NASA Blueshift - 2012
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# Keeping Skepticism Alive, Part 1 of our Interview with “Bad Astronomer,” Dr. Phil Plait

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Maggie Masetti: Welcome to Blueshift, brought to you from NASA's Goddard Space Flight Center. I'm Maggie Masetti.

Both Sara and I been involved with science education and public outreach, and not only with NASA Blueshift. The job of taking science and trying to explain it to the public so that it’s not only understandable but correct is often a challenge. But we both feel it’s so important that the public (as well as the next generation of kids) care about what NASA is doing, and more than that, we want people to have an interest or a curiosity in how the world (and the universe) work.

The questions are, how DO you make people care? What’s the best way to convey how awesome science can be? And how do you combat the misinformation and superstition that are already out there?

Since this is a subject we’ve spent a lot of time discussing amongst ourselves, we thought we’d consult some other well-known names in the field of mythbusting. The first of these is the so-called “Bad Astronomer”, Dr. Phil Plait. Phil used to work here at NASA Goddard, but is now a full-time writer and advocate for both good science and the busting of misconceptions. This podcast is the first part of our interview with him, in which we learn what makes him the “Bad Astronomer”, why he blogs about misconceptions, and how to help keep skepticism alive.

Sara: So thank you for joining us Phil.

Phil: Thanks for having me on Sara! It’s been a while.

Sara: So Phil can you tell us a little about your background?

Phil: Yeah, I’ve done a lot of different things. It’s hard to know exactly where to start. But I guess I can say I’m trained as an astronomer. I got an undergraduate degree in astronomy, then went on the get my Ph.D at the University of Virginia. I used Hubble when it didn’t work very well and then continued to use it after it started to work well. I worked at NASA Goddard Space Flight Center for several years on the space telescope imaging spectrograph, which was put up onboard Hubble in the late 90s, fried out and then got fixed a couple years ago on the last servicing mission so it was nice to get to see that thing working again. I’ve also done educational stuff for NASA. I was as Sonoma State University for several years with NASA grants developing educational activities doing sort of formal and informal - in classroom and outside the classroom - educational stuff. Then sometime around when I was in grad school I started to writing and I created a webpage which was brand new on the web, you had to use Mosaic to look at it. This was 1993 so yeah... I believe we were using stone knives and bear skins, if I can quote Spock. And I started writing about astronomy and science and that’s just basically taken over my life for the past few years and now that’s what I do. I try to talk to people about astronomy and how cool it is.

Sara: What makes you the “Bad Astronomer”?

Phil: That name... my mother still gives me grief about that. The original website was called “Bad Astronomy” because I took on myths and misconceptions about astronomy. This was stuff like, in the beginning, it was things like why you can stand eggs on end any day of the year and not just on the vernal equinox, which is a legend which back then was pretty big and now is sort of dying off, I don’t hear about it much anymore. But then just other things like people who think the sky is blue because it’s reflecting ocean water or why the moon looks big on the horizon and people say “it’s atmospheric refraction” which it’s not, it has nothing to do with that, it’s just a straight illusion. And it just got bigger and bigger over the years. I started tackling pseudo-science like astrology and UFOs. And calling it “Bad Astronomy” made sense and then somebody started calling me the “Bad Astronomer” - I guess it just got picked up here and there - and I thought, “that’s funny, I like that” and I didn’t have any problems with that and it turned out to be a really good branding. So now it’s just everywhere, on Twitter and all of that it’s “Bad Astronomer” and it’s easy to remember and I like it. So there you go.

Sara: What makes you blog about hoaxes and bad science and misconceptions?

Phil: Well the reason anybody would, they tick me off. Part of it is that old cartoon, I think it was from xkcd that says “I can’t go to bed, there’s something wrong on the internet!” And it’s like, “Oh, I’ve got to fix this!” Somebody’s saying this and this is wrong. I’ve actually moved away from that because, honestly, you’re standing there with a thimble trying to stop a tsunami, so it’s not going to work. And I try to pick and choose my battles a lot better. But honestly that’s still part of the motivation. The people are saying things that are wrong. Most of the time it’s not a big deal, it’s not going to destroy the Earth if people have some misconception about astronomy. On the other hand, you can use them to point out funny things. If there’s a mistake in the movie Iron Man, which is a huge blockbuster movie, and I can say, “well they kind of forgot to take account of momentum here” and when he lands in the desert in that suit and they opened it up they would find him, basically, a cup full of goo at one end of the suit. So it’s fun to talk about that kind of stuff and it helps - I hate to use the word ‘educate’ because that sounds so formal and people don’t want to be ‘educated,’ but I think that people do they just don’t want it to be called that. It’s fun to be able to say, “Hey look, this is interesting that you would say that but here’s what’s really going on.” And it’s just awesome to be able to see that light go on when you’re talking to somebody and they go, “Ooooh!” that’s terrific.

Sara: To us that’s the ‘why,’ that’s asking why and being sort of naturally curious. So I want to know were you the kid who always asked, “Why?”

Phil: I guess, it’s hard to remember that far back... You know when the Moon was half as close as it is now and the Earth was spinning faster and dinosaurs were around. But I think so. I seem to remember always poking my teachers and they would always pull me aside after class. And the good ones would say, “I’m glad you would do that, here’s what you need to look up in a book someplace.” And the other ones would say, “Shut up, kid. Go stand in the corner” - I got that too. But that natural curiosity is something that you look at with really good teachers, really good scientists and even a lot of other people at the top of their game. I’m actually fascinated by the mechanics of comedy now. How comedians stand up on stage and make funny. It turns out there’s a pretty good overlap between them and people who stand up and give talks about science. They haven’t lost their curiosity either. If you can’t look around the corner, if you can’t try to find that left hand turn you’re not going to be able to make a joke. You’re not going to have a punchline. And so I think that there’s still a lot of people like that out there who still have that curiosity in them and for me it’s the worst thing to see it crushed out of a kid because that natural curiosity is how we know everything that there is to know about what know.

Sara: Well and that's our big concern is people who have lost that "why?" and that natural curiosity. So what advice do you have for keeping it alive? For cultivating critical thinking and good skepticism?

Phil: I don't know. There's a lot of directions you can go, a lot of fingers you can point and I don't want to necessarily do that. Parents need to cultivate that curiosity in their kids. It doesn't even haveto be proactive as long as it's not negative. As long as you don't say, "Kid, go away." Encouraging somebody to be curious, encouraging a kid to investigate the world around them is just a matter of not shutting them down. And saying, "That's interesting. Why does that spider look like that? Let's look it up!" "Why is that cloud shaped that way? Let's look it up!" And you can find things out that way and also encourage them to go beyond that. you don't want to make them think that science is just something that you can look up. It's a matter of exploration and all that. Teachers need to do this as well. Certainly pop culture. Television and all that need to encourage curiosity. Right now - and this has been true for decades - it's the opposite, it's the skeptic that gets slapped down at the end of the show. And it's kind of nice to see science having turned around in the past couple of years. TV shows are hiring science advisors. And they're encouraging accurate science - up until it hurts the story - but they're making an effort which I think is fantastic. And the scientists are becoming the heroes. When you look at these TV shows in a lot of them the scientists are the good guys. It's terrific.

Maggie: Tune in next time for more of our interview with Phil Plait in which we discuss science in pop culture, particularly his relationship with the Mythbusters and Big Bang Theory TV shows. For more information on this interview, check out our blog at universe.nasa.gov/Blueshift. You can also find us on Twitter and Facebook as NASABlueshift (all one word). Let us know what you'd like to hear more of either there, or through our website feedback form!

I'm Maggie Masetti, bringing the Universe closer to you with Blueshift.