



Photo of the ISS taken from the space shuttle *Atlantis* in 2010, by NASA, via Wikimedia Commons: <https://bit.ly/1Ndjmf5>

Note on this Case Study:

New technologies present both opportunities and challenges to religious communities. Throughout history, many religious people have created and used new technologies on behalf of their religious traditions. At times, religious needs have driven technological innovation. Yet many religious people have also tried to limit the use of certain technologies that they felt violated principles of their tradition. The relationship between religion and technology is complex and highly dependent on context. As you read these case studies, pay attention to that context: Who are the groups involved? What else is happening in their context? Who benefits from new technologies? Who gets to decide if they are legitimate or not?

As always, when thinking about religion and technology, maintain a focus on how religion is internally diverse, always evolving and changing, and always embedded in specific cultures.

The Religious Literacy Project is directed by Diane L. Moore and all content is constructed under her editorial direction.

Muslims in Outer Space

In the last century, advances in science, engineering, and technology have allowed humans to travel to space. Over five hundred people have gone to space since 1961, and at least nine of them have been Muslim. Though Muslims make up approximately one quarter of the global population, they make up less than 2% of astronauts to date, in part because of the hiring practices of the historically dominant US and USSR space programs. The US initially only recruited white, Christian males, and the USSR initially only hired ethnic Russians and Slavs, who were also more likely to be Christian.¹ However, as these space programs have diversified to reflect their populations, and as other countries have developed their own space programs, Muslim astronauts have become more common.

Space travel can create several interesting challenges for Muslims, because some common Islamic practices are tied to geography on Earth or the orbits of celestial bodies. For example, many Muslims pray by facing Mecca, but when orbiting Earth at 17,400 miles per hour, Mecca moves rapidly below the spacecraft. In addition, many Muslims pray five times a day, but astronauts experience sunrise and sunset every ninety minutes while they orbit Earth. These quick sunrises and sunsets can cause confusion about when to pray, as well as when to fast during the holy month of Ramadan when many Muslims fast during the day. Many Muslims also prostrate during prayer, but this is nearly impossible in space due to the lack of gravity.²

The first Muslim to encounter these challenges in space was Sultan bin Salman bin Abdulaziz Al-Saud, a fighter pilot and a prince of Saudi Arabia. In 1985, he was a Payload Specialist for the US's National Aeronautics and Space Administration (NASA) mission STS-51G, using space shuttle *Discovery* to launch three satellites. Sultan chose not to fast for Ramadan while he was training and in space, but he brought a small Qur'an into space with him, along with a prayer from his mother asking God to protect travelers. He also told reporters that he tied his feet to the shuttle floor to allow himself to perform the motions of prostration to the best of his ability.³

¹ Cathleen S. Lewis, "Muslims in Space: Observing Religious Rites in a New Environment," *Astropolitics* 11, no. 1-2 (2013): 109-10.

² Bettina Gartner, "How Does an Islamic Astronaut Face Mecca in Orbit?" *Christian Science Monitor*, Oct. 10, 2007. <https://bit.ly/2L8hRAM>

³ Lewis, "Muslims in Space," 110; Sultan Bin Salman Bin Abdulaziz Al Saud, "Praying Toward Mecca... In Outer Space," interview by Michel Martin, *Tell Me More*, NPR, July 12, 2011, audio, 4:30. <https://n.pr/2vRqoTq>

Later Muslims in space were cosmonauts from the Soviet Union, and there is no evidence that their religious practices impacted their travel in space. It is likely that these Muslims found their scientific mission to be more pressing than their religious practice, particularly in the officially atheist USSR. Similarly, Anousheh Ansari, the first Muslim woman in space, made few public statements about whether her religious tradition affected her flight on Russia's Soyuz rocket to the International Space Station (ISS) in 2006. Ansari, a multimillionaire, paid an undisclosed sum—some sources say \$20 million—to go to the ISS. While the Iranian-American pointed out that she views faith and science as “very complementary,” she did not note any particular religious plans for her space travel, instead focusing on her scientific goals.⁴

Other Muslim astronauts have been more outspoken about their religious obligations. In 2007, Malaysia sent its first astronaut to the ISS as part of a \$900 million deal to buy fighter jets from Russia. The astronaut was Sheikh Muszaphar Shukor, a Muslim doctor who launched aboard Russia's Soyuz TMA-11. Before liftoff, Dr. Shukor said that while his “main priority is more of conducting experiments,” he was concerned about maintaining his Islamic practices in space. In response, the Malaysian government called a gathering of 150 Islamic legal scholars, scientists, and astronauts to create guidelines for Dr. Shukor. The scholars produced a fatwa, or non-binding Islamic legal opinion, intended to help future Muslim astronauts, which they translated into both Arabic and English. They wrote that in order to pray, Muslims in space should face Mecca if possible; but if not, they could face the Earth generally, or just face “wherever.” To decide when to pray and fast during Ramadan, the scholars wrote, Muslims should follow the time zone of the place they left on Earth, which in Dr. Shukor's case was Kazakhstan. To prostrate during prayer in zero gravity, the scholars stated that the astronaut could make appropriate motions with their head, or simply imagine the common earthly motions.⁵

Despite issuing guidelines, the scholars agreed with Dr. Shukor that his priority was conducting experiments. A minister of religious affairs in Malaysia noted the fatwa was created, “to ensure our astronaut could fully concentrate on his mission, without having to worry about... his religious obligations in space.”⁶ Along with the guidelines for religious practice, the conference approved space travel generally: “according to Islam, traveling to space is encouraged.”⁷ Other Muslims have pointed to a Qur'anic verse to back up this claim: “O assembly of Jinn and men! If you can pass beyond the zones of the heavens and the earth, then pass!” (Q. 55:33).⁸

However, some Muslims see religious limitations to space travel. In 2014, after thousands of Muslims applied for a one-way trip to Mars through the Mars One organization, a fatwa council in the United Arab Emirates issued a ruling that condemned promoting or being involved with Mars One. These Islamic legal scholars argued that the risks of the trip were tantamount to suicide. Citing verse 4:29 of the Qur'an which states: “do not kill yourselves or one another,” they asserted that a Mars mission would pose a “real risk to life.” Mars One disagreed, noting that the crew would only liftoff after a livable Martian habitat was completed, and asked that the fatwa be rescinded. Some Islamic legal scholars also decried the fatwa. Khaleel Mohammad, an expert in Islamic Law in the US, called it “extremist nonsense.”⁹ Regardless, Muslim communities will continue to grapple with celestial questions as more Muslims travel to space.

⁴ Lewis, “Muslims in Space,” 110-113.

⁵ Department of Islamic Development Malaysia, “A Guideline for Performing *Ibadah* at the ISS,” (2006): 5-6. <https://bit.ly/2MTgrvp>.

⁶ Lewis, “Muslims in Space,” 114.

⁷ Department of Islamic Development Malaysia, “A Guideline,” 7.

⁸ Farah Rishi, “Why Sci-Fi Gives Me Hope for the Future as a Muslim,” *Vice*, Nov. 15, 2016. <https://bit.ly/2MV8Kol>.

⁹ Ahmed Shaaban, “One-way Trip to Mars Prohibited in Islam,” *Khaleej Times*, Feb. 20, 2014. <https://bit.ly/2L6D91r>; Sudeshna Chowdhury, “Can A Muslim Take a One-way Trip to Mars?” *Christian Science Monitor*, Feb. 21, 2014. <https://bit.ly/2PoHlv5>.

Additional Resources

Primary Sources:

- Malaysian fatwa “A Guideline of Performing *Ibadah* at the International Space Station (ISS)” (2007): <https://bit.ly/2MTgrvp>
- NPR interview with Prince Sultan on his space travel (2011): <https://n.pr/2vRqoTq>
- Video of Dr. Shukor praying in the ISS in 2007: <https://bit.ly/2KXjTn1>
- Speech by Dr. Shukor on his mission, in the US in 2008: <https://bit.ly/2Mm5MNw>
- Muslim author Farah Rishi writes about the importance of outer space in Islamic science fiction (2016): <https://bit.ly/2MV8Kol>

Secondary Sources:

- Article from *Wired* magazine exploring the intersection of Islam and space travel (2007): <https://bit.ly/2w8G7wY>
- Documentary from Journeyman Pictures about Dr. Shukor: <https://bit.ly/2MzccwqD>
- Article from *Christian Science Monitor* on the Mars One fatwa (2014): <https://bit.ly/2PoHJv5>

Discussion Questions

- What prevented Muslims from going to space in the early decades of space travel? What has changed that allows or restricts Muslims’ space travel today?
- Why might some Muslims feel it is important for religious scholars to address space travel? Why might others feel it is unimportant?
- How do the different responses of Prince Sultan, Soviet cosmonauts, Ansari, and Dr. Shukor to their religious tradition in a new context show how Islam is internally diverse? Why might they hold these different positions?
- Read the Malaysian fatwa in the primary source list. What is something that surprised you? Why? How do you think this fatwa’s rulings might change if it was written in a different country?
- Read Rishi’s piece about Muslims in space in the primary sources. What does her perspective on Muslims in space add to our understanding of Islam?
- The fatwas mentioned in this case study are written by those in power in Malaysia and in the United Arab Emirates. How do you think this influences what the texts say?



Anousheh Ansari, an Iranian-American and the first Muslim woman to travel to space. Photo by NASA in 2005, via Wikimedia Commons: <https://bit.ly/2vQ6Q1U>