UC SANTA BARBARA
THE Current

November 5, 2009
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'Galileo, the Universe, and God:' UCSB Science and Humanities Faculty to Discuss Legacy of Galileo and his Astronomical Discoveries

Galileo Galilei is revered as the father of modern science, a true Renaissance man who made important discoveries in astronomy, physics, mathematics, and natural philosophy. He also changed our vision of the universe, so that we no longer see the earth as the center of the universe but instead understand that we are part of a vast cosmos where humankind plays just a small part.

Yet, because the discoveries for which he is now honored called into question the Catholic Church's interpretation of the Bible, Galileo was put on trial by the Inquisition, which banned his works and placed him under house arrest for life. Although the church eventually accepted Galileo's discoveries, perceived conflicts between science and religion continue to be the subjects of debate.

The intersection between religion and science and Galileo's scientific and intellectual legacies will be the subject of "Galileo, the Universe, and God," an interdisciplinary event organized by a group of UC Santa Barbara science and humanities faculty that will take place on Thursday, November 12, at the Santa Barbara Museum of Natural History. The event, which is open to the public, also celebrates the International Year of Astronomy, designated by the United Nations and the International Astronomical

Union to commemorate Galileo's first telescopic discoveries in 1609. It will feature a theatrical performance and presentations on history, art, and the future of astronomy, including current developments in telescopes connected to the University of California and UCSB.

"Galileo, the Universe, and God" was conceived by Tommaso Treu, associate professor of physics and an astronomer, and Stefania Tutino, associate professor of religious studies and of history, in collaboration with Jon Snyder, professor of Italian studies. The idea for the event grew out of a course they co-teach, "Origins," which they present as a scholarly and methodological dialogue between science, religion, and history about the origins of the cosmos and the place of humans in the universe. Treu and Tutino, who are married and also natives of Italy, are passionate about the importance of connecting scientists to the humanities and to the wider community, and vice versa. "UCSB is a great research university that is at the forefront of scientific research and is a leader in the arts and humanities," says Treu, but, adds Tutino, "because science is in many ways very relevant to daily life, it has to engage more with society. We want to engage the community in a discussion about these important issues."

The event will examine science, the humanities and Italian culture during the Renaissance, a time when distinctions between academic disciplines were not as well-defined as they are today. Politics, religion, philosophy, and the arts were interconnected, says Tutino, an expert in politics and religion in early modern Europe. Knowing the debates of the period make it is easier to understand why Galileo was banned. The church was already under threat because of the Reformation and, with his astronomical discoveries, Galileo, a devout Catholic, was insisting on a new interpretation of the Bible. The church was not against his scientific discoveries per se, and was willing to talk about science, but Galileo wanted them to teach Copernicanism, which placed the sun at the center of the solar system, as fact, even though Copernicanism was scientifically problematic.

What did Galileo observe that caused such controversy? Although more primitive telescopes had been developed by the Dutch, Galileo was the first to use the telescope for astronomical observation. He discovered the phases of Venus, the moons of Jupiter, moonspots, and sunspots –– "the first stepping stones to building a model of the universe where Earth, the place where humans live, is just a random, insignificant part," says Treu, who will discuss Galileo's legacy as an astronomer and three contemporary telescopes connected to UCSB that are expanding the frontiers

of astronomy.

The first is a network of 20-30 telescopes that form the Las Cumbres Observatory Global Telescope Network, a privately owned and operated network of telescopes built and operated from Goleta. The 0.4- to 2.0-meter diameter telescopes are positioned around the globe. They operate robotically and communicate via the Internet, allowing astronomers to always have a view of the dark sky. This provides continuous monitoring of those rare, but important, stars that explode. The nearest telescope in the network was just installed at UCSB's Sedgwick Reserve. This aspect of astronomy –– discovering and monitoring changes –– has been revolutionized by the commodity prices for cameras and the increase in computer power.

The Keck Observatory, on the island of Hawaii, has two 10-meter telescopes that are the largest optical infrared telescopes in the world. The observatory was built and is now operated by the University of California and the California Institute of Technology, in collaboration with NASA, and is "one of the gems in UC's crown," Treu says. The telescopes allow astronomers to see deep in space, back to the beginning of time. They have a laser system that can create artificial stars, to correct for the blurring of the atmosphere. "The advances made possible by these telescopes are roughly the equivalent of Galileo moving from the naked eye to the telescope, in terms of resolution," he adds.

The next development will be the Thirty-Meter Telescope (TMT), to be built in Hawaii by a partnership of the University of California, Cal Tech and a group of Canadian universities called ACURA. UCSB Chancellor Henry T. Yang is the chair of the TMT, which is in the early phases of construction. The TMT will have even greater resolution and sensitivity than Keck, and will allow astronomers to determine, among other things, when the first stars, galaxies, and black holes formed in the history of the universe.

To put the contemporary telescopes in historical perspective, history professor Patrick McCray will discuss the history of the telescope. Complementing the presentations on history and astronomy will be discussions of Renaissance art, by Robert Williams; and the literary value of Galileo's writing, by Snyder.

One of the highlights of the evening will be a performance of scenes from Bertolt Brecht's "Galileo" by Irwin Appel, actor, director, and professor of theater. "We want to present Galileo in all his complexity as an historical figure whose life and work

continue to resonate in the 21st century," says Tutino.

Tickets to the event, which begins at 7 p.m., are $8 for museum members and $10 for non-members, and are on sale at the museum, 2559 Puesta del Sol, Santa Barbara, or online at www.sbnature.org.

Santa Barbara Museum of Natural History

About UC Santa Barbara

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