Br Guy Consolmagno SJ: God and the Cosmos

Study Day, 10 June 2017

Church of Christ the Eternal High Priest, Gidea Park

Br Guy had intended to use slides and a short film for the morning session, but this proved unfeasible due the brightness of the church in which the session was staged. So he said that instead he'd tell us some stories about astronomy. Then over lunchtime people were invited to write their questions on pieces of paper and place them in a basket, and told that he would devote the afternoon to answering them. These notes cover both sessions, but without clear demarcation.

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Br Guy began the morning session with the slide with which his slide presentation would have begun, before turning off the projector because we couldn't see anything. The slide showed a quote from G. K. Chesterton's book *Orthodoxy*:

> *The earth is so very large and the cosmos is so very small. The cosmos is about the smallest hole that a man can hide his head in.*

What did he mean by this? We carry around a 'cosmos' in our heads which is our scheme for interpreting the world. It can help us, but it can also hinder us by limiting our ideas.

"Religion gives me the reason to do science."

"With civilisation, you get atheism and flush toilets."

"I only believe in one more God than Richard Dawkins (and I probably don't believe in the God he doesn't believe in)."

To do science takes a very specific sort of mindset. The Chinese had thousands of years of wonderful philosophy but were never interested in learning about the laws of physics. The Indians had phenomenal mathematics and could predict eclipses, but their interest was in astrology rather than astronomy.

In order to do science, it is necessary to make certain assumptions, and those assumptions are religious assumptions. To begin with, we have to believe that the universe exists. This is an unprovable axiom, like the root assumptions which underlie any system of inquiry. The second assumption we have to make is that the universe is law-governed. Who was the first person to think this way? Maybe Aristotle. But Aristotle's physics was sterile because it never developed in 1500 years.

The gods of the Greeks and Romans were part of nature, responsible for thunder and lightning, harvests and famines, etc. But the Christian God is outside nature; he

creates nature. The word ‘outside’ is inadequate [being a spatial metaphor], but such language is the best we can do. Hence we say that the Christian God is above nature, *super*natural.

God not only creates the universe, he also gives it its meaning. Wittgenstein said that there’s no point to a chair without me to sit on it. Likewise, without God, there would be no point to the universe.

There are three things you need before you can do science is (i), education; (ii), people to talk to (i.e. science is an essentially communal activity – he tells his students apropos of experiments, “If you don’t write it down, it didn’t happen”); and (iii), you need someone to pay the bills.

Why is it worthwhile doing science now? It’s worth doing if you believe that the physical universe is the creation of the Creator. Why did all the people involved in the medieval development of science do it? Because they believed it was worth doing.

Leo XIII started up the Vatican Observatory at Castel Gandolfo, but now, because of the light pollution, its main telescope is in Arizona.

You need to have your family behind you to do anything. Science doesn’t happen if there aren’t families to support it. Br Guy gave some examples of people in families or cultures that don’t support science, e.g. a young person whose family’s religious beliefs don’t have room for it. That young person might have wanted to be a scientist, but because it would make their family ashamed of them, they won’t do it. Also, you need to be able to convince other people of the value of your project; it’s no use having a research project that really excites you if no-one wants to pay for it.

Doing science is an act of worship because God is logic as well as love. To say that Christ is the Logos means not only that he is the Word, but that he is logic. Since God is logic as well as love, to find logic in the universe is to find God in the universe.

“We do science for the joy that is the love of God.”

Doing science is playing with God. Br. Guy told us about how, when he was a child, his mother used to play Rummy with him, and how he realised she did it because she loved him. Now, when he’s in the lab, he’s playing with God; it’s his way of being intimate with God. It’s the same if you’re working in the garden, writing poetry, bringing up a family, caring for, or being cared for by, someone.

Re the repository of faith: an archive was assembled thirty years ago of all the photographs ever taken of astronomical objects. New discoveries enable people to look for new things in them, that they wouldn’t previously have seen because they didn’t know to look for them. The repository of faith is like that: as our world changes

and we make new discoveries, we become able to look for new things in scripture and tradition.

Re the existence of extra-terrestrial life: starting with scripture, the writers of our tradition have never been afraid to say that there exist creatures other than us who are in relationship with God, most obviously the stars and the angels. E.g. the prophet Baruch says that the stars sing for joy at their Creator. Historically, the only people to insist that humans are alone in the universe are the humanists of the Enlightenment.

Re our impact on the earth: while we can try to limit the damage we do, simply by existing we hurt the earth. The only way to justify this is by adding to the earth more than we take away, i.e. by adding love, beauty, etc.

Re the resurrection: there is reason to think that it happened, namely the biblical records. If it *did* happen, then it *can* happen.

However, you can't always read the Bible literally because no words can describe God. The position with trying to understand God is analogous to the case of quantum physics: if you understand quantum physics, then you don't understand quantum physics.

An American cartoonist said, 'Either we're the most intelligent life form in the universe, or we're not. Either is a sobering thought.'

The Catechism is the finger exercises we have to get past in order to become intelligent adults. Some people never get past them, and some of those people are our students and others are our teachers. We're a big Church.

Br Guy met a man who believed Genesis to be a literal account of creation. He, Br Guy, wondered where this man thought the space shuttle goes and why it doesn't get wet (because of the waters above the firmament). Then he discovered that this man was a test pilot. Said Br Guy: "Test pilots aren't supposed to think creatively. Some jobs need people like that. They're fine as long as you don't have to go to the Museum of Modern Art with them."

The person who discovered the Big Bang, Fr Georges Lemaître, was a Catholic priest.

Br Guy's father told him that knowledge is like an island: the more you know, the bigger your island gets, and so the bigger its shoreline. The sea represents everything we don't know. So the more we know, the more we realise how much we don't know. If you know everything then your island is very small!

The Enlightenment was the adolescence of human thought, when people thought up every daft idea possible and believed it to be true.

[Br Guy referred a couple of times to Deism, the belief, current in the Enlightenment, that God was only involved with the universe at the beginning when he created it. It's like a machine that, once created, runs on its own.]

Re artificial intelligence: information depends on there being someone to read it, otherwise it's just noise. One man's signal is another man's noise, which is why computers will never be able to do science. E.g., the man who discovered that electrons have wave forms recorded the data but didn't see its significance. So he took three weeks off to go on holiday. While he was on holiday, he attended a lecture at Oxford based on his data, i.e. the lecturer had seen its significance. The two of them, along with a third person, shared the Nobel Prize.

Again re AI: familiarity breeds contempt. When he was at MIT, Br Guy shared a room with someone working in AI. He has a lot of familiarity with it.

Re miracles: a miracle can't be defined as a violation of the laws of physics because we had miracles before we had laws of physics. Miracles aren't about violating laws, but about awakening us into relationship with God; they're like a divine coincidence. The rainbow doesn't stop being a miracle just because it can be explained in scientific terms.

[Another point Br Guy returned to more than once is that the 'God of the gaps', i.e. the 'God' we invoke to explain something we don't understand, as, e.g., the early Greeks explained thunder and lightning by reference to Zeus, isn't the God we should be believing in. The Christian God is not the 'God of the gaps'. He is not part of nature, but above it, its Creator.]

Re the Church's attitude to the theory of evolution: the problem wasn't the theory but rather its potential for abuse, e.g. by teaching evolution from a biology book which says that black people are inferior.

One of the reasons why Pope Leo XIII founded the Vatican Observatory was that people had just started thinking that science and religion were opposed. Re the case of Galileo, Br Guy has written a chapter in one of his books on this. But basically the reason people go on about it is that it's the only case [of the Church apparently opposing science] they can find, and the reason there was an issue is because, since the Church cares about science, they cared about what he was saying. It was absolutely not a case of, "We've got all the answers; all you have to do is to memorise Thomas Aquinas".

What's next for the Vatican Observatory? Work has started on assembling the world's biggest ever telescope, the Giant Magellan Telescope, in Chile. Br Guy would like to be able to raise £10 million to contribute to it, so that their team would have a stake in it.

What was God doing before he created the universe? There was no 'before', since time was created with the universe. Likewise, there can be nothing outside the universe.

What about original sin? There's a lot we don't know about it. What we do know, works, and suggests that there's something deeper going on which we don't understand yet. Our current knowledge of original sin is like saying that an electron's a little silver ball with a minus sign attached that bounces along a wire. It works, in that it enables us to achieve practical results, but it also points to there being something deeper going on.

Genesis is not a book about the earth, it's a book about God. There are lots of creation stories in the Bible, starting with the two in Genesis. The sole biblical reference to creation *ex nihilo*, incidentally, is in the Fourth Book of Maccabees, when the child is thrown into the fire and the mother refers to 'God who created the world from nothing'. But all the biblical references to creation have in common that God created us on purpose; that we're not an accident. Biology books are thrown away after three years because they become obsolete, but we won't be throwing away Genesis.

When it comes to science, the Church doesn't tell us what to believe, because science isn't a belief system; it's a way of exploring reality. The encyclical *Fides et Ratio* talks about this: both science and religion have their respective domains and need to be in dialogue with each other. They're the two wings that enable us to fly.

Can doing science make a person gain or lose their faith? Br Guy thinks not. A person is probably disposed either to believe or not to believe, and they bring that disposition to whatever they do.

Is it true that physicists and cosmologists are more likely than biologists to be believers? In Br Guy's experience it seems to be, although there are notable exceptions. He thinks the reason is that physics was humbled at the end of the nineteenth century when it became apparent that Newtonian physics don't work and can't be made to work. The universe isn't all gears and levers. The biologists haven't yet had an equivalent experience, so they're still looking for the gears and levers; they're still in a mechanistic universe.

We must constantly interact with people who challenge our assumptions. Doing so will strengthen the assumptions which are true and weaken the ones which are false.

On the relation between theory and practice: it's essential to be experimentally in touch with the thing you're theorising about. How do we do this in religion? Through prayer. Prayer is, if not experimental theology, then certainly observational theology.

On whether things happen by chance: it seems that in the universe some things do happen by chance. On the scale of the very small, things seem to be random. Predictability comes into play at a higher level, and in relation to collections of data.

What does it mean to say that God sent his only Son into the world? For Br Guy, the idea of God as Father really works. He's learned a lot from talking to feminists, but for him, the idea of God as mother doesn't work. He has a fabulous relationship with his father, but if a person doesn't have a good relationship with their father, they don't have the necessary resources to think of God as father. If a picture doesn't work, find another picture.

Back to the subject of how we can know/understand God. When Mary and Joseph find the twelve year old Jesus teaching in the temple and he explains that he's in his Father's house, Mary doesn't write a three-volume work on Christology, she treasures it in her heart. God is not a problem to be solved. It's been said that you never understand mathematics you just get used to it. God is not a problem to be solved, but a relationship!

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