



PROFILES IN SCIENCE ENGAGEMENT WITH FAITH COMMUNITIES

# Guy CONSOLMAGNO

*Brother Guy Consolmagno, S.J., is Director of the Vatican Observatory and President of the Vatican Observatory Foundation. We spoke with him about the universality of wonder, joining the Jesuits while being a scientist, and doing science engagement at science fiction conventions. (Above photo courtesy G. Consolmagno.)*

**You've previously said that science fiction drew you to science—how did that happen?**

I'm a baby boomer, and I grew up in Birmingham, Michigan. I was in kindergarten when Sputnik was launched. I was a rising senior in high school when people landed on the moon. Smart boys of my age were all going to be scientists; that was the culture, so I wanted to be a scientist. But then I went to the Jesuit high school, and all of the smartest kids were in the classical Greek track, and then I wanted to be one of them.

I became a history major at Boston College, but I was very unhappy and didn't fit in. When I visited a high school friend at MIT, I discovered that they had tunnels you could explore at night, and weekend movies, and the world's largest

collection of science fiction. I'd read science fiction as a kid. My dad had been a big fan of science fiction when he was a kid. My older brother was a big fan. I had this love of science fiction in my background, and suddenly, there's the MIT science fiction library.

I decided that I would transfer to MIT, just because it was more fun to hang out there. I was trying to find an excuse for why a history major would go there, so when I got interviewed, I said it was to be a science journalist (which I did try doing for a time). But the real attraction was to read science fiction and be able to get involved in it. And at that point, I also discovered fantasy and the very fuzzy boundary between the two, which was encapsulated by the famous line from Arthur C. Clarke that any sufficiently advanced technology is indistinguishable from magic.

A buddy of mine came up with the opposite statement: Any technology which is not indistinguishable from magic isn't advanced enough. But the idea of magic is relevant because when I read the Harry Potter books, I was homesick for MIT—MIT was the Hogwarts of my lifetime, suddenly surrounded by other people who were all learning how to become magicians in their own way, by learning the rules and the magic incantations. After all, what is a computer program but writing down the exact words and the exact magic incantation? And you'd better get the letters right or else the magic spell won't compile.

**How did your time serving in the Peace Corps in Kenya impact your thinking about science and science engagement?**

After MIT, I got my doctorate in Planetary Science at the University of Arizona, and then did five years as a post-doc at Harvard and then MIT. Which was great, but it was still a post-doc; I couldn't get a real job. In frustration, I said, "I'm wasting my life. Why am I doing science when there are people starving in the world?" That's what motivated me to join the Peace Corps.

I was assigned to the University of Nairobi, and there were other volunteers in villages all across Kenya. And the first thing I discovered was that people there wanted science. When I would visit and set up the telescope in those villages, everybody in the village wanted to look through the telescope, just like the people in Michigan. And everybody went, "Wow!" when they saw the rings of Saturn, just like the people in Michigan. And that's because we're all human beings and that's how human beings react. I discovered that human beings are hungry for something

as seemingly useless as looking through a telescope and seeing the moons of Jupiter, because these things feed the soul.

And that rekindled in me a love and appreciation of astronomy that I'd lost. For too long, the motivation for doing the science had been to get the next grant, the next job, to show up my rivals, to get the patent. I remembered that science was something that could make you go, "Wow," something that you could share with someone else. And not just that the moons of Jupiter are beautiful, but that what could be going on inside them, according to this computer model that I've just written, was also beautiful and exciting. That experience reinvigorated both my love of science itself and my desire to share it with people.

My time in Kenya also had parallels with science fiction for me. I was living in a culture that was so different from mine, on a continent that smelled different, where the sun felt different, where the vegetation was completely unfamiliar. I felt like I was on a different planet.

It was fascinating to walk across the campus of the University of Nairobi. I had spent all my adult life at universities, and here I was in another university, which should have felt totally familiar, but I'd look at myself, and there was something wrong with me. I was very pale to the point where I looked sickly. I didn't look like everybody else around me. I didn't fit in; I was the alien. There is a science fiction book by Rebecca Ore called *Becoming Alien*, which deals with this sense of who is the alien and who is the norm.

**Why did you enter religious life, and why in particular did you choose to join the Jesuits?**

I discovered in Kenya that I loved teaching, and when I returned to the U.S., I was able to get a professorship at a wonderful small college, Lafayette College, in eastern Pennsylvania. I loved it, but there was still something missing. I felt uncomfortable with the thought that the purpose behind my teaching and research was just to get tenure, to get a grant, to amass a bunch of publications. Also, I had been dating someone, but when that didn't work out, I realized that getting married and having a family wasn't really what I was looking for, either.

I had been educated by the Jesuits in high school, and I had encountered Jesuit astronomers in my work, so I knew that they ran a network of small colleges much like Lafayette. I did not feel particularly called

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*Brother Guy Consolmagno teaching astronomy at the Vatican Observatory. Photo courtesy G. Consolmagno.*

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to do ministry type work, just teaching, and so it seemed that joining as a brother was the right choice, rather than going for ordination as a priest. I had assumed that I would be assigned to a place like Fordham or Georgetown.

I actually didn't want to join the Vatican Observatory; I wanted to teach. But I had taken this vow of obedience. And so I was ordered to go to Rome, live in a palace overlooking a beautiful mountain lake, eat Italian food, and take care of a collection of a thousand meteorites. Alas, I had no choice but to obey!

**What was it like joining the Jesuits and being a scientist at the same time?**

I was in my late 30's at this point. I'd been a scientist for 15 years, and I was worried what other scientists would think. I had grown up with the assumption that the science world was anti-religion. But, the first summer I was a Jesuit, I worked for a month at the Goddard Space Flight Center doing research. Somebody there, who I respected tremendously as a scientist and who is a no-nonsense character, said, "We've got to talk." And I was worried. But what we talked about was her parish, her religious life, raising her family, all sorts of things about her that I had never known.

And that kind of interaction happened over and over again; people who I had known as a scientist for years came up to me and said, "Oh, you go to church?", and then they started telling me about the churches they went to. Almost every religion you could imagine. And I'd had no idea that they were religious. Back then, the older scientists had been either overtly anti-religious or, if they were pro-religion, they were defensive about it and felt they had to justify having religious belief. I think that by figuratively putting on the collar (though I never actually wore one), I gave them permission to talk about their religion. All of us had thought we were the only ones.

In the 30 years since then, I've noticed a real generational change [in my field]. There are certainly plenty of people who are non-believers or agnostics, but being religious today is one of those quaint things that shows that we're diverse. In some ways, they don't take it as seriously as they did back when they would get mad at you for being religious, but on the other hand, it also means that you can hold a religious belief and not have it count against you as a scientist. You no longer have to be, in your own mind, the token Catholic or the token Jew.

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**Do you think those attitudes have changed because the scientific community is becoming more aware of science as something that has a culture and history?**

Partly, but I think it's more an awareness of diversity. I was a graduate student at the University of Arizona in planetary science in 1975, the second year that they accepted students to the department. Of the 10 of us, one was a woman. One had a vowel at the end of his name, me. One was Jewish, though not a practicing Jew—culturally Jewish. Two of us were culturally Catholics, and only one practiced. It was still a predominantly white, Northern European thing to be a scientist. That said, I never experienced any kind of discrimination that I could recognize, unlike my father, who, in the business world, was always very aware of his Italian last name.

If you go to the Lunar and Planetary Lab today, there are many more women than in 1975. And while students of color are still not proportionate to the population, their numbers are greater. The field has a long way to go in terms of diversity, but we've come a long way, too. And I think the acceptance of religious belief is part of it.

I also think that the science-religion wars of the previous generation have left such a bad taste in everybody's mouth that most of my atheist friends are as embarrassed by some prominent atheist scientists as I am by the most staunch creationists. That's not who we want to be.

**You eventually joined the Vatican Observatory and are now Chief Astronomer for the Vatican. What would surprise people about your work there?**

Most people are probably surprised there's a Vatican Observatory at all. But astronomers have always needed some kind of patron, and in our case, it's the Vatican Museum; most of our budget comes from the museum's proceeds. At the observatory, we're doing the same kind of science as anybody else because we all got our degrees in the same schools as everybody else.

But you may also notice our science is different, not because of the religion, but because of the support. You don't do science in a vacuum—you do science as part of a community, and if nobody is interested in the science you want to do, it's not going to happen. But at the Vatican Observatory, I don't have to renew my grant every three years, I don't have to have results in three years' time or I'm out of luck. We don't have to worry about tenure or prestige, and that

means that our scientists have traditionally gravitated to what one guy has called orphan science—the science that everybody knows somebody ought to do, but nobody's getting supported to do it.

**As a person of faith and of science, are there questions you get asked a lot?**

A typical question is, has there ever been a conflict between something I knew in my religion and something I knew in my science. Some people think of that as the “killer question,” and they're shocked at the answer, which is two-fold. First, “No, because science and religion are not talking about the same thing.” And second, what does happen is that something I know in my science conflicts with something else that I know in my science. And when that happens, you get really excited, because you say, “I'm about to learn something new.”

Many people think of science as a big book of facts, and religion as a big book of facts, and when you've got two books, if they conflict, whose book is right? But that's not what religion is, and that's not what science is; that's just the way we teach them in high school. And I don't know how to teach it any better; if you're going to teach somebody the piano, you have to teach them scales. But playing scales isn't the same thing as playing the piano.

**You do a lot of science engagement at science fiction conventions—what is that like?**

Science fiction conventions are a brilliant place to do public engagement about science. You've got an audience who is on your side from the start. They tend to be very well educated, especially in science and technology, so you can speak to them at a high technical level. They're hungry to learn about this stuff, because in many cases, they are people who thought they were going to be scientists, but wound up going in a different direction; or they wound up being engineers but always loved the science underneath it; or they wound up being managers even though they'd started out in engineering. So you've got a really well-educated audience who can handle the toughest stuff you can throw at them, who are hungry for it, and who will ask really good questions, including sometimes questions that you should have been asking yourself.

Science fiction conventions are also interesting from a diversity standpoint. Humans tend to segregate ourselves into little communities of people who look like us,

because all of us feel alienated from what we think of as the rest of the world. We tend to surround ourselves with people who think like we do, who look like we do, and have the same interests that we do.

In my experience, a science fiction convention is a place that tends to attract people who, in high school, felt rejected by everyone else. Of course, what you don't realize is that most people feel rejected by everybody else in high school; that's part of being in high school, so that feeling of rejection therefore spans a diverse group of people. And so, science fiction convention attendees can be a diverse group, including people of many different religions, for example. There are a lot of very serious pagans, Mormons, and Evangelical Christians, in the science fiction world. And there are a lot of Jews who are non-practicing, and a lot of Jews who are very devout.

**What topics do you talk about at science fiction conventions?**

I mostly talk about asteroids. Asteroids are very popular in the science fiction world, and so people want to know about meteorites and asteroids. Many of them collect meteorites and they want to know what they've got. Meteorites give them a sense of outer space that they can touch and see, that they could imagine mining in 50 years for a living.

The second thing is that they love stories of people doing science. What's it like to actually be a scientist? People love stories. Every scientist who's been in the field for very long generally has a lot of funny stories and crazy things that happened in the lab. Like back in the days of giant capacitors, somebody walked in and stood too close to the capacitor bank and all the cat hair on their sweater jumped into the capacitor and shorted everything out, with sparks everywhere.

**What suggestions do you have for scientists who want to engage with communities of faith?**

Tell stories. I learned a long time ago that stories engage your imagination. They allow the person listening to enter into what you're trying to describe. They'll laugh, they'll cry, they'll remember, but they'll also feel comfortable in judging, in a good or bad way, what it is you're saying. When a typical person who's not a science fiction fan goes and hears scientists speak, they are expecting to be baffled. They are expecting to not understand. But they'll understand a story. Whatever it is you want to get across, tell it as a story. ~

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*Br. Consolmagno and author Dr. Nnedi Okorafor at the 2020 DoSER Holiday Lecture "Imagining Different Worlds: Science, Ethics, and Faith in Science Fiction."*

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