AUC: Asian Journal of Religious Studies
66/2 Mar-Apr 2021, ISSN 2249-1503 | 41-46
DOI: 10.5281/zenodo. 4558516
Stable URL: http://doi.org/10.5281/zenodo.4558516

Catholic Church and Cosmology

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Abstract: Rev Cris Corbally, SJ, has become the 11th Jesuit priest to have name connected to an asteroid This gives the author an opportunity to explore the relations between Jesuits and cosmology. In this article we take up only some significant Jesuits who have contributed to cosmology. The enormous contribution made by the Jesuits to cosmology will, hopefully, dispel any doubt that religion is opposed to religion.The author wants to indicate that the Church has always been encouraging science and fostering dialogue between science and religion.

Keywords: Rev Cris Corbally, SJ, Vatican Observatory, Jesuits and cosmology, Asteroid names, Science-Religion Dialogue

Cite as: Pandikattu, Kuruvilla. (2021). Catholic Church and Cosmology (Version 1.0). AUC: Asian Journal of Religious Studies, Mar-April 2021(66/2), 41–46.
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Rev Cris Corbally, SJ, has become the 11th Jesuit priest to have name connected to an asteroid. The astronomical body was named for the catholic priest to honour his 37 years of good work at the Vatican Observatory.

Catholic News Service (CNS) reports that the asteroid, which is about a mile wide, is now known as 119248 Corbally. The particular asteroid is about a mile across in size. It was discovered Sept. 10, 2001, by Roy Tucker, a recently retired senior engineer from the Imaging Technology Laboratory at the University of Arizona.

This gives an opportunity to explore the relations between Jesuits and cosmology. In this article we take up only some significant Jesuits who have contributed to cosmology. The enormous contribution made by the Jesuits to cosmology, I hope, will dispel any doubt that religion is opposed to religion.

Corbally as a Jesuit Scientist

Corbally (1946-) has been working at the Vatican Observatory since 1983, where he has held the position of Director of the Vatican Observatory Research Group.

Asteroids are indeed small (relative to other bodies in outer space) rocks, regarded as minor planets, that are caught in the sun's orbit. CNS noted that the orbit of 119248 Corbally takes it around the sun every four years. There are millions of asteroids orbiting within the inner solar system. Asteroids are small rocky bodies that orbit the sun. Thousands of them are located in the asteroid belt between the orbits of Mars and Jupiter. But some have orbits that bring them into other locations in the solar system.

Although he was pleased with the naming, Fr. Corbally recalled that his interests lie more in star systems, their classifications, galactic structure and more. He added: "I'm very much a star man. But realizing that stars are in our galaxy, I'm also interested in galactic structure and history of star populations in our galaxy. My way of probing all this is through the individual stars."

"I'm not a kind of an asteroid guy" like some of his colleagues at the observatory, he said. "For me it came as a complete surprise. That's why it's kind of nice."

Tucker has worked extensively with Vatican astronomers. His work included building and maintaining the charge-coupled device cameras used for digital imaging of celestial objects at

the Vatican Advanced Technology Laboratory as well as on telescopes used by Corbally at the University of Arizona's Steward Observatory.

Naming an asteroid requires approval from a committee of the International Astronomical Union. Once named, a short citation about the person being honored is published in a circular from the IAU's Minor Planet Center.

Born in London, Chris Corbally has been on the Vatican Observatory staff since 1983. He joined the observatory after completing a doctorate degree in astronomy from the University of Toronto. He was vice director of the Vatican Observatory Research Group until 2012. It may be noted that Corbally has a wide range of research interests. They have spanned multiple star systems, stellar spectral classification, activity in solar-type stars, galactic structure and star formation regions and telescope technology. Currently he researches on human sentience in the context of evolution.

Vatican Observatory

The Vatican Observatory (Italian: Specola Vaticana) is an astronomical research and educational institution supported by the Holy See. Originally based in the Roman College of Rome, the Observatory is now headquartered in Castel Gandolfo, Italy and operates a telescope at the Mount Graham International Observatory in the United States.

In its historical roots and traditions the Vatican Observatory can claim to beone of the oldest astronomical institutes in the world. For the first foreshadowing of the Observatory can be traced to the constitution by Pope Gregory XIII (1502-1585) of a committee to study the scientific data and implications involved in the reform of the calendar in 1582. The committee included the famous Jesuit mathematician Christoph Clavius. From that time and with some degree of continuity the Papacy has manifested an interest in and support for astronomical research. In fact, three early observatories were founded by the Papacy: the Observatory of the Roman College (1774-1878), the Observatory of the Capitol (1827-1870), and the Specula Vaticana (1789-1821). These early traditions of the Observatory reached their climax in the mid-nineteenth century with the researches at the Roman College of the famous Jesuit, Father

Angelo Secchi, the first to classify stars according to their spectra. To deepen the astronomical explorations and “in order to counteract the longstanding accusations of a hostility of the Church towards science” (Vatican Observatory, 2015). Pope Leo XIII formally re-founded the Specola Vaticana (Vatican Observatory) in 1891 and located it on a hillside behind the dome of St. Peter's Basilica. In 1906, Pope Pius X entrusted the Vatican Observatory to the Society of Jesus.

Because of the urbanization of Rome, it became difficult to study the fainter stars. So Pope Pius XI provided a new location for the Observatory at the Papal Summer Residence at Castel Gandolfo about 25 km southeast of Rome in 1930. It is here that the modern observatory, entrusted to the Jesuits, with the construction of two new telescopes, the installation of an astrophysical laboratory for spectro-chemical analysis, and the expansion of several important research programs on variable stars. With the installation of a Schmidt wide-angle telescope in 1957 research was extended to other topics such as new techniques for the classification of stars according to their spectra. This is still an active program at the observator.

Further, in 1981, for the first time in its history, the Observatory founded a second research center, the Vatican Observatory Research Group (VORG), in Tucson, Arizona in the United States, one of the world's largest and most modern centers for observational astronomy.

In 1993 the Observatory, in collaboration with Steward Observatory, completed the construction of the Vatican Advanced Technology Telescope (VATT), Arizona, probably the best astronomical site in the Continental United States (Vatican Observatory, 2015).

Jesuits and Cosmology

Research by the Vatican Observatory has turned up at least 11 asteroids named for Jesuits, including St. Ignatius of Loyola (1451-1556), founder of the Society of Jesus, “3562 Ignatius” (Macke, 2018).

Other asteroids have been named for Corbally's contemporaries: Brother Guy Consolmagno, director of the Vatican Observatory and president of its foundation, Father Richard P. Boyle (1943-) and Congo-born Father Jean Baptiste Kikwaya (1965), astronomers at the observatory, and Father Robert Macke (1974-), a research scientist and meteorite curator for the observatory, notes J-P Mauro, writing in *Aleteia*.

In addition, asteroids have been named for Father George Coyne, a onetime observatory director who died Feb. 11, 2020; German Jesuit Christopher Clavius (1538-1612), whose mathematical measurements helped develop the Gregorian calendar; Father Roggiero Boscovich (1711-1787), an 18th-century mathematician; Father Maximilian Hell (1720-1792), who determined the solar parallax from observations of Venus as it transited in front of the sun in 1769; and Father Angelo Secchi (1818-1878), director of the Roman College observatory in Rome during the 19th century (Macke, 2018).

In a related case, in July 2018 an Indian born Jesuit from the same Vatican Observatory, Richard D'Souza (1978-) made a path-breaking discovery. He, with his colleagues, showed that our galaxy Milky Way had a sibling, which was devoured by the Andromeda galaxy almost two billion years ago.

Conclusion

In this article, I have been able to list a very limited number of Jesuits who have contributed to the ongoing growth of cosmology. There are other Jesuits and Catholic priests who have been at the forefront of the scientific and cosmological revolutions taking place today.

As human being longing for stories that will connect us with the rest of ourselves and the whole cosmos, it is natural for us to seek our common origin and end. As such, science with its various theories on the origin (and possible end) of the universe provides "adequate and satisfactory" answers to this end. These stories can surely complement with the perennial Biblical versions of the beginning and end of the universe. We need to emphasis that both these stories are autonomous, distinct and at the same time complementary. Thus the scientific study of cosmology gives a firm and surer footing to deliberate on the theological version of

the origin and end of the universe (cosmos and eschatology). We need to respect their autonomy and complementarity.

The commitment and pioneering work of these priest-scientists make it obvious there is a healthy relationship between spiritual commitment and scientific research and between priestly vocation and scientific openness. We just cannot afford to remain in the outdated thinking that science is opposed to religion. They are different and are opposed only to the extent the thumb is opposed to the other fingers, a unique human feature. There may be some difference between some scientists and some religious people. But inherently there is and there cannot be contradictions between science and religion. The dictum

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Article received: Feb 09, 2021: Accepted: Feb 15, 2021: Word: 1670