



PROFILES IN SCIENCE ENGAGEMENT WITH FAITH COMMUNITIES

Salman HAMEED

Salman Hameed is Charles Taylor Chair and Associate Professor of Integrated Science and Humanities at Hampshire College. He is also Director of Hampshire's Center for the Study of Science in Muslim Societies. We spoke with him about the inspirational power of science communication, assuming people are smart, making science relevant for your audience, and the necessity of a more nuanced understanding of faith perspectives. All photos courtesy S. Hameed.

You became an astronomer because you were fascinated by Cosmos! Tell us about that.

I got into the sciences and astronomy because I watched Carl Sagan's show Cosmos back in 1984 when it aired in Pakistan. I was in 9th grade at the time, and I was blown away—I wanted to be an astronomer. It took another 17 years until I got my Ph.D. But to me, science engagement with the public has always been an important component of being a scientist. I appreciate from personal experience how outreach by a scientist can change lives; I wouldn't be talking to you right now, I wouldn't be here in the U.S., I wouldn't be an astronomer had I not

watched *Cosmos* when I was in 9th grade. Having that kind of impact is an incredible power of scientists and also of media, and science outreach is a combination of those two things.

Before coming to the U.S., I started an amateur astronomical society in Pakistan, and I also started doing public lectures around that time. Throughout my undergraduate and graduate studies, I kept on being engaged in Pakistan; whenever I would go back, I would give public lectures. At the time, there were no professional astronomers in Pakistan, so it was important to engage with the public to provide something that they didn't have.

Most of my lectures are in big cities. I grew up in Karachi, so I go back there. There is an amazing coffee shop there which is called The Second Floor. It's actually quite well known for its progressive outlook and for its multiple arts and science lectures, so that has always been one of my favorite locations to give a talk. Also, since it's a coffee shop it will have people from all walks of life.

I have given other talks also, like to a very active astronomy group in Lahore called the Lahore Astronomical Society. They have organized lectures, so you get more serious amateur astronomers; their level of questioning is different. This makes the engagement slightly different, because you have an audience which already has a baseline of astronomy knowledge. But even among amateur astronomers, there is still a big range of knowledge, and you can also get teenagers in attendance, so it is certainly a distinct audience from a coffee shop.

How do you tailor your talks to your audiences and prepare for challenging discussions?

Over 95% of the population in Pakistan is Muslim. In general, Pakistan is considered quite religious, but there's a lot of complexity within that. It helps to know where you are speaking and what kind of audience is going to be there. What kind of topics are going to be useful? Good? Offensive?

If I'm asked to give a talk, I have to decide what my goals are. Often, the goal is to communicate the wonder of astronomy or science. Personally, again because I'm inspired by Carl Sagan to a certain degree, I don't think facts are that interesting; I think what's interesting is how we construct meaning out of those facts. How do we know what we know? And the goal is also to inspire people to try to figure out their own questions about what they want to know.

It's also important to sometimes challenge perceptions, which is a decision to make before giving a talk. If I'm going to give a talk on the origins of the universe, or the origins of life or intelligence, that will potentially get a less friendly reaction from the audience compared to a generic talk on galaxies. If I decide that I am going to bring up questions of origin, a) I should be prepared for some sort of reaction, because we know that within the science and religion context, this is a potential flashpoint, and b) I should be sensitive about that.

So, how do you handle that? Within the Pakistani context, I have given talks on origins and also on evolution. I have a stance I advocate within my lectures about the separation of science and religion. If we are talking about origin questions within the scientific context, then science is the best way to get at answers. I advocate this viewpoint knowing full well that some people may disagree, and when they do, I have to make sure that I am not insulting them or their religion. Sometimes it also happens that you're giving a talk on something else, and people ask questions about origins or evolution. The questions can come on any front, and you have to be aware of the cultural and religious context for these questions; you have to be prepared for that.

You can defend evolution, but with an understanding of someone's perspective. You can agree to disagree, and people may actually come around if you are being respectful. But if you create a boundary and just say "us versus them," it is more likely that people are going to reject evolution or origins

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Salman Hameed in the studio at WHMP radio in Northampton, MA.

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Salman Hameed discussing with audience members after a talk in Pakistan.

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How can scientists prepare for engagement with faith communities that they don't belong to?

There are couple ways to approach it. One way would be to ask beforehand—just like you prepare the talk itself, you also have to prepare for the audience. If you go blindly into a group of people to give a talk, you could be surprised in ways that you may not find pleasant. The first rule of science communication is that you have to know the audience. You always ask, who is going to be there? Is this coming from a religious perspective? A secular perspective? A particular ethnic perspective? If someone has invited you to give the talk, ask them who will be in the audience. Tell them your topic and what you want to talk about, and ask if it will raise any questions that you need to prepare for.

A second way is that you always have to assume that the audience is smart. If you assume that, then any question that comes your way, no matter how critical, you have to give it a respectful answer. People are not idiots. People are smart, and there are reasons why people believe what they believe. If you want to engage with the public, then I think it's important to start there. If someone says, “The world is 6,000 years old, so all evolution is completely wrong,” you can say, “I disagree with that because my perspective is coming from science.” Fundamentally giving respect to other perspectives would be a useful thing.

Last, if you're speaking to a community that isn't your native audience, you should go into a frame of learning from them. We say that every kid is a scientist when he or she asks a question about the stars in the sky. Well, everybody can also be an anthropologist. You can try to understand where the person is coming from and what they are asking, rather than assuming that they are completely wrong because they are disagreeing with your particular position on science. They may instead be coming from a different perspective. Put on your anthropologist

hat and try to understand why people are saying what they are saying.

With these steps, hopefully the interaction will not be acrimonious, even if people disagree. Rather, it would be an exchange on both sides where you learn from an individual and the individual learns from you.

How have your talks been received?

The response was phenomenal (this is not a boast about me, but rather I'm referring to the reaction on discussion of these topics!). Even though there are no professional astronomers [in Pakistan], the appeal of astronomy was really positive. I kept giving the public lectures even after I got my Ph.D., and whenever I go back, I give public lectures in Pakistan. Because there's interest in astronomy there, and especially because I grew up there, I feel that it is my responsibility to do this.

I give public lectures and do radio here in the U.S., but giving a public lecture in Pakistan is just so rewarding. Part of the reward is the questions from the audience. You can stay for an hour or two afterwards, and people keep asking questions because of the scarcity of such discourse. From a qualitative perspective, people there are starving for this kind of information, and they absolutely love it. There is a similar dynamic with amateur astronomy groups—there is a whole other level of satisfaction. I get satisfaction from giving those talks, and I hope the audience gets some of that satisfaction as well. But I get a different kind of reward also, because the experience connects me to when I was young and in Pakistan. I would really have appreciated talks like this back then, so I'm trying to give those talks now.

I should also mention that in the over thirty years since I left Pakistan, a flourishing amateur astronomy scene has developed, and there are astronomy societies in nearly all the major cities. It wasn't because of these public talks; it may be because of the internet and individuals who have been organizing these societies. But there is now a thriving astronomy scene, and they organize public events themselves. There

is a lot of public outreach that is taking place, and I'm assuming that will lead to more people becoming professional astronomers.

You're also trying to reach Urdu speakers in Pakistan; how are you doing that?

I'm making astronomy videos in Urdu at Hampshire college aimed at audiences in Pakistan. One of our most famous alums is Ken Burns, so there is a very strong film program at Hampshire. The videos are about 10 to 15 minutes long and deal with recent astronomy news, but I use them to talk broadly about the place of science.

There are two key aspects of the videos. One is that they are in Urdu, a language that is spoken in Pakistan. Elites in Pakistan speak English; Pakistan was a part of India, and before that, it was colonized by the British. The education system has a hierarchy, a three-tiered system linked with your social class. Upper elites already get all the English documentaries, and they have cable. I deliberately wanted to reach broader swaths of our population, so I started making these videos in Urdu.

The other aspect is that I wanted the videos to have some connection to Pakistan or provide some local cultural context. If I'm just saying the same things Neil Degrasse Tyson is saying, why wouldn't I just dub his videos? I think it makes a difference if somebody local is speaking; the public can see somebody they can identify with, and they can say, "If he can be an astronomer, then maybe I can be an astronomer." But I take it one step further with providing that local context. For example, in talking about neutron stars, often the standard comparison is that neutron stars are the size of New York. Well, you change that: instead, neutron stars are the size of

Karachi [the largest city in Pakistan]. Or if you're talking about water geysers on Saturn's moon Enceladus, the features are all named after characters in Arabian Nights; people in Pakistan are familiar with Arabian Nights. If you're talking about Pluto, one of the features on Pluto was recently named after a Muslim geographer. Yes, astronomy is cool by itself, and we can reach people just with astronomy, but whenever there is an extra connection, it adds another layer of interest.

Is there anything else you would like to share?

I worry about some of the science rhetoric in the public sphere regarding religion, and in particular regarding Muslims in the U.S. or in the U.K. It's a really hard problem because it's not an easy thing to discuss. Headlines can be incendiary and provocative. [Media often] ignores all the diversity and multitudes of Muslims that exist. "Muslim" is not a monolithic entity. [Many scientists] are not familiar with the diversity of Muslims, and most of the information about Muslims come from the newspaper headlines and [sensationalist] articles.

This issue requires a more sophisticated understanding of culture and religion on the part of scientists—not at the expense of science, but as academic scientists learning about the complexities of politics and culture. I think an introduction to anthropology would also be very helpful because some people don't understand the nuance and complicated ways that other people believe. I know a lot of people that have a hard time understanding why others don't think purely from a scientific perspective, or why people don't give science the sole privileged position. Science may not be the most important thing in many people's lives and that's okay. ~

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Salman Hameed with the Lahore Astronomical Society.

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