

 AMERICAN MUSEUM OF NATURAL HISTORY

HAYDEN PLANETARIUM
ISAAC ASIMOV
MEMORIAL DEBATE

SELLING SPACE



Illustration by Stephen Tyson

WEDNESDAY, MARCH 19, 2014 | 7:30 PM
Samuel J. and Ethel LeFrak Theater

The late Isaac Asimov, one of the most prolific and influential authors of our time, was a dear friend and supporter of the American Museum of Natural History.

In his memory, the Hayden Planetarium is honored to host the annual Isaac Asimov Memorial Debate, generously endowed by relatives, friends, and admirers of Dr. Asimov and his work, bringing the finest minds in the world to the Museum each year to debate pressing questions on the frontier of scientific discovery.

Proceeds from ticket sales of the Isaac Asimov Memorial Debates benefit the scientific and educational programs of the Hayden Planetarium.

PREVIOUS DEBATES

- 2013 The Existence of Nothing
- 2012 Faster than the Speed of Light
- 2011 The Theory of Everything....Still Searching?
- 2010 Rose Center 10th Anniversary Isaac Asimov Debate:
Is Earth Unique?
- 2010 Moon, Mars, and Beyond: Where Next
for the Manned Space Program?
- 2009 From Planets to Plutoids
- 2008 Mining The Sky
- 2007 The Pioneer Anomaly
- 2006 Universe: One or Many?
- 2005 The Enigma of Alien Solar Systems
- 2004 The Dark Side
- 2003 The Big Bang
- 2002 The Search For Life in the Universe
- 2001 The Theory of Everything

SELLING SPACE

Space exploration is entering a new era. In recent years, dozens of private aerospace companies have emerged, all with the goal of commercializing space as never before. From serving NASA's cargo needs to sending tourists on space vacations to mining asteroids for profit, this next generation of entrepreneurs, and not NASA, may be the ones who transform space into our backyard, possibly creating the first-ever trillionaires. Join host and moderator **Neil deGrasse Tyson** for a lively conversation with a panel of entrepreneurs and space historians on what may be our real future in space.

TONIGHT'S PROGRAM

Welcome and Introduction

Opening Questions

Directed Free Debate among Panelists

Questions from Audience

Adjournment

PANELISTS

WANDA AUSTIN is president and chief executive officer of The Aerospace Corporation, a leading architect for the nation's national security space programs. The Aerospace Corporation has nearly 4,000 employees and annual revenues of more than \$850 million. Dr. Austin assumed this position on January 1, 2008. She is internationally recognized for her work in satellite and payload system acquisition, systems engineering, and system simulation. Austin served on President Obama's Review of Human Spaceflight Plans Committee in 2009, and in 2010 was appointed to the Defense Science Board.

MICHAEL GOLD is director of Washington, D.C., operations and business growth for Bigelow Aerospace. Mr. Gold has a broad array of corporate responsibilities including international business development, federal relations, and legal/regulatory matters. Additionally, Mr. Gold serves as the chair of the Commercial Space Transportation Advisory Committee (COMSTAC), the Federal Advisory Committee to the Federal Aviation Authority's Office of Commercial Space Transportation comprised of senior industry executives appointed by the U.S. Secretary of Transportation. Mr. Gold has written three law review articles regarding the need for export control reform, has testified before Congress on space policy, and has had two of his editorials entered into the Congressional record.

JOHN LOGSDON is professor emeritus at George Washington University's Elliott School of International Affairs, where he was the founder and long-time director of GW's Space Policy Institute. He is the author, among many articles, essays, and edited books, of the award-winning study *John F. Kennedy and the Race to the Moon* (2010), *The Decision to Go to the Moon: Project Apollo and the National Interest* (1970), and the main article on space exploration for the *Encyclopaedia Britannica*. Dr. Logsdon is a sought-after commentator on space issues. In 2003, he was a member of the Columbia Accident Investigation Board, and formerly was a member of the NASA Advisory Council.

ELLIOT PULHAM is the chief executive officer of the Space Foundation, and leads a premier team of space and education professionals that provides services to educators and students, government officials, news media, and the space industry around the world. Before joining the Space Foundation, he was senior manager of public relations, employee communication, and advertising for all space programs of Boeing, serving as spokesperson at the Kennedy Space Center for the Magellan, Galileo and Ulysses interplanetary missions, among others. In 2003, the Rotary National Awards for Space Achievement Foundation presented him with the coveted Space Communicator Award. Mr. Pulham is chairman of the Hawaii Aerospace Advisory Committee, a former Air Force Civic Leader and advisor to the Chief of Staff and Secretary of the Air Force, and a recipient of the U.S. Air Force Distinguished Public Service Medal. He serves on the editorial board of *New Space Journal*.

TOM SHELLEY is the president of Space Adventures, Ltd., the first only company that has successfully arranged for private citizens to experience space. Mr. Shelley joined the company in mid-2006 as the vice president of sales and marketing and was appointed president in 2010. His primary focus is the development of clients for Space Adventures' circumlunar and orbital spaceflight programs. Since 2001, Space Adventures has facilitated the flights of all the self-funded private space explorers, including Dennis Tito, Mark Shuttleworth, Gregory Olsen, Anousheh Ansari, Charles Simonyi, Richard Garriott, and Guy Laliberté.

ROBERT WALKER is former chairman of the House Committee on Science, Space and Technology. During his 20-year service on that committee he championed policies to expand commercial space activities. He was the first sitting congressman awarded NASA's highest honor, the Distinguished Service Medal. Later, he was also awarded the NASA Distinguished Public Service Medal. In 2001, President Bush chose Walker to chair the Commission on the Future of the U.S. Aerospace Industry and, in 2004, as a member of the President's Commission on the Implementation of U.S. Space Exploration Policy. He has served as Space Foundation chairman.

HOST AND MODERATOR

NEIL deGRASSE TYSON is an astrophysicist with the American Museum of Natural History and the Frederick P. Rose Director of the Hayden Planetarium. Born and raised in New York City, Dr. Tyson attended the Bronx High School of Science and later earned his B.A. in physics from Harvard and his doctorate in astrophysics from Columbia. He has been an advisor to NASA and to three U.S. Presidents on matters related to space exploration. Tyson has been awarded 18 honorary doctorates, has an asteroid (13123Tyson) named after him, and is frequently consulted by print and broadcast media for his views on cosmic discovery. In addition to professional publications, Tyson has written ten books, the most recent of which is the New York Times best-seller *Space Chronicles: Facing the Ultimate Frontier* (2012). This spring, to air on FOX and National Geographic television Tyson hosts a 13-part series "Cosmos: A SpaceTime Odyssey", the continuation of Carl Sagan's landmark series from 1980.

UPCOMING HAYDEN PROGRAMS

ASTRONOMY LIVE

6:30 pm | Hayden Planetarium Space Theater
\$15, \$12 Members (\$13.50 students, senior citizens)

This monthly program offers an interactive tour of the universe and a view of the constantly changing night sky. Learn about what is visible in our nighttime sky with the brilliant stars of the Zeiss Mark IX Star Projector or travel to the edge of the observable universe with the world's largest cosmic atlas, assembled at the Hayden Planetarium. Please see monthly descriptions for details.

HUBBLE SCAVENGER HUNT with Christina Pease and Emily Rice

Tuesday, March 25

Journey through the universe with imagery from the Hubble Space Telescope. Explore picturesque planetary nebulas, stunning supernova remnants, captivating star clusters, glittering galaxies, and more. Learn how to locate these faint gems in the night sky (even from New York City), and bring your binoculars to view some of the brighter deep-sky objects that are at, or just beyond, the limit of what our eyes can see.

CELESTIAL FIREWORKS IN SPRING SKIES with Joe Rao and Steve Beyer

Tuesday, April 29

Springtime night sky views this year are punctuated by brilliant Mars, outshining the brightest stars seen throughout the season. Tour other seasonal constellation highlights and stars orbited by newly discovered extrasolar planets. And learn where and when to see what promises to be the most exciting sky event of 2014, an amazing display of shooting stars that could come early on the Saturday of Memorial Day weekend (May 24) as Earth passes through trails of dust left behind by a tiny comet!

THE SCI-FI UNIVERSE with Brian Levine and Christina Pease

Tuesday, May 27

Ever wonder where that galaxy far, far away really is? Or the best place for a colony on Mars? Many stories that have captured our imagination have settings far beyond the Earth. Examine the universe as seen through the lens of science fiction as we visit locations from various shows, books, and movies. Find out just how much we have, and have not, explored!

SUMMER SKIES TELESCOPE PARTY with Christina Pease, Emily Rice, and Ted Williams

Tuesday, June 24 | 8:30 pm – PLEASE NOTE THE LATE START TIME

Explore city, suburban, and rural summer skies with Hayden Presenters in the dome. Visit the Great Globular Triangle, visible with binoculars or a small telescope, and finish with a look at the planets Jupiter, Mars and Saturn. Weather permitting; a star party co-hosted by the Amateur Astronomers Association will follow on the Arthur Ross Terrace.

FRONTIERS LECTURE SERIES

7:30 pm | Hayden Planetarium Space Theater
\$15, \$12 Members (\$13.50 students, senior citizens)

Our FRONTIERS Lecture Series is designed to bring the latest advances in our knowledge of the universe to our audience. To accomplish this, we bring in the scientists working at the cutting edge of the field to present their research to the public.

UNRAVELING THE MYSTERY OF CONTINENTAL CRUST FORMATION with Max Schmidt and Oliver Jagoutz

Monday, April 7

High in the Himalayan Mountains of Pakistan, **Oliver Jagoutz** and **Max Schmidt** discovered the long sought-after missing piece that explains the formation of the continental crust: a hidden flux in Earth's mantle. The composition of this flux puts material in the mantle on a par with that of meteorites. This talk will explore the implications of this discovery for understanding our planet's evolution.

THE COSMIC COCKTAIL with Katherine Freese

Monday, May 12

Theoretical astrophysicist **Katherine Freese** ponders the most important research topic in cosmology and particle physics today: what is the universe made of? It is now clear that the bulk of the mass in the universe consists of a new kind of dark matter particle. There are claimed detections in multiple experiments—particle accelerators, such as the Large Hadron Collider; underground laboratory experiments worldwide astrophysical searches of dark matter annihilation products—but they cannot possibly all be right. Still, excitement is building that the nature of the dark matter particle may soon be revealed.

THE UNIVERSE AND BEYOND with Alexander Vilenkin

Monday, June 9

Recent developments in cosmology suggest that the Big Bang was not a unique event in the cosmic history. Other big bangs constantly erupt in remote parts of the universe, producing new worlds with a great variety of physical properties. Some of these worlds are similar to ours, while others are strikingly different. Consider the origin of this new worldview, its possible observational tests, and its implications for the beginning and the end of the universe.

SPECIAL PROGRAM – NASA SUN/EARTH DAY

Saturday, March 22 | Noon–5 pm
Free for Members or with Museum Admission

Join us as we explore the special relationship between Earth and the Sun and learn about the delicate balance that makes our planet the perfect place to call home. Talk with scientists, look through telescopes, and engage in hands-on activities at this family-friendly event.

UPCOMING HAYDEN PROGRAMS

For information on Hayden Planetarium
and other Museum programs and tickets
call 212-769-5200 or visit
amnh.org/calendar.

Hayden Planetarium
haydenplanetarium.org

Department of Astrophysics
research.amnh.org/astrophysics

Rose Center for Earth and Space
amnh.org/rose
212-769-5900

Hayden Planetarium's Night Sky Q&A Hotline
212-769-5901

Visit **amnh.tv** and subscribe to
the Museum's YouTube channel
to see a recording of tonight's program
and videos of past Asimov Debates.

This program will also be available
as a podcast at **amnh.org/podcasts**
or on our iTunes channel.

To add your name to the Hayden Planetarium's
StarStruck e-list for sky phenomena
and Hayden events, visit our website
amnh.org/email.

