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Editorial

Introduction to Special Issue: The Mutual Influence of Religion and Science in the Human Understanding and Exploration of Outer Space

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When considering the exploration of outer space people typically think about technology, engineering, physics, and the use of the scientific method to understand what is out there, beyond the Earth's atmosphere, from the nearby Moon to distant galaxies only visible through the use of high-powered telescopes. Religion rarely comes to mind in this context, despite the fact that before humans practiced science as we do now, religion offered the only explanations humans had about where we were, why we were here, what the future might hold, and what those glowing, moving lights in the sky might be. Religion said the sun was Apollo's chariot, that Mars was the god of anger or war, or that the stars and planets moved in celestial spheres. Since then we have learned more about the universe around us, but scientific advances have not completely eclipsed religious perspectives. With this collection we seek to explore the various ways that scientific thought and religious understandings intersect, combine, contrast, and overlap in the exploration of outer space.

The mutual influence of science and religion in the way human beings understand and explore space is not well understood. In the United States, religion and science have recently been presented in the media as political enemies, even diametrically opposed, creating in many a misguided view that to accept science is to reject religion and vice versa. Our goal in this project is to shed light on the real connections that exist between religious and scientific thinking about outer space by bringing together a collection of multidisciplinary papers to add to existing scholarship and serve as a foundation for future research.

These papers feature different perspectives from a variety of academic disciplines, written by experts in anthropology, history, physics, communication studies, archaeology, art history, political science, disability studies, and philosophy. The first two articles provide some historical background demonstrating that the relationship between religion and science in the exploration of space is nothing new. Vatican Observatory Director and astronomer Brother Guy Consolmagno starts the collection with "Space and the Papacy", a discussion of how specific popes, beginning with Pope Leo XIII, who set up the first Vatican observatory in 1891, have promoted space exploration as a way to better understand the "heavens". Historian Glen E. Swanson continues the historical theme in his "The New Frontier: Religion in America's National Space Rhetoric of the Cold War Era" with an analysis of religious language used in the early days of the American space program, particularly the religiously charged concept of manifest destiny as applied to human exploration and settlement in outer space.

We next turn to contemporary religious communities in the United States, examining how religious understandings influence the way they conceptualize outer space and its exploration. Political scientist Joshua Ambrosius examines data correlating support for space exploration and religious affiliation in "Reexamining the 'Separation of Church and

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Space': Evangelical Protestant Support for Space Exploration in the Trump-Pence Age", and specifically whether having Mike Pence, an evangelical Vice President who was also a space enthusiast, may have influenced support among evangelicals for NASA's programs and the projects of private space companies. Conservative Protestants are also the subject of anthropologist James Bielo's chapter, "Incorporating Space: Protestant Fundamentalism and Astronomical Authorization". Bielo notes that fundamentalist opposition to certain scientific subjects like evolution is well known, but that astronomy has recently become a more popular topic in "creationist cultural production". "Future-Day Saints: Abrahamic Astronomy, Anthropological Futures, and Speculative Religion", by Jon Bialecki, turns an anthropological lens on speculative fiction produced by and for authors associated with the Church of Jesus Christ of Latter-Day Saints, looking at both contemporary Mormon writings and those produced in the 19th and 20th centuries.

The next section of our collection takes us off the planet and into space, introducing a topic where scant research has been done—the actual religious practices and religious experiences that have taken place in space. We start with an example of "space archaeology". The term archaeology has been used for decades to refer to the study of objects made or modified by humans that reveal information about the cultures that produced them. Although archaeology is sometimes associated with antiquity, archaeologists frequently look at the artifacts and debris of contemporary societies, and that is what archaeologist Justin Walsh, art historian Wendy Salmond, and archaeologist Alice Gorman do here in their paper "Eternity in Low-Earth Orbit: Icons on the International Space Station". They focus on Russian Orthodox religious icons brought into space by cosmonauts living on the International Space Station and compare the religious use of these icons on Earth to the role they play in the ISS Russian Zvezda module. Deana Weibel keeps us in space with an anthropological discussion of Frank White's well-known term "the Overview Effect", which describes strong emotional and often spiritual experiences astronauts have when looking at our planet from space. In her article "The Overview Effect and the Ultraview Effect: How Extreme Experiences in/of Outer Space Influence Religious Beliefs in Astronauts", Weibel suggests that there is evidence for something she calls the "Ultraview Effect", a similarly strong response to seeing the enormity of space from space itself under certain conditions where an astronaut's view is unimpeded by the Earth's atmosphere or by the light of celestial bodies. She discusses the experiences of nine astronauts in terms of their exposure to both "effects" and considers the long-term implications of these experiences.

The final four articles suggest topics where the intersection of religious and scientific ideas about outer space offer a particularly fertile ground for future exploration. In "Models of Disability as Models of First Contact", Sheri Wells-Jensen and Alyssa Zuber take ideas from disability studies to consider whether future contact between humans and technologically advanced extraterrestrials would mirror the contact between disabled and abled people on Earth. Using examples of disabled-abled interactions on our planet, such as those based on religious understandings that see disability as punishment in some circumstances or a blessing in others, they examine just what it would mean for humans to interact with other, more developed species. Philosopher Kelly C. Smith takes a different approach in his "Cosmogenesis, Complexity, and Neo-Natural Faith in the Context of Astrobiology", one that questions whether religious activities or beliefs should hold any place in space exploration at all and considers what forms of religion might ultimately be compatible with human scientific pursuits in outer space. In Religion, Science, and Space Exploration from a Non-Western Perspective", anthropologist John W. Traphagan also explores the potential congruity between scientific and religious ideas about outer space, arguing that practice-based religions like Buddhism may be better suited to space exploration than faith-based religions like Christianity. Finally communications studies scholar Paul Levinson concludes our collection of articles with "The Missing Orientation", which he defines as a sense of awe often associated with religion that might be exactly what humanity needs to inspire and guide human space exploration in the future.

The 11 articles included in this collection are presented as a starting point and an example of the potential a wide array of academic disciplines can bring to space exploration research. While countless studies have emphasized the engineering of spacecraft, the dynamics of pulsars, or the effects of microgravity on biology, research that focuses on the human experience in, and ideas about, the universe also holds value and may, in fact, turn out to be essential as human societies move beyond our home planet.

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