing you know in the late Eighties, early Nineties, it didn't have much of a field but it was developing and it was something he could sort of start from scratch and they didn't really discriminate, like if you were from a good university it didn't make a difference.

BH: Now from the tome you sent me of notes...

BS: [laughs]

BH: that I was reading earlier, obviously there was four brothers, you're the second oldest, I got the impression it's your older brother Davey that you were particularly close to and sort of intertwines with your life more than the others, perhaps?

BS: Yeah, I think that's a fair comment in terms of our ages are quite different. So Davey right now is age forty, I'm six squared, thirty-six and John is thirty and Tom is twenty-six, it's quite it's a fourteen year age gap between the youngest and oldest. So Davey and I were three school years apart, so we grew up together and again Davey's story is again people probably should now the story before I explain. So Davey had you know its tragic, he was involved in a car accident when he was age two, two and a half, so was physically confined to a wheelchair for the first, I think, til about age fourteen, fifteen, he went to a special school. And back then in the UK they weren't very enlightened about their approach to students with physical disabilities. They assumed if you were physically disabled then you got no academic or mental faculties. So he was with students, you know people that had Down Syndrome, other sort of conditions that prevented them from academically flourishing but Davey's issue was he had physical handicap but not a mental issue as it were. So for many years his only sort of enrichment was with me at home or my dad in the library, but in school they were literally just like can you move your hand can you move your legs. So growing up with him, it was strange because normally you know your elder brother, your big brother, is someone that you look up to because they're bigger, they're stronger, they're smarter, but with him it was different because... while he had probably, okay definitely he is innately, if you can use the word innately, smarter than me, but when I was young I couldn't really tell that because his numeracy skills, his reasoning skills, his writing skills, weren't as good as mine, so I thought oh I'm smarter than my older brother who's three year old than me without me understanding the wider circumstances of that.

BH: So what was that like, having an older brother who obviously, you know, it sounded like he would have needed also a lot of you know care and stuff like that. Did that, did having a brother in that situation affect your life very much do you think?

BS: Yeah I think it's from a young age it's made me more empathetic because

you're always having to consider other people because normally if you've got siblings you're like oh they'll sort themselves out, but with Davey you need to make do you have enough water, do you want me to adjust your chair, do you want me to get your books? Again Davey, okay he absolutely loved computer programming. We had BBC Micro and he'd be sitting there programming constantly in front of the computer. But there would be times where the computer, the TV would switch off, I need to plug things back in. So you need to constantly ask someone are they okay, physically, do they need different things? So that sort of...

BH: Yeah.

BS: ...having to ask someone constantly if they're okay makes you more empathetic makes you more aware of people. But again because he's physically confined it meant Davey's mind became imaginative. So my dad would give us lots of activities to do. So we'd draw, we'd play chess, we'd learn about the stars. Again we did some programming. We did mathematics. We did, in fact, at a young stage it was a case of Davey and I in particular, again, he's the person that I'll chat to first for discussing ideas. We had such a breadth of things that we did together. Including the trashy stuff like watching TV, Neighbors, oh my god, can I ask you are you a Neighbors, or Home and Away, person?

BH: I'm neither...

BS: Oh

BH: but back in the day I probably would have been in the Home and Away camp...

BS: Oh [groans]

BH: These are two Australian soaps, television soap operas people, that

captivated Britain. Neighbors and Home and Away.

BS: Oh god [groans]

BH: and you're either a Neighbors person or a Home and Away person it seems.

BS: Can I just put it out there, I am a Neighbors person. So I'd watch Neighbors, I think I'd watch it twice. If I was at home I'd watch the 1:30 and then I'd watch the 5:30 repeat. And in Britain it was like it is the it is one of the biggest cultural phenomenons. I still can't explain to this day why an Aussie soap opera has such deep connection with the Brits. But everyone, my family we'd used to watch. So Davey and I used to watch sort of stuff like that. So what do I remember from it? Very little, but it was a big part of my childhood with Davey. Again, we just did so many different things, the chess, watching sports, drawing. The annoying thing for me was very quickly I'd realize anything we did Davey very quickly pick it up and be better than me. Actually this guy, if there's something called innate smarts and not that I was unsmart but I think Davey definitely got a little edge in that field.

BH: What were you like? Obviously it sounds like you were incredibly bright and, you know, curious and, you know, being encouraged by your father. What were you wanting to do? What were your ambitions? What did you want to be when you grew up? [chuckles]

BS: So it changes as my life progressed. But when I was young when I was five or six and this still cracks me up. I can't imagine either of these two now. But it was genuinely either to be a chess player or a cosmonaut. One of those two. And I say specifically cosmonaut rather than astronaut, because our dad from Kerala. Kerala the state in Southwest India is interesting because its a state, I think its the only state that's functionally hundred percent has a literacy rate in India, which is, again India's got various standards of education, but Kerala they

got no natural resources, so education's very important. But they also have, okay I think it's more socialist, a party called the Communist party, that ostensibly wins elections or wins power every five years and the next party comes in. So it's always had a strong sort of inverted commas communist roots. So there are lots of books from the old soviet union. So growing up we had fiction books, of course we had western fiction books, but we had lots of books from Russia, Ukraine, Belarus, and again as part of that you had to love space and astronomy. We had lots of books on astronomy, and we had lots of books on chess. So my brother and I used to play chess all the time. Used to look at the stars. And I was convinced I want to be a cosmonaut or I was about eight or nine, I thought I wanted to be a chess player. And the thing that sort of made me yep I want to definitely go into chess back in the I think 1993, the world chess championship, so Gary Kasparov was the big boss man of the chess world, and there was Nigel Short, an english chap, who was sort of right up sort of rising up the ascendancy, I think he was possibly one of the grandmasters at the time. He was invited to take part in a world chess championship against Gary Kasparov in London, and it was broadcast on I think Channel 4 in the UK and I vaguely recall Carol Vorderman who was a former numbers lady on Countdown being one of the presenters. But they would have chess on television and I would come back from school and my dad would have bought magazines, clippings, newspaper reviews, and my brother and I would sit there watching the chess. Glued. And we'd get our chess board, play along, discuss possible moves. So for me it's either chess or being cosmonaut. They're the two things I was really interested in. Having Davey there, if I was an only child, or I had younger siblings, I don't know whether if that would have been the same because he had those interests it's almost like... not oneupmanship, that's a bit unfair saying like I want to beat him but we would sort of collaboratively competitive with each other in both those fields.

BH: Now what kind of school are you going to at this point? Were you going to like, you know, a challenging school, if you were living in a part of London that you know wasn't flush with cash?

BS: East Ham, Newham, to be fair it still not... it's still quite a deprived area in terms of the UK big picture but students nowadays they can academically flourish if they want to. Back then, the reality it was very difficult for students to succeed. Partly because back then East London, you know, was written off. One thing I would say is that while the area was very tough, the primary school and secondary state school that I went to were... fine. They were okay. They, if you wanted to work you could do. If I'd had gone to the school on the other side of the road it would have been horrendous. But again, big picture, was it good compared to other schools nationally... probably not. With my family, my dad in particular, we never tried to blame the school. So if for example I wasn't doing well in geography, or my PE was underperforming, or when I was trying to learn the Indian flute and it was all a disaster we wouldn't look to blame the teachers or say Mr. Teacher, Bobby's not performing, what can you do? It would always be a case of we'd go home and my Dad would say what could we do Bobby to help you with your... and again PE's an example, physical education. I wasn't doing so well running races. And I was like oh dad I really want to win running races in school. So my dad and I we'd go to the park and we'd practice, we'd train, we'd go there you know set up cones. Do fifty meters, seventy meters, eighty meters. And we'd practice penalties, we'd practice football. So again that idea of with practice you can improve in most things, and again eventually I had made the school football team, I became one of the quickest in the playground. And my teacher would say oh Bobby you seem to be quite gifted at sport and nah nah not gifted at sport I've just gone and practiced a bit. I've gone and practiced my sprinting with my dad in the playground. So again it was a case of even if the school's were disadvantaged relatively speaking we'd always use it as an opportunity to try to say don't blame the school, do something in yourself to improve your lot as it were.

BH: Pull yourself up by the bootstraps sort of philosophy?

BS: Yeah. I would say that.

BH: Having said that, I read that you ended up going to the poshest of all posh schools...

BS: [laughs]

BH: Well how did this happen?

BS: Oh, yeah. So when I was fifteen, sixteen, so doing well you know conventionally, academically coming top of my year and I remember in any subject if I ever came second there'd be like an inquest, not with my dad but with myself, I'd go back home and go how did I come second, how did I drop one percent. I was a bit tough on myself, if I ever have children I will tell my child you know it's okay not to get hundred percent, it's okay not to come top all the time. Because I think I put a bit of pressure on my self to always be the top in every subject. When I was fifteen my family used to read The Times newspaper, I'd normally start off with the back section, the sport, read about West Ham losing which they often did, and then...

BH: [chuckles]

BS: ...towards, there was an ad section, I saw this ad that said, are you a bright boy? I'm like yeah that sounds like me. Are you from a state school, so that's a non-fee paying school. That's me. Would you like a life changing experience? Doesn't sound like a bad idea. Apply to Eton College. I'm like, Eton College? I think isn't that that really famous school? So I remember I cut out this little like coupon as it were, put my name, my address, I remember getting a brown envelope, self addressed envelope, running to the post box, posting it and not thinking much of it.

BH: Did you discuss this with your parents? Did like you say dad I'm gonna send in for this?

BS: No I didn't, I think at the time I just because I think it was just for an application form, so I just went there, did it myself and then a couple of weeks later we got this really fancy brochure, like really laminated Eton prospectus that showed off this school, playing grounds, and in my secondary state school, which is a good one for East London, but we didn't have any playing fields. So we had to go to a local park to play our sports. But I saw Eton's my god there's like twenty football pitches and swimming pools and golf courses and I was telling my... when we got the prospectus like dad I'm going to apply to this place, and he was like okay, you know, we'll apply there but... again this has always been our attitude, I didn't expect to get an Eton scholarship, but my thought was in the process of applying in the process of trying to prepare for the scholarship, the aptitude test, and the interviews, et cetera I would become a better academic. So even if I didn't get the scholarship it would be fine because it would have meant that I would have raised my game. And that's what ultimately...

BH: That's such a mature attitude for a boy!

BS: Yeah... [stutters] I was really this strange child in sense of, I think again I think having a brother that was disabled when you're young and realizing that you can't take things for granted does change your perspectives. I think had Davey just been a regular boy that was brighter than me, I might have been like Davey he's annoying he's just smart. But actually growing up in that environment actually changes who you are. So again applying to Eton, I went there for the open day and I was like oh my god thinking about this place at the time eighteen Prime Ministers, and it's unfortunately they've had two more Prime Ministers since then that have not been brilliant for Britain.

BH: Bobby perhaps for our listeners from outside the UK you can just give a quick executive summary of what Eton is, because Eton may be a name they've heard of but they might not realize this is kind of you know this is the super posh

school where all the royal family goes and like you said almost all the Prime Ministers come from there and you have to wear fancy uniforms and suits and outfits, don't you? Sort of paint the picture of Eton for us.

BS: Yeah, so let's go back to 1440 and I think...

BH: [laughs]

BS: [laughs] sorry

BH: Oh no I'm gonna get another six page document.

BS: No, no, no you're gonna get executive summary... so 1440 Henry the Sixth was given a foundation a bunch of some income and set up a school for poor scholars. So there were about fifty to seventy poor scholars from the surrounding area of Windsor. So Windsor is famous for Windsor Castle which is the Queen's main home apart from Buckingham Palace. So originally it was a home for poor scholars. But over time it became a place for the elites of the country to the point where the character's such as James Bond, Captain Hook, you know from Captain Hook is from Eton?

BH: No.

BS: That's crazy isn't it? Captain Hook if you ever watch any film versions you will see him with a tattoo and the tattoo is the school's crests. It's had eighteen Prime Ministers, and more recently Prince William, Prince Harry and actually Prince Harry was not a friend but you know those people at school that like you like nod at and you like you're sort of go yeah hi how are you. He was an acquaintance of mine. He was a year below me at school. So again eighteen Prime Ministers, multiple members of various royal families across the world and it depends on your perspective. I had an amazing time but it can be sign as extreme elitism but I think the school personally has actually done a lot of great

work in the last five, ten, fifteen, twenty years to be more inclusive. In fact there are some sixth forms in my sort of school's that help kids apply before college or university that have been set up by Eton so they are definitely giving back, supporting other people. But Historically the connotations of Eton weren't so positive. But yeah it is probably the most famous boarding school in the world, maybe?

BS: Yeah.

BH: I can't think of many other ones.

BS: I can't think of a more famous one.

BH: Bobby what did your parents think when you got in? I mean you've already given away the ending, you did get the scholarship.

BS: [laughs] Sorry that was bad story...

BH: What did you parents think when that offer came through, that must have... like for someone in East Ham?

BS: Yeah, so the story is, I remember the day I got the offer. I remember the interviews they went really well. I was very happy. But I again I thought if I get it, great I'll be happy, if I don't life will move on. I was walking back from school along my road and my dad and my youngest brother were heading towards me and heading off into town. And around that time I was expecting the letter to come through at some stage. And then my dad is waving a piece of paper in his hand, you got it! You got it! [paper rustles] I was like oh my god, oh my god. And I was like dad get some...

BH: [laughs] what he opened your mail?

BS: Yeah he had. He had. [laughs] Cheeky.

BH: [laughs]

BS: Yeah actually I never questioned that to this day. Why did he open it? I've never thought about that. But he obviously did yeah. He's waving it, and I was like god dad get some KFC some Kentucky Fried Chicken, let's celebrate.

BH: Aww that makes it all worthwhile.

BS: He got a bargain bucket after he came back with my youngest brother.

BH: [laughs] Bargain bucket when you got into Eton? [laughs]

BS: Yeah I know I know. My first day Eton when I turned up. Again in East London I'll tell you what's cool back then. Reebok, Adidas, Nike, Kappa... all the sort of... Alesi, all these sports brands. And I thought I'm gonna wear my finest Adidas and Nike. And I turned up day one to Eton wearing this purple Nike top with Reebok trousers and Reebok classic trainers and really cool baseball cap. And I thought like I'm the boss. I'm from East London. And I looked at everyone else and like they'll all wearing Ralph Lauren and really smart shirts... and like [laughs]

BH: [laughs]

BS: like I look some sort of gangster. Which I definitely wasn't.

BH: Aside from your clothing though I was gonna ask were there many other boys that looked like you at Eton?

BS: Not back then. Because I had joined in the year 2000, and when I had joined again Eton's changed over the last twenty years, subsequently my two

younger, two of my younger siblings did go to Eton on a scholarship and it has become more diverse. But back then, when I joined the way it works you live in boarding house with fifty other boys. Ten from each year group. Ten who are age fourteen, ten who are age fifteen, sixteen all the way up to eighteen. So ten times five is fifty. But twenty-five boarding houses. And in my boarding house I was the only non upper middle class white boy.

BH: Yeah

BS: A lot of the boys, in fact I remember when they saw my name on the scholarship list, Bobby Seagull, one guy thought we were gonna get like a six foot four strapping West Indian fast-baller and then they saw a five foot five Indian spin-baller and they were devastated. They already had a spin baller of their own. [laughs]

BH: Right, this is Cricket terminology.

BS: Cricket, ah yes, cricket, cricket.

BH: So how did you feel about that Bobby? You seem to me like someone who doesn't get very affected by that, or did it affect you being like you know surrounded by a whole boarding house of white boys?

BS: I think it's I think if you ask someone as an adult even if you ask me as an adult I definitely would be cognizant. I look different to people here. But going as a sixteen year old with a bit of naiveté and not really thinking deeply in that particular way about the geopolitics why is it I'm the only brown person in this particular boarding house. I went there as someone that loved football, eating Hagen-Dazs, listening to S Club 7 music and Robby Williams, and I found commonalities with boys in that way. So boys would be like oh Bobby we're going off to play football do you want to join us? Or Bobby were gonna genuinely big Hagen-Dazs feast, we'd go off to the shop and buy tubs of Hagen-

Dads till we felt sick. And so those so boys treated me like a boy. And again, of course you'd realize at half-term when you'd go back to East London on the train and they're off to I dunno some fancy chalet for a nice break ah okay they do live a different life-style to me. In terms as the human connection you were just a sixteen year old, fifteen year old boy like there were.

BH: Yeah, how were you preferring academically? Were you still like kicking goals?

BS: So initially interesting when I first joined again I had gone from being the top student not just in my school but in my borough so like thirty, forty schools, was the top student there. And thinking initially I thought I'll immediately get to the top of the school. But actually when I first joined I found that students were... I don't know if they were bright or not because you come from different academic backgrounds but they were definitely further ahead of the curve than me because there would have been students there who had been smashing the maths Olympiad type problems, they would have been like thinking about Cambridge and Trinity Cambridge already, and I was like a little bit behind them. So initially when I joined it took a little bit of a while to find my feet. But interestingly, so maths eventually I did find my feet eventually moved up to the top set and was right near the top. But initially when I started the subject that really got my sort of peers interest was I came top in history. And again when you think about stuff that Eton contributes towards especially at university level, maths and stuff they are good. They produce good mathematicians but it's their arts that they tend to out perform, and then when I came top in history I was like, wow how did I come top in history. So initially when I was thinking about the university process, my peers, my house master would say Bobby you should definitely apply to do history at Oxbridge because that's your strength. But for me maths and numbers maybe party because of my Asian, Indian background that's where I always felt my affinity, that's where I thought like I need to be investing my time and my efforts towards.

BH: Bobby, why do you think you were so good at history then? What was it about you that gave you an aptitude for that?

BS: I think actually if we go cast our minds, Brady, to like twenty minutes back we were talking about East Ham Library. And again when you're in a library we didn't read books about maths and science, but reading books rather than sitting and doing problems [sighs] is more conducive to learning about the world, learning about history. So again when we learn about mathematicians, learn about scientists, I learn about Euler, Ramanujan, Newton, but you learn about them in a historical context, you're not gonna be sitting there in a library, you can do, but working out calculations. So it's the history of the world that I think first appealed to me. So I think it's that it wasn't history, it's about being able to make connections with different part, again even though we studied 19th century history in France, I you know, knew about the development of France, the 1600s, the 1500s, so I was able to bring in prior knowledge, so I think it was the reading in the library that made my history knowledge stand up just beyond the syllabus that we are studying. So I that's why I think initially you could say if you saw a sixteen year old, seventeen year old Bobby, that's his sort of natural inclination for the future.

[gentle violin music]

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[violin stinger]

BH: Now Bobby in this mighty tome you sent me about...

BS: [laughs]

BH: ...the not so brief history of Bobby

BS: [laughs]

BH: I think my favorite sentence of the one that stuck out to me that I really want to hear about is how you ended up choosing where to go to university to start with.

BS: Oh, my god.

BH: It seems like an interesting story to me. Tell me about how you decided where you would go to university.

BS: Oh god. I actually had to have a chat with my brother about this to make sure that I not done him disservice because there was definitely an argument involved and that we can... what the argument was we're not sure. So Davey again, so he's definitely a critical part of the story because until the age of fourteen, fifteen didn't go to a normal school. He went to a school called Elizabeth Fry that helps students with... I'm not sure the politically correct terms, but physical impairments. But that school got burned down. And in a bizarre way that was probably the best thing that ever happened to my family, because it got burned down Davey was forced to go to a normal school, and he couldn't join my state school because there was no wheel chair accessibility to the science

department, so if he joined my school he wouldn't have been able to do science or geography and it's like no, no can't do that. So he had to go to another school which is actually at the time in the literally bottom three in the entire country. In the entire country in the UK. and he joined school...

BH: But with good wheelchair access [laughs]

BS: Yeah they had wheelchair access everywhere, you got lifts up and down, the school was good for students with sort of special needs but they weren't good for students academically thriving. But Davey he went there and initially the other kids in set nine, set ten, he didn't have the conventional academic capabilities but every week he'd rise up, they'd move him up a set, move him up, he eventually became top of the school, went to Sixth Form got the top marks in A levels in maths and computer science and then went and did maths at Trinity College Cambridge, which you know I think in the UK is the most prestigious university and college to do maths for undergrad levels. He goes there...

BH: But I mean that's remarkable in itself isn't it? Just for one second. Like Davey's gone from being in this school where he's just not getting a chance, it burns down, and now he's doing maths at Trinity at Cambridge like which is like Top Gun for mathematics.

BS: [laughs] yeah

BH: It's crazy.

BS: Yeah, I think one thing that marks my family is that as a teacher I try and encourage my students as an attitude of you just push for the best that you can and if you don't reach it fine, but don't let others put a limit on your ability. And I remember when Davey was thinking about university, there was a some couple of teachers, even some like family friends that were saying, who knew about university, saying, you know Cambridge? Don't bother, Davey. Even Trinity, like

if you're gonna do Cambridge, Trinity's a bit of a mad choice. But Davey's like, I've seen Newton went there, Ramanujan went there, I want to give myself a chance. Again that attitude I'm going to aim for the top, if I miss it, fine, but I'm going to give myself a shot. So Davey did there and went to Trinity and at the time I was thinking, ooh Davey I sort of thought I wanted to go to Trinity but now you're at Trinity okay and I visited Davey and I was thinking Cambridge is definitely the place I want to go because that's where you do mathematics and I had a look around went for an open day went to Oxford and Cambridge for an open day, went to Cambridge first and I looked at Trinity but I thought I can't be the same college as my brother, even I think they had like forty to fifty places per maths so two hundred and fifty undergrads each years and maths was about twenty percent of the intake. But I just thought, we'll be cramping each others styles, you know I don't wanna just be hanging out with Davey's friends, yeah as cool as Davey was, Davey was actually quite cool [laughs] but I thought we need separate...

BH: Like you kind of thought you need to have a bit of distance from him?

BS: A little bit, but not too much distance, so I thought what's the second best college in Cambridge at the time? It was St. John's, it was just across the road. They had a bit of you know friendly rivalry so I thought okay I'm going to St. John's, but in the summer of 2001, so in another life Bobby Jose or Bobby Seagull is this St. John's maths guys, but Davey and I had an argument about something and honestly Brady I cannot tell you what it was about. Most likely, football, because I'm a West Ham fan, Davey's a Tottenham Hotspurs fan, and if anyone knows anything about English Football, West Ham doesn't like Tottenham, to be honest Tottenham... West Ham's insignificant, we're not a big club compared. But we had a bit of beef, that's the word we say in East London. Beef is an argument about football. It was petty, honestly. Petty, petty. And in the end it was like I'm not going to Cambridge, I'm going to somewhere else. I don't want to be near you Davey, I'm going to...

BH: [laughs] Because of a fight about football!?

BS: Yes, legitimately. Legitimately I don't know why. Maybe finally the hormones are kicking in. I was like I'm going to Oxford!

BH: So it was just like a little fit of pique sort of you know...?

BS: Literal seventeen year old boy having a hissy fit. And I didn't have many hissy fits in my life but that was definitely one.

BH: This seems like something that your dad wouldn't have let go though?

BS: See this is the interesting thing, with our dad, while he like encouraged us and gave us the right environment to learn, rarely would he this is what you must do. This is what you should do. It's like here are the options. An Indian family who are academically interested in studying hard, one of the things is none of us in our family did chemistry. None of us did doctors. And if you go to traditional Indian families in Britain, or maybe it's all of the world, that have done well academically, it's likely that someone will become a doctor, because that's a sort of Indian thing to do. Whereas in my family our dad always said you do what you want to do, if you're interested in music, if you're interested in sport you take that up. And again, with the Cambridge decision, he obviously had to sort of deal with the fight first [laughs] need to resolve that but once the fight's done, you want to go to Oxford we'll go and have a look at Oxford. Again we looked at Oxford, I'll be honest at first the department back then it's quite a beautiful department now, but back then it was a really horrible concrete bunker. I was like this is not really not beautiful department, but I thought the alternative is I'm next to Davey and I already had a big fight with this guy. And I'm like nope [laughs] I'm going to Oxford. Funny is Davey and I get on like a house on fire.

BH: Not that going to Oxford to do mathematics is like you know a terrible

failure in life. But it's such a funny thing, it's so funny.

BS: Sliding doors, had I not picked up the Times newspaper that day to read about a possible West Ham Tottenham transfer, whatever it may have been, I may have ended up with Davey at Cambridge. [laughs]

BH: So you think it was even about like transfers of players and politics of football... there was no personal aspect to it at all?

BS: No, it was not personal at all. And that's again one of the things that I've learned again as even as an adult... I never make arguments personal, like I think you should never attack the person, like don't attack their character traits, because then you're getting low. Attack the argument, attack what they say, but not the person. Even in our family if Davey's arguing...

BH: It sounds like you took this pretty personally though because you decided to go to a whole other city!

BS: It's weird. It's so weird, because I still can't understand. I wish we had like you know like Facebook or SnapChat or something that presumably there would have been some sort of record or email, there's no record, audit trail of this argument...

BH: [laughs]

BS: Again I spoke to Davey about this thing. What was it about? You know I know it was about football? And he was like saying Bobby, honestly, it's possibly like the lamest argument ever. And it would have been about football, football is thing that we would argument about. But I don't know why it made me want to change university... pettiness. Petty Bobby.

BH: Classic.

BS: Bobby is very petty.

BH: So now you are at Oxford and it sounds like this is the first time that suddenly things change a bit?

BS: Yeah so again I had a gap year before I went to Oxford, again I'd apply with a gap year which is harder to get in theory because the university has always got to give up a place for a year's time. I worked in the city as an accountant for KPMG for nine months. Did youth work in Edinburgh helping young people, again education has always been important to me. Started Oxford and when I went to Oxford, and again like at Eton you're like a really strong pastoral network, you've got a housemaster, a dame, so always like father, mother figures just keeping their eye on you. Where Oxford's like you do what you want, you got Fresher's Fair, you got alcohol, I'd never really drunk anything before, you got all these societies, you take part in debating, sport, you can go to societies, you can go to other people's lectures, you can do volunteer teaching, you can take part in college politics, and my mind is blown like I was like whoa this is like... have you seen Pinocchio, before, the cartoon?

BH: I have not, no.

BS: Oh... okay... in Pinocchio there's a scene where he goes with a character called Lamptea*, so Jiminy Cricket's a little good guy saying, Pinocchio, you've gotta be a good boy and then one day you'll be converted from wood to a real boy, but Pinocchio gets led astray as he goes to this island with Lamptea* and this island is called Pleasure Island but there's so many amazing things to do and it was almost like when I went to Oxford that one year I just had like I had a good... well people often ask me will come to then... did I have a good time in Oxford? I had a great time. I met some amazing friends. I did volunteer teaching. I went to lectures on Shakespeare. I was the captain of our croquet team. I was, one cool thing I became like the Agony Aunt or Uncle for students. If people had

relationship issues, or issues with managing their time they'd come to Bobby and I'd go walking around the Quad in my college Lady Margaret Hall and talk to them, again I had an amazing time, but I think it's I had too much of an amazing time and I sort of forgot what the point of university is. The primary purpose of university. What do you think the primary purpose of university is, Brady?
[laughs]

*[Ed. Note, referring to the character Lampwick in Disney's Pinocchio.]

BH: Well... [laughs] that's a can of worms I'm not sure I want to open but...

BS: Oh god it is, isn't it? It is a can of worms.

BH: But let's say it's to... well it's to get a deeper knowledge, a deep expertise in the area that you may end up pursuing later in life. Is one idealistic version of it. [chuckles]

BS: That's... I like that... a deeper knowledge, and again for me it would have been I love maths, I've enjoyed the maths since a young age, the problem solving aspects, et cetera, and I'm at a great university. To be honest I quite enjoy the subject, quite enjoyed the work. But I just didn't do enough of it, simple as that like you turn in your problem sheet, you know spending a few days on it, I would rush in a couple of hours before the tutorial and over time you know from starting term one as someone that looked like a first candidate to the second candidate the second term first two one second to third term two one two two, and then by the end you're looking like you're gonna be a candidate that's absolutely not gonna get a two one. And this is the reality of Oxford, all UK. At the time my ambition was to get into banking, I wanted to be an investment banker, again there's I nowadays have moral qualms, if you're good at maths you should pursue mathematics you shouldn't just go into like not sell out careers but you shouldn't just go into the world of finance. But I thought at the time I grew up in not poverty but I grew up in challenging financial circumstances, I

thought I'd learn to earn money so I could support family, support them financially. So I wanted to get into banking, but banking is very tough in terms of you need a quantity degree, probably maths maybe economics. But you definitely, ideally a first, with a two one would be fine, two two or anything below, even if its at trinity Cambridge and you get a fifty-nine point nine, two two means you're pretty much getting cut out. And that was where I was at the end of my first year.

BH: So for people listening outside the UK, a first is like the top mark you'll get on your degree.

BS: First is the alpha, the top mark you can get at a university. Which is meant to be the creme de la creme, but if you're applying for sort of lucrative graduate jobs like investment banking you pretty much need that. Two ones are regarded as like good, you got a good degree and you can move on and most graduate jobs require that. And two two is getting to the point where... it's a second class degree. It's fine. But the reality is you don't you almost have to go and do a Master's or a PhD to make up for it. And at that stage in my first year I was a two two candidate at best. And when I was thinking about the summer applying for banking jobs, even when I was applying in the summer of my year at Oxford, I wasn't getting into the banking teams. I would get reject to start off, because if I was predicted a two two, they didn't care about my story, the fact that I've had a I'd taken myself from a state school background to Eton and gone to Oxford and had this range of interests. They're like you're getting a two two mate, you're not getting a banking job. I remember the start of my second year. It was the end of the summer and I was thinking about my career where I wanted to go, just a few days literally I was sitting there monk like, writing down [laughs] probably tomes of papers about my life and what I wanted to do. And I was thinking I still want to get into banking, but if I go to Oxford... and the nature of maths is you can pull it back, I could probably just still pull it back to a two one first by third one, but by that stage it would have been too late for banking because you gotta apply for jobs at the start of your internship to the start of your second year and

if you don't get an internship you can't apply for grad jobs. Again it's a bit of sad because it's driven by a job requirement rather than the subject. And then I made the decision I'm not gonna go back to Oxford because I'm not gonna get that two one at this rate. I definitely won't get the banking job. But by this stage universities were already started, it was like most other terms, I think Oxford we got short terms, like Cambridge, eight weeks. Whereas other unis had started and it was like it's too late to go to any other uni because London School of Economics, Imperial, they've already been a week into term, but I can go back to Oxford but I wouldn't get that banking job. And I remember looking at university and go what universities would still accept people at this late stage. And at the time I looked up a university called Royal Holloway and at the time I hadn't heard of it even, but they were part of the University of London so near enough London, so I can apply for banking jobs. I don't cry often in my life, you know I'm quite a strong guy, resilient, but I remember having tears before having to tell my mum actually, like mum... I'm going back to Oxford, and mum's like Bobby, what are you, this is a joke, in a half Indian half English, Bobby, you're joking, you joke, it's a good joke, yeah yeah. I'm like, mum it's not a joke, and she says yeah nice joke Bobby, okay calm down, nice joke. I'm like it's not a joke ma, I'm not going back to Oxford. And remember like on my death bed I'll look back at moments in my life where you could feel like oh you felt all the emotion. I felt it then. I worked so hard to get to Oxford and taken myself from a difficult council estate to Eton to Oxford and now I'm not throwing it away but I'm just like making a decision to abandon that. [scoffs] And in bizarre way I think that was probably the toughest decision of my life. But also it's also one of the decisions in my life, in terms of professional decision making, that's made me look back and think, you were able to face something as difficult as that, making a very mature decision at the age of nineteen, twenty, to leave Oxford for what you thought would be the best way for your career. I love this story because... people often meet me now and they go Bobby you're this University Challenge legend, you're really smart guy, you know you're doing all those maths things, you know, life's been easy for you and you've never had you know never had to encounter difficulty, and I'm like no no, I've fallen off my horse. I was at Oxford,

you know that? They are like what? You were at Oxford? And I didn't graduate from Oxford.

BH: You're a university dropout!

BS: That's right, I am! That's what it is.

BH: So the thinking here, Bobby, is going to Royal Holloways 'cause you need a reboot basically, you need a fresh start otherwise you feel like you're not going to get where you need to be?

BS: Exactly... again the point of university, while I love maths, the point of university was not to become a mathematician, but was to get a quantitative job. Would have been in banking, as a trader, and that was not gonna happen with a two two at Oxford to the best of my will, so I went to Royal Holloway, and in the end I think that proved the making of me because it made me, like I've always been a humble... you know again I think humility is not innate. I think humility is a skill you pick up, because it can be easy. There's time in my life where my ego gets slightly a little bit large and then people in my family, and my brother, my cousins, my close friends, will be like oh Bobby don't get too big for yourself. That again taught again to learn to be humble again, because before that I would have probably been like nineteen year old thinking oh you gotta have Oxbridge degree or otherwise you know is it really worth anything? But after that I was actually thinking ah! University's not just about Oxbridge it's about lots of other university and in fact some people university might not be the right option for them. So it definitely gave me a greater sense of awareness of people in general rather than just thinking about the elite who end up at Oxbridge and things like that.

BH: I can imagine like it's a bit of dent to your ego at this stage because obviously you know you've been having so many victories in life. Did you spin that to your family and friends as, aww, you know just Oxford's not for me and I

want a bit of change of surroundings or were you honest and were you saying look I've mucked it up, I blew it, I didn't... I took my eye off the ball and this is the only way I can fix it? or how were you spinning it at the time as opposed to how you tell it now?

BS: To be honest it's not too dissimilar from back then. I remember writing to my friends when I was leaving at Oxford and just telling them that I'd just not put in the work, simple as that. And I just put my hand on my chest and said, I messed up. I remember like getting an email from my tutor saying you know you can't cry over it, just look at what the next option, I just put my hand up and said I messed up. I... again thinking back now it brings back the emotions. Because I rarely think about the... obviously I think about like the steps I took, but I never think back, I never put myself back in the position, in fact right now I'm thinking about sitting on my bed telling my mum when she came round. And it's not... I'm not tearing up, I'm not tearing up...

[gulls crying in background]

BS: ...but I definitely feel it was an emotional decision, the right one but I was honest enough to tell people that I had made a mistake. I just didn't study hard enough and it was simple at that, it wasn't anything else. And I think admitting that I had made a mistake allowed me to move on reasonably quickly...

BH: I have no idea if you heard the seagulls going crazy in the background...
[laughs]

BS: I did! I was thinking, you know for a second I was looking out of my window and I was thinking, is it there? Are my cousins and my uncles and aunties turned up? Nope.

[gulls begin crying again]

BH: I've got some seagulls crying outside my window it's amazing... [laughs] there you go, what can I say? Can we jump in the timeline a bit to something that has to be talking about when talking to you and that is University Challenge? For people who don't cause obviously University Challenge is a real institution in the UK but I know a lot of Americans and people around the world are listening. This is a quiz show in the United Kingdom where universities send in teams of four students to do sort of general knowledge quizzes against each other and a series of rounds and knockout competitions and then there's a big final with two universities go head to head and it's quite well now for the questions being... difficult.

BS: Mhm.

BH: Very specialized and things like that. And Bobby you ended up on this show and... became a bit of a cult hero. Can you tell me how that happened?

BS: Yeah so again, so just quickly literally in thirty seconds spin through my career. After Royal Holloway I got my dream job in investment banking, was a trader, actually traded something called collateralized obligations which uh partly was involved in... watch the film Big Short, it's party involved in the financial sub-prime crisis. It wasn't me though, I was just a junior [laughs] then went and did the same job at Nomura as a trader, then went to PWC, qualified as a chartered accountant, everything's going hunky-dory but at PWC I had an epiphany, I was teaching new young graduates and actually thought teaching is for me. I want to become a teacher. So I went to Cambridge, did my teacher trainer, then did my Master's in Cambridge in Maths education. And when I was doing my Master's I saw an ad our college wall you know that had a picture of a man called Jeremy Paxman whose the host of the quiz show University Challenge. I applied for my college team, there was a couple of auditions where you know a test in the pub, and then individual tests. Then there's a test on buzzers where you'd answer questions as quickly as possible. I got selected for the team, then we had to apply to the BBC, then my college, Emmanuel College

in Cambridge, we got selected for University Challenge. Actually Simon Singh did his PhD at Emmanuel College, so Simon...

BH: Oh yeah?

BS: Singh and I are from the same college. Just for other Numberphile fans. So I got on to the quiz show, most people who get on the quiz show University Challenge, it's something like a family ritual. They'd watch it with their family from the age of five or six, and always harbored a desire to get on the show and I think most of my teammates, they'd watched it with their parents, always wanted to get on the program, bizarrely enough, perhaps because my parents are from India, we never really watched the program, in fact, I watched no more than thirty seconds of the show growing up, but again because of my time in the library, I always had a good range of broad knowledge and got made captain of my team and then when I got on the show again I was thinking, ah okay so I've got I'm on the quiz show, now I'm going take it seriously. There's an amateur gentleman or like Steven Fry approach to the show where you can sort of just turn up and just like record things that you've read serendipitously, like Slumdog Millionaire, where you've got a story for every recollection of fact. And that can be the case but I thought, I'm on the quiz show, I want to win it, again you know I'm competitive but in a nice way.

BH: And a preparer, [laughs] I've got the document in front of me to prove that.

BS: like yeah! So I watched lots of old episodes on YouTube, prepared a massive spreadsheet with all the different topics that had turned up, gave it to my team. Allocated different subject areas like Presidents of the US, Nobel Prize Winners, Booker Prize Winners, Presidents, Prime Ministers of Britain, all the Capitals, all the Periodic Table Elements, so we'd systematically allocated topics to people. We'd go and practice quiz shows in the university at Cambridge. You know we'd religiously practice on a Tuesday night, Thursday night, in fact there

would be times where I'd be quizzing til two AM, three AM and I have to wake up at four to get ready for teaching school the next day. I've got like an ability for it, but I've worked very hard towards it. And more than that, not just myself, but making sure my team were prepared. So by the time that we got on the quiz show we were like, ah, I recon we can win this thing. So we got better and better as the series progressed. And actually they prerecord, Brady, the whole show, so people often ask me so Bobby did you go on the show and did you put on this like this style and this charisma on purpose to try and get attention and to be honest, absolutely nothing. I went on the show I'd just love to win the quiz show, because if I win it, it would mean in the teaching world as a maths teacher I'd get a bit of cred you know like teacher's would go that's that guy who did the quiz show, and my students would go that's Mr. Seagull, the one that was on telly. And that was the limit of ambition.

[University Challenge Clip]: Hello, time again to rattle the cage of the student mind. An ancient college is playing a more modern university with a place in the second round at stake.

[BS in clip]: Hello, my name is Bobby Seagull, I'm from East Ham the London borough of Newham, I'm studying for a Master's in Education specializing in Maths.

B:: But when it was broadcast, so it got broadcast after it was recorded, like five six months after. I ended up going viral on twitter.

[University Challenge Clip]: Who when asked in 1929 whether he considered himself a German or a Jew, replied, I look about myself as a man, nationalism is an infantile. It is the measles of mankind. The speaker was a physicist...

[ringing]

[University Challenge Clip]: Emmanuel, Seagull.

[BS in clip]: Albert Einstein

[University Challenge Clip]: Correct.

[applause]

[University Challenge Clip]: Your bonuses Emmanuel are on fictional works set in Shanghai. Japanese spies and opium smuggling in Shanghai feature in *The Blue Lotus*, published serially in the mid 1930s, which fictional European reporter is its protagonist?

[From clip, whispers BS]: Tin-tin yeah?

[Emmanuel team members]: yeah, Tin-tin.

[From clip BS]: Tin-tin.

[University Challenge Clip]: Correct.

BS: The BBC did a tweet, remember there's a particular match, I think we were playing SOAS, they said, is this the happiest contestant ever? I was on like a radio stations and a few newspapers and they were all talking about there's this guy Bobby Seagull, he's knowledgeable but also he's like fun and he talks to his teammates and the way we discussed answers we weren't as normally on the show it'd be people are got quiet and hesitant, if they've got an answer they'll discuss it like hushed whispers. Whereas I would discuss it aloud with me team, we would say, I would say to some of my team. Didn't we discuss that on the train on the way here, what was the answer? And like people sort of enjoyed like almost like behind the current.

[University Challenge Clip]: Surname of the US physicists who explained an effect or scattering that occurs when electromagnetic radiation is scattered by free electrons followed by the name of the longest river of Canada.

[BS and team discuss]: Compton? Mackenzie. Compton Mackenzie, is that a thing? Compton Mackenzie, because there's lots of other scattering. Which one? Which scattering, there's Brownian, there's Rayleigh scattering. Does anyone know the writer Mackenzie? There's Rayleigh scattering. Just say Compton. That's not a name. Compton scattering. Rayleigh scattering. Compton Mackenzie then. Compton Mackenzie.

[from clip BS]: Compton Mackenzie.

[University Challenge Clip]: Correct. Finally.

[applause]

[University Challenge Clip]: The given name of the usual lead guitarist of the Beatles followed by the name the river that reaches the sea between Harwich and Felixstowe. The name of which novelist results?

[BS and team discuss]: Is it the Thames? No, no Felixstowe. Who's the lead guitarist of the Beatles? John... John Lennon? No. George Harrison. George Harrison. George... George what's the name of the river? I don't remember. Felixstowe. George Thames? no no no, it's Suffolk it's gonna be like, George Dahl? [crosstalk] John Donne? Okay it's over.

[from clip BS]: John Donne?

[University Challenge Clip]: John Donne?! [laughs] No, it's George Orwell.

BS: And as the series progressed there was actually another guy which plays an instrumental role in my series. Suddenly you go to Canada in Oakville a man called Eric Monkman and he was again came from Canada to a Masters in England at Cambridge a different college called Wolfson and he was a stronger

quiz player than I was but again his team, he went viral people loved him in England and then as the tournament progressed people like on Twitter were saying, What if these two guys collide, what if you get Monkman versus Seagull?

BH: Yeah.

BS: And we actually we didn't face off in the Final, we played in the Semi-Final which I was a bit gutted about.

BH: Yeah.

BS: And face each other and the day before our match we had people like Stephen Fry, Louie Theroux, all saying like, are you gonna be supporting Monkman?

BH: [laughs] Right.

BS: Are you gonna be supporting Seagull? And it was the most I think it was the most watched match of the University Challenge in the 21st century. I think in the 20th century audiences are much larger, back when TV was much more linear. But it was the most watched match this century and Twitter melted down. I think it was like hashtag University Challenge number one I think it was normally on a Monday. Then hashtag Monkmania than hashtag Monkman hashtag Seagull than hashtag Monkman Seagull and what made it even more bonkers I think it was the tightest semi-final for thirteen years. Because normally by the semi-final a couple of teams are distinct and the other teams are slightly behind but in our series we had three teams that are very good. So the match was going to and fro and it went down to pretty much the last question and it was a question of Japanese Cinema and I was thinking okay I got two guys on my team that are really good at cinema. I sort of think I know the answer but I can't take a gamble. It was about Kurosawa and I needed a film called... was it [hesitates] Game of... Throne of Blood and Rashomon but I wasn't too sure and then there

was a buzz and I'm thinking whoever gets they win the match to the final and I was hoping it's my team and I hear... Wolfson Monkman and I know please get it wrong and it was Rashomon, he got it correct.

BH: Yeah

BS: They won the match they're through to the final. And then Paxman like gave us a lovely eulogy as it were [laughs] but we lost.

BH: Yeah

BS: And I thought aw that's the end of my journey but then the BBC called us up I think the very next day after it was broadcast, or the same night, and said we'd love to get you on the One Show and the One Show in fact to explain to foreign viewers is like BBC's magazine show on every night at seven o'clock. And normally they use it as a platform and there's like a famous TV actor or a pop-star who is introducing a new album or a new film. They get them on the show and they're like we're gonna get Monkman and Seagull on to talk about University Challenge. And they brought us on the show and then from there it just sort of spiraled. We got so many different opportunities.

BH: Yeah.

BS: And again there's one thing Brady I'll tell you but and our international viewers, University Challenge every year there's normally a person or two that goes viral, and that's always the nature of the show.

BH: Yeah.

BS: There's some great contestants.

BH: Usually someone who's a bit quirky, not only super smart but a bit quirky

and yeah.

BH: Yeah. They gotta have the quiriness but I think the difference in this year was, I think it was mainly me being I was a grad, I was a bit of an older student, I was a grad student. I thought, ah! I've got this platform, I've changed careers to become a teacher, I'm gonna use this platform to talk about mathematics because people wanna talk to me about University Challenge, they want to talk to me about Monkman, they want to talk to me about what was it like being in the studio, what was it like becoming a viral sensation? But I'm only gonna talk to them about it if they want to talk to me about math education. So I used that platform to talk about math, talk about learning, talk about education, and then what ended up happening is that my conversations again I was on BBC Breakfast, ITV, all the newspapers, half of the interview would be about the quiz show but the other half would be about my passion for math, my passion for education, and it actually helped me to build a career in media which is again I didn't expect it, I never planned for it, but I've now used it to become a very vocal advocate for math education in particular but also education in general. So again I changed careers because I wanted to be a positive influence for maths but as a teacher. But University Challenge has given me this platform to become a much more influential person within the field of math education in England.

[gentle piano music]

BH: Bobby I just wanna jump around in the timeline again cause there's something I wanna understand a bit better.

BS: Mhm?

BH: You obviously you know did well you put more than a toe in the water when it came to sort of banking and accountancy and that sort of that world of finance.

BS: Mhm.

BH: Obviously, you know, there's money to be made there. I never think of people who get into teaching as making a lot of money. What changed? What made you say when you were in with all the banking and the finance, I'm gonna turn my back on this, I'm gonna go and convert to become a teacher? Why? What happened?

BS: This is a great question Brady, and sometimes people say Bobby when you were there did you find it soulless, life destroying place? And to be honest I didn't. I enjoyed it because you're surrounded by lots of smart people, you're trying to find clever ways of gaming the financial markets and that's what it sort of is. And I really enjoyed applying my, it's not necessarily mathematics, there were times we were using math but my applied math to statistics, econometrics, in this field. And I did enjoy that. But I've always found a great sense of satisfaction helping other people. Again in primary school I would always love spending break times helping other kids with their homework. At Eton I would volunteer every Wednesday helping a local primary school. When I was at Oxford I would spend again every Wednesday afternoon helping a kid with their math homework. When I went to Royal Holloway I spent a lot of time of working on university volunteering stuff. I've always been interested in supporting others but I always thought I would do that as a side thing and my again I wanted to get into banking, and again in my early years I think my path was to become a managing director, make lots of you know... millions and millions of dollars. And I think had Lehman not gone bankrupt I think I would not have adjusted my mindset. Because again two of my siblings, the number one and number three, entered banking and they've actually been at the same firm for... let me work it out, fifteen and nine years respectively. So they've been for twenty-four years the same firm. Not left. And I think I would have been a similar kind of guy. But one having the dropping out of Oxford as it were, and Lehman collapsing has made me a bit more adaptable in my thinking. So okay, that's one part.

BH: Cause you were working at Lehman were you?

BS: Yes, right til the very moment they collapsed. But still I found a job Nomura and then I went to PWC, so still on my way to earning lots of money. I think I would have but at PWC and I vaguely mentioned it. Briefly mentioned it early but I took like almost like a mini-sabbatical as it were and I taught new graduates joining the firm. So these weren't kids as it were, high school kids, but were these twenty-one, twenty-two year old graduates who joined the firm. And I spent like six to eight weeks teaching them. And when I was teaching them, Brady, I found like I truly came to life. Again in my normal parts of the firm, when I was in investment banking, when I was in PWC in the accounting, I'd always come in like usually the top quartile. Do really well in the internal assessments, so you know traditionally doing well in the firm. But teaching, not just the external like approval, I found I came to life. That was me, like I would stand there, I dunno if it's ego or not but having to teach people, but like oh I know something I wanna help you guys learn it. And I love the feedback, the kids... the kids, the adults the twenty-one year olds, twenty-two year olds who would say to me Bobby, really love your teaching, we love the way you're so enthusiastic and again when I would teach them I would teach them in a way that obviously I've got the knowledge but I wouldn't do it from a perspective of arrogance I would be like guys here's what I know but if you know something better than me help me understand as well. And I absolutely loved that and I thought oh I'd love to do more of this, and I thought there is a career where you can become a professional trainer, professional tutor for grads, but I thought actually...

BH: Hmm.

BS: What's a thing that sort have been the thread for my life? It's my I've always enjoyed numbers. I've always enjoyed mathematics. Pattern spotting. And I thought actually I want to go into teaching. So I took some time away, like

almost like a sabbatical away from a sabbatical and I was supporting a social enterprise that I sent up and actually so again in 2007 when I joined banking, I set up social enterprise called OxFizz, that supports Sixth Formers applying to universities and in fact in my banking days I'd spend every weekend supporting kids who are fifteen, sixteen, seventeen, you know from dark tough backgrounds applying for top universities, Oxford, Cambridge and other top unis. So I know that I was interested in education so I spent like six months with those organizations that were supporting kids but this is the thing I did that which I don't think anyone has done sort of before maybe not ever since, I would not advise, I spent six months going to every single high school and primary school, all sorts of primary schools in my borough and I forensically did a study of all the schools understanding how was math taught. And I wrote this amazing book, almost like again another mighty tome of mine. Every school that I've been to looking at their lessons, looking at the way they teach, looking the schools, the demographics and trying to make sure that if I'm gonna make this move as a thirty year old now, into teaching and to teaching maths I need to be a hundred percent certain because I can't keep on flip-flopping between careers. I'd been in investment banking as a trader, I'd been in chartered accountancy, and again I sent up a social enterprise. But I need to make sure that I make that right career this time. So I went six months and I was like I'm absolutely convinced that education and math in particular. I say math interesting to me because I speak to a lot of international colleagues I always call it math and I call it high school which is terrible because it should be maths, secondary school. [laughs] but anyway. I was convinced I wanted to be a math high school teacher.

BH: [chuckles]

BS: And then again that's when I went to Cambridge. But again, I think it was the epiphany at PWC where I realized that I make a bigger impact, I feel like I'm leaving more a mark on the world because again... I could you know get to ninety be an investment banker earn millions and millions of dollars, tens of millions of dollars and great you've got some money, but [sighs]... you don't

really think of... okay when you read accounts of people that are on their death bed and the things that they sort of regret in their life, people rarely... okay you need money so you're comfortable, so you can support your family, you go on the odd holiday, but beyond that sort of western basic needs in the western country, you don't need millions of dollars. It's your friends, your family, the impact that you make on people and for me education again it turned sort of my life again growing up in a really challenging council estate there's some of my friends there that didn't get education beyond sixteen. They're barely literate and numerate. And they're really struggling in life and the only difference between me and them, is I think I had a father that really valued education at school, that gave me a good supportive environment and the education transformed me. So I wanted to enter a profession where I could make that same impact on other people and being a teacher there's you know I don't think there's any greater joy than being someone in a class as a teacher when you see a kid when you're trying to teach someone Pythagoras theorem or rearranging an equation. And when you suddenly see that child have that lightbulb moment honestly there... what is it there are moments like MasterCard can buy the moments that they can't, they're the priceless moments. And as human being, as a yeah as a person, they're the moments that make what life worth living. I think again, money's nice but... you know... there are some things that are much more valuable than money, it's impacting others.

BH: So what do you do now? Are you like a nine to five school teacher?

BS: Yeah so this is my career, again University Challenge has slightly changed my path in different ways. So initially when I was doing University Challenge my path was I wanna become a full time math teacher, head of a math department, head teacher, then be like again I was ambitious too. Be like an influential head teacher with the folks in math education. But after University Challenge, so I was like a leading head of department with my own department in East London, the acting head, and I thought that's going be my path but after University Challenge I sort of had a raised profile within math and education. So

overtime, so initially I started doing a part-time doctorate at Cambridge, which I'm still doing sort of part-time looking at math anxiety, why people are scared about studying mathematics and the relationship with math in the media and how the media, I think, often portrays the subject so negatively.

BH: We'll come back to that.

BS: So initially I taught five days a week, and then oh see I did this starting the doctorate I was doing four days a week, so now I teach up to a couple days a week in my local state school but the rest of the time, the other five days of my week, because I don't really take, I'm not really a holiday, which is probably why I'm single. [laughs] But the rest of my time is often doing work to do with math propagation as it were. Be like doing talks at schools, doing projects with the government, or even other things not just math but libraries and reading and I do a lot of campaigning about again in the UK we've had home learning recently but a lot of kids haven't had access to laptops or computers so I done some campaigning with government, lobbying to try and get kids to have laptops. So again, maths education predominantly but a lot of work around the country trying to get governments, I've done some stuff with the OECD. I've started doing talks, I got some tour, you know was it in Geneva, Madrid, in Paris, so I'm trying like yeah, not just math but education as well. Trying to get people to realize how important education is to a country.

BH: But Bobby is that, I mean that's you know who am I to criticize that? What fantastic things to be doing. But you were saying you kind of turned your back on finance and the money and various careers because you wanted that sort of granular one on one moments, those human moments, and it feels like you've drifted away from that again now and now you're all big picture and policy and that sort of thing. Like how are you balancing those two desires?

BS: Yeah no I would say that's a very good question. In fact people often ask me, Bobby are you gonna go full-time into like presenting your TV shows and

writing your books and traveling around, and I would say I definitely want to keep doing that, but what makes what gives me value add in that world is that fact that I still teach my own classes, I'm still up to a couple days of week in East London, teaching state school kids, having to deal with behavior, having to call parents, having to mark papers, trying to bang your head against the wall trying to teach a kid Pythagoras theorem, like come on! You square both sides you add up, so I still teach kids on a weekly basis, and no matter how glamorous my career in that sort of media world gets, again I'm saying that I'm almost like putting my self out there, I almost will never quit being part-time in a classroom. So I think the value I add is that I'm someone that's still in the classroom but has that connection to the media world, and that I can raise again things like in my school when we're having to think about our budget for photocopying or having to cancel an extracurricular trips, I can now go I've seen that in my class and then take that higher up to politicians, using my media platform. So I think it's the combination of the two. So again, at some stage I might go back to full five days a week but right now I'm in the sweet spot where people in the media in Britain do want to listen to me and my views on education but I think my views on education are more valid and more valuable because I still teach in a class. So if somehow if I can keep both going on as long as possible, that would be the dream for me.

BH: Bobby you mentioned your research. I know you have some thoughts in general in public perception of mathematics.

BS: mmm.

BH: Well how are you feeling about that these days?

BS: I personally, so my research again this is a separate question, can I do a doctorate part time when I'm doing all these other things. I'm gonna have a crunch point very soon about that but... my doctorate initially was looking at maths anxiety so again maths anxiety is academically... termed as that negative

emotional response that we feel when encountering maths. And again it can happen to school children if they're doing long division or adults where they're you know they're splitting a restaurant bill. So that visceral fear when dealing with numbers. And I know mathematics is much more than numbers, it's about patterns, shapes, understanding the world but for in terms of day to day for most people it's about numeracy skills.

BH: hmm.

BS: In the UK, I'm an ambassador for a charity called National Numeracy. And their job is to try and help people, again, what it does it says on the tin. To improve numeracy skills across the UK so that people can go about their day to day life feeling comfortable with numbers. And the question they ask a stratified sample of people was, can you calculate five percent of nine pounds, or five percent or nine dollars? With or without a calculator? And again most people listening to the show go that's not math, that's just a quick arithmetic question. And it is, again, to work it out mentally you could work out ten percent of nine pounds, which nine hundred pennies, that's ninety P and half of that five percent is forty-five P and it's a really straightforward question and again with a calculator you can just do five percent of nine pounds. But in the UK, and I'm not sure what the stats are for other Western countries, but it's shocking that one in two adults, one in two, fifty percent, of the population cannot work this out even with a calculator. And that's not because these kids, these adults couldn't do it at school but something's gone wrong where they've done math til school, GCSE High School exams, they sort of somehow got through but they crammed for an exam which means they don't feel confident with numbers and they leave school thinking ah, I've got my math qualifications but I hated it I never want to see it again. And they can't do math as an adult, and almost like infections they spread it to their kids and they tell their kids you don't need math, you don't need numeracy, I'm fine, look at me I can read that's all you need. And I think there's such a negative attitude towards math, it's about a subject that's only for geeks, only for a certain kind of person. And I think sometimes as a society we do the

subject a disservice because we say that only a certain kind of person can do math. Again Jo Boaler in America, one of my sort of idols, she's a math professor of education at Stanford. She's actually like a rockstar in America, in a math education world. But she talks about how people think only a certain kind of person can do math. And of course if you're trying to become like a Fields medalist or you know become one of the very top mathematicians in the world of course I'm gonna say for those type of people not hard work alone won't get you there, you probably do need some sort of innate skills to get you to the very top. To get to the level, Brady, where you you can work out five percent of a number, has got nothing to do with talent. And again my disclaimer is there's a few people that have dyscalculia...

BH: Yeah.

BS: I think it's like one to three percent, and for those people like dyslexia for words, you need a different approach. But for the vast majority of the population it's their attitude towards math that hinders them. So my research initially wanted to look into why do people get anxious about maths. And actually getting into the field, the academic field of maths education I realized there's actually a lot of research already done on that. You know people have done some great books, great great field work on it, and would I be able to add that field? Maybe yes, in terms of maybe like a small perspective. But the perspective I thought I could add is, I'm now working in the field where I'm a class teacher but I'm also doing a lot of work in the media, trying to help the media develop the attitudes towards maths in a more positive way. Because Brady, when I'm often like say BBC Breakfast or ITV or any of the major broadcasting stations in Britain. They'll introduce me, oh we've got Bobby Seagull Maths Teacher, and the first thing they'll say, Brady, is oh, Bobby I hated maths at school. And like it's this constant narrative that's making like maths sound like its a useless subject, but also like only a certain kind of person can do math. So then I realized actually for my research it's more useful if I look at almost the relationship between maths and the media. Why is it that the media portrays maths in a negative

fashion? And then how that negative reputation in the media feeds to narratives in schools where people think only a certain kind of person can do maths. So that's what I wanna do, essentially what I'd love to do I can imagine my dream would be to create some sort of charter at the end of my thesis where the media have got to sort of again a voluntary code but the media will sign this thing where if they're a major broadcaster, major newspaper, even like a major Instagram influencer, they'll not use math for cheap shots, and if they do they'll explain why. Because I think this constant negative messaging does infiltrate people because again one example I'll use is, cigarette smoking. So growing up used to be really popular, loads of naughty kids would smoke cigarettes because you'd see cool ads, you know Marlboro Lights on Formula One cars, but since they've gotten rid of the adverting and now in the media generally people do not talk about smoking, it's almost like it's not I mean people still smokes, but smoking numbers in Western society have gone down significantly. It's not cool to smoke as it was twenty years ago. So in the same way, in a reverse way, I think with math we can definitely change the image of the subject of course. The people that love math, the people that are the nerds, the ones that found patterns and found you know it was there thing in school, they're always gonna find it. But I think it's about approaching the people that have that negative approach, negative impression of the subject. Can we reach them? Because if we can reach them we're gonna open up math to many more people. Because I can imagine again I listen to you, by the way, I always wanted to say on behalf of my students, Numberphile is like... you're a god. The kids that love maths, you're doing an amazing service for young people and adults around the world. So just a big thank you. And I listen to James Grime on your podcast and James Grime talking about at school he found his thing he found math and when he was at university he found more kids like him who really loved the subject. And I think we could, there could be more James Grimes out there but we're not finding them because maybe they're in a family where math is viewed very negatively, maybe they're at a school where the general vibe is math is not for them and because of that that sort of James Grime doesn't discover math. Maybe he goes on to discover computing or discovers being I dunno, a great Instagram

influencer in physics. I dunno what it is, I don't know what it is but it's something else, but we lose them. We lose them because there's so much negativity about the subject. So I want to play a part in helping to change attitudes towards mathematics and obviously I'm gonna start with England, but longer term, I'm thirty-six, hopefully I've got at least another sixty-four plus years throughout the world and I'd love to be someone that plays a part with, we got a great math community, we got you know Eddie Woo in Australia, we got John Urschel in the States, Cédric Villani in France, there's so many people out there doing great math work but I'd love to be someone that helps to get this community to work together over the course of my life to make math seem a bit more attractive. Again I've always thought like when I'm dead, Brady, what would I like my influence to be. Like I'd love my epitaph to say, Here Lies Bobby Seagull, He Made Math A Little Bit Less Icky. And that's what it's all about [laughs]

BH: [laughs]

BS: Trying to just be a positive influence in the world of math education.

BH: Bobby you identify a problem right. And it's easy to you know everyone has heard oh I hate math, I hated it at school. The TV presenters you talk about, joking about how they hated maths. And it does have this huge stigma attached to it, no one could deny that. And a stigma that other areas don't have attached to it. But Why? Why did maths get it? Why don't people say oh god I hated reading at school? Oh god I've never like words. You never hear that.

BS: [laughs] You absolutely do not.

BH: Why do numeracy get it and not literacy?

BS: So I think, Brady, it's to do with the way it's taught at school which again there's difficulty about this but at school, so imagine you've got in the morning

the teachers are yeah okay guys! We've got literacy in the morning! [laughs] Why am I being a strange primary school teacher, but okay. We got literacy in the morning, and then we got numeracy or maths in the afternoon. So in the morning they're writing a story, and the afternoon they're doing some problems. And again in primary school it's often just the teacher will teach a method and they'll do some long multiplication and then at the end of the day the teacher will come down, checking your work and they'll look at your little story and they'll come to you and say, imagine there's little theoretical little Bobby, go, you know, Bobby let's look at your story you talk about an elephant, I love the way you describe the elephant as like a crazy elephant, it's a nice word crazy. And the story's a bit realistic because the elephant's not really gonna climb the Empire State Building, Bobby so maybe look at making a story a bit more realistic okay but good start and they'll come to my math and I'm like okay, the story is okay, they'll come for my maths and they look at my long division and because I've made a mistake with the lining up the tens and then units I've got it wrong, and the teacher's like wrong wrong wrong wrong wrong, Bobby you've made it you've got it all wrong. And actually with the math I've just made one mistake because I've lined up the columns incorrectly and my English I've talked about an elephant climbing the Empire State Building, but my view is, I'm okay at reading and writing, I'm all right, but with math I just can't do it. And I think the nature of teaching at elementary and primary school means that it's quite binary you either think that you can or can't do maths. When the reality is I just made a mistake with one final bit, and again I'll talk about, refer to Jo Boaler again. She talks about how math at elementary school is too much about just being right or wrong. And because of that young people think they can't do it and then again we've got these issues about people who have become media presenters, television presenters, Hollywood stars, sport stars, you listen to the radio any sort of broadcast opportunity, even Youtube and Instagram, you hear people talking about, oh I couldn't do math, I could never do it, it was never my thing. And what they don't... what they actually mean is at primary school I did math and I made mistakes. And actually they don't talk about the fact that they got it seventy percent of the way right but because they got the final thing wrong, they

get an X. And I think the way we teach math at elementary school leads to that perception. Whereas with reading we never tell someone oh you stumbled at couple of words, you can't read. It just oh, there's a few words you need to read. So I think it's the way we teach at elementary school needs to be looked at internationally.

BH: Bobby, does it matter if people don't like mathematics, though? Like as long as the people who need to send the probes to Mars or build the bridges or my accountant, as long as they know how to do mathematics, why does it matter if the person walking the street hates mathematics? If they don't need to do it?

BS: I'll tell you where I am, this actually what, the reason behind this is partly how I address people that tell me why should we do math? They'll tell me what's the point of math in school? And of course there's some bits of maths which are important in terms of numeracy, being able to use skills like basic percentages, understanding ratios, so your day to day whether it's working at your tax bill or making sure that you don't burn turkey or making sure you're planning your journey to work in time. So those bits of numeracy are important. And people will say to me oh Bobby but the other bits of math, you know like your number theory, your graph theory, your trigonometries, analytics... analysis... they're not necessary, they're not relevant. And I'll go to them and say, what's the point of Shakespeare? What's the point of listening to some rap music? What's the point of looking at a Picasso painting? And they'll say I do because I enjoy doing it. And I think mathematics can be enjoyable. And also, I think mathematics is an expression of what it means to be human. Because humans have delved the greatest depths of their mind to come up with amazing theories that can help us understand our world. Understand the way numbers are structured, understand the way primes are distributed. And I think people should be given the chance to be exposed to these things. And again I think maths is a beautiful thing and there are lots of people out there who think it's not beautiful. And again, you might say ah okay art, everyone can look at a piece of artwork whereas to understand complex math is more difficult. Yes, that's true but I still think we should give

people the chance to. There are so many young people that because of maybe parental attitudes, maybe because of their particular teacher that had a negative experience that are saying math is not your thing. I think that everyone should have the chance to experience the beauty of mathematics. And the reality is people are not and then because of that it impacts their numeracy which means that they can work out five percent of a number. Which means that even basic things like their bank statements, working out their budgets, even like cooking, they find those things difficult. So I think it's not just the mathematics but the day to day numeracy. And I think [sighs] we need to move to a world where everyone's encouraged to see the beauty of math and if they're not at least get the numeracy because we're not even getting the numeracy bit right at all, Brady.

BH: Alright.

BS: [laughs]

BH: Sounds fair to me.

[gentle violin music]

BH: Well that's all for today. Our thanks to Bobby for his time and for those extensive preparation notes. For more information and links check out all the details in the description for this episode. Also thanks to Brilliant for sponsoring this episode, remember [Brilliant.org/numberphile](https://brilliant.org/numberphile). [music continues] And also thanks to the Mathematical Sciences Research Institute in Berkeley, California for it's important support of Numberphile. I'm Brady Haran, we'll be back with another podcast sometime pretty soon, in the meantime it can never hurt to rate and subscribe the podcast in all the usual places. That helps inform all those invisible algorithms that decide the fate of podcasts and videos like ours.

[music fades out]

