

# Universe will end with a bang, or a whimper, says Vatican astronomer

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Guy Consolmagno of the Vatican Observatory waxes poetic about the nature of the universe and God.

While some pit science against faith, a Vatican astronomer contends that science is, in fact, a very Christian pursuit, but that it alone cannot answer all of life's big questions.

Guy Consolmagno of the Vatican Observatory visited the University of Alberta campus on Wednesday to speak about the challenges of reconciling the scientific evidence that predicts a gloomy end to the universe with God's love of the world and the immortality of the soul.

Consolmagno explained the evidence for the Big Bang theory, which is generally accepted as the cause of the universe's creation, to a capacity crowd in the Education Building. The theory generally conceptualizes a universe that began, 10-20 billion years ago from a single point of

extremely compressed matter and space that expanded outward. The theory also explains present scientific evidence of an expanding universe, which is being pushed apart by 'dark energy' at an ever-quickenning pace.

"Not only does the Big Bang give us an idea of the beginning of the universe, but an ultimate fate," said Consolmagno.

It is hard to say precisely what the universe's end will look like, he added, but "either it will end with a bang, or it'll end with a whimper."

What's more, the Laws of Thermodynamics predict a sudden "heat death" of the universe, when all stars have died and an ever-expanding empty universe fills with expanding radiation.

While the universe may be slated for destruction billions of years from now, Consolmagno doesn't believe this suggests the physical world lacks eternal meaning. Physics cannot explain a great deal about nature, including the existence of the soul, and the world's splendour, he noted.

Van Gogh's work *Starry Night* is such an example, said Consolmagno.

"I can scientifically tell you all sorts of interesting scientific facts about every dab of paint in the painting. I can tell you the chemicals present, I can tell you why it reflects light in those particular colours, I can measure the wavelengths. Science isn't going to tell you why this is a gorgeous painting," he said.

"That requires the human intellect to interpret those dabs of paint and say, 'Those are stars, this is Van Gogh.' And Van Gogh's paintings are not photographs, it's up to us to take those dabs of colours, those bits of paint, and add our own imagination to complete the picture. In that way, the picture and the painter enter into our soul."

He emphasized that paradoxes exist in the physical world, and that while reconciling God and the universe's end in a single theory cannot be easily done, it doesn't negate the idea of eternal physical life, as indicated in the Bible.

"The best we can do is to speak in poetry. The best we can do is to talk about paradoxes of body that are, at the same time, the same but different from the bodies that we know now," he said.

"It is a paradox, but that doesn't mean that it's unreal, or even unfamiliar. We can understand that, in some sense, the centre of human identity - call it if you want the soul - can maintain a hypothetical existence even in the absence of a particular physical manifestation, in the same way that the idea of a song or a poem can live on even after every copy of it has been destroyed."

While some argue that there's a divide between science and religion, and that good Christians shouldn't pursue science, Consolmagno argues that contemplating the big questions is an inherently Christian activity, since "God loves the world."

"God made this universe, and made us a part of it, and what's more, Christianity says that God so loved the world that he actually incarnated himself into it to become a part of it. If nothing else, that means that this physical world means something to this God. And that's one reason why doing science is a Christian thing to do."

He added that it's also a Jewish and an Islamic thing to do. "Any book that believes in the creation of the universe by a good God is what gives you the motivation to do science."

Source: University of Alberta (By Caitlin Crawshaw)

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