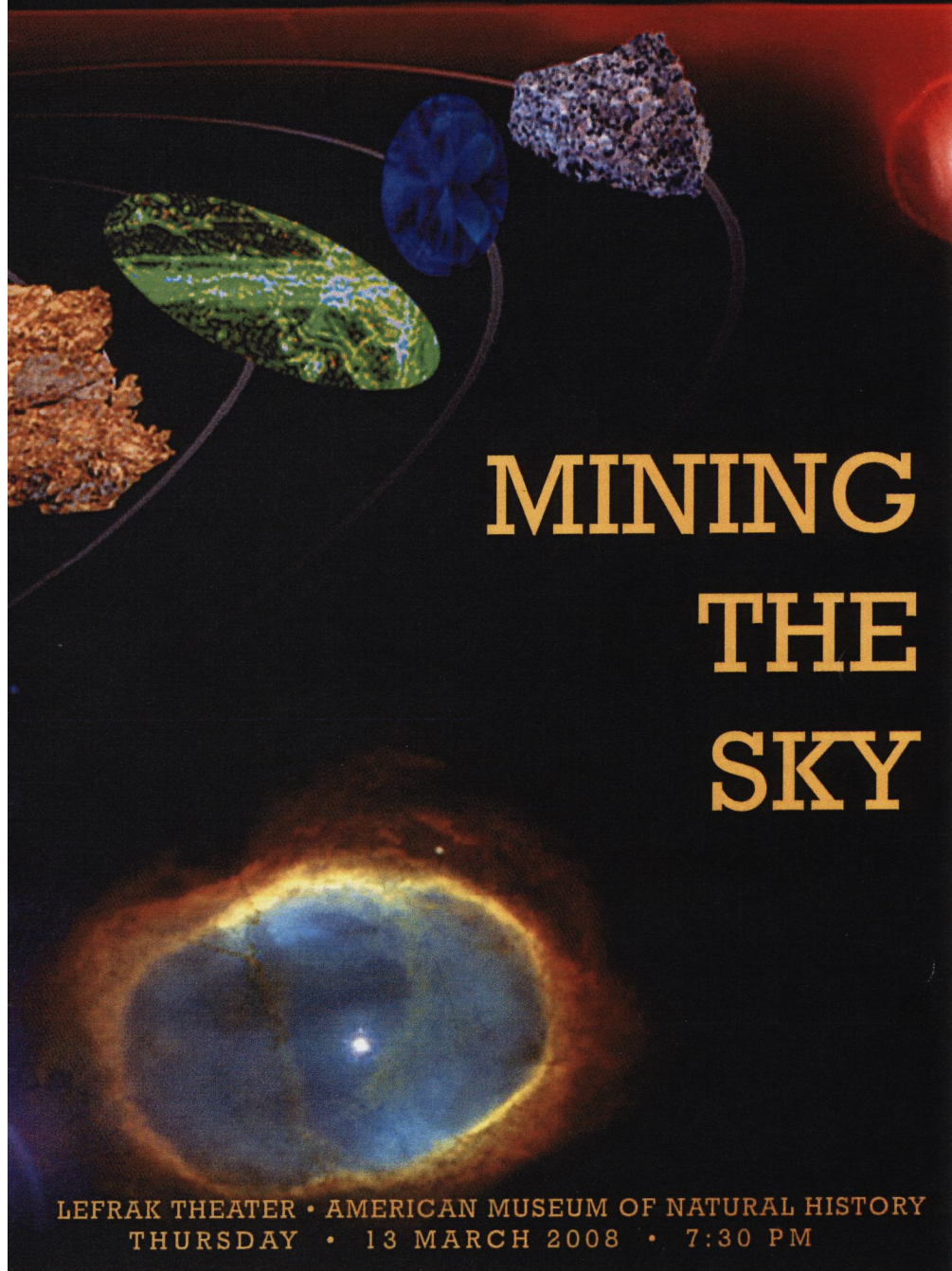


HAYDEN PLANETARIUM
ISAAC ASIMOV MEMORIAL DEBATE 2008



MINING THE SKY

LEFRAK THEATER • AMERICAN MUSEUM OF NATURAL HISTORY
THURSDAY • 13 MARCH 2008 • 7:30 PM

Planets, moons, asteroids, and comets contain natural resources such as water, minerals, and trace elements that may have survival value to visiting astronauts and economic value to life on Earth. How did we learn of these materials? How would one go about mining them? Who owns these resources, if anyone? And should they be mined at all?

For more information about this remarkable dilemma, we recommend reading:

Mining the Sky by John S Lewis

Rain of Iron and Ice: The Very Real Threat of Comet and Asteroid Bombardment
by John S Lewis

Cosmic Debris by John G Burke

THE EVENING'S PROGRAM

Welcome & Introduction of
Panelists

Opening Questions to Panelists

Directed Free Debate Among Panelists

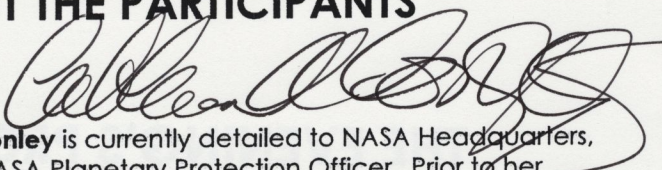
Questions from Audience

Adjourn

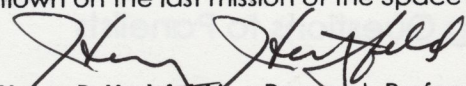
Book Sale / Book & Program Signing
Hall of Northwest Coast Indians

ABOUT THE PARTICIPANTS

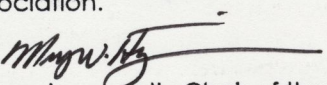
Panelists



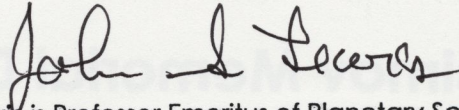
Catharine A. Conley is currently detailed to NASA Headquarters, acting as the NASA Planetary Protection Officer. Prior to her detail as PPO, Conley's research at NASA Ames Research Center focused on the biochemistry and evolution of muscle tissue, the basis for motility in all multicellular animals. A recent offshoot of this work explores the adaptation of multicellular organisms to extreme environments, including the Atacama Desert in South America and the Arctic tundra. Conley has been involved in several spaceflight experiments using the nematode worm *Caenorhabditis elegans*, the first of which was flown on the last mission of the Space Shuttle Columbia.



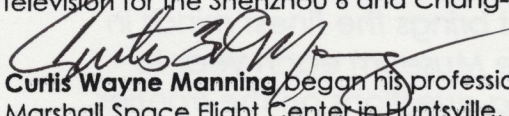
Henry R. Hertzfeld is a Research Professor of Space Policy and International Affairs at the Elliott School of International Affairs, The George Washington University, Washington, DC. He is both an economist and an attorney and has been at The George Washington University since 1992. Hertzfeld is the co-author of the book, *Space Economics*, and has also authored numerous articles and monographs on topics that include: the economics of launch vehicles, property rights and sovereignty on the Moon, and economic indicators for the space industrial sector. He is a member of the International Academy of Astronautics, the International Institute for Space Law, and, the American Economics Association.



Murray W. Hitzman is currently Chair of the National Research Council's Committee on Earth Resources and a member of the NRC Board on Earth Sciences and Resources. He is on the Board of Directors of three mineral exploration / mining companies. He worked in Washington, D.C. as the Geological Society of America Congressional Fellow for Senator Joseph Lieberman (1993-94) and as a policy analyst in the White House Office of Science and Technology Policy (1994-96). In 1996, he was named the Fogarty Professor of Economic Geology at the Colorado School of Mines. He has published extensively on mineral deposit geology and natural resource policy and works on mining-related sustainable development, social license, and corporate social responsibility issues.

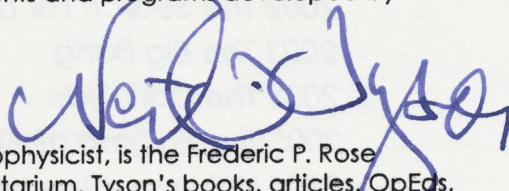


John S. Lewis is Professor Emeritus of Planetary Sciences and Co-Director of the Space Engineering Research Center at the University of Arizona. His research interests are related to the application of chemistry to astronomical problems, including the origin of the Solar System, the evolution of planetary atmospheres, the origin of organic matter in planetary environments, the chemical structure and thermal history of icy satellites, the hazards of comet and asteroid bombardment of Earth, and the extraction, processing, and use of the energy and material resources of nearby space. He has written undergraduate and graduate textbooks in Planetary Science and three popular science books, *Mining the Sky*, *Rain of Iron and Ice*, and *Worlds without End*. He has been a member or chairman of a number of NASA and Space Science Board advisory committees, and has recently served as a commentator on Chinese Central Television for the Shenzhou 6 and Chang-e 1 missions.



Curtis Wayne Manning began his professional tenure at NASA's Marshall Space Flight Center in Huntsville, Alabama in 1992. He currently serves in the discipline of Rapid Prototyping and has done so since 1994. Mr. Manning has played a significant role in the development of Rapid Prototyping at NASA (MSFC) since that time. Among other awards, he has received a Director's Commendation for the advancement of Rapid Prototyping at the Marshall Space Flight Center. Currently, he is the Manager of the Rapid Prototyping facility at Marshall and works with In-Situ Resource Utilization (ISRU) to promote and carry forward the concept at Marshall. Mr. Manning participates with National Rapid Prototyping consortiums and faithfully serves as a mentor for high school and college students through events and programs developed by NASA.

Host & Moderator



Neil deGrasse Tyson, an astrophysicist, is the Frederic P. Rose Director of the Hayden Planetarium. Tyson's books, articles, OpEds, Presidential appointments, service to NASA, and myriad media appearances, led Time Magazine in 2007 to name him as one of the 100 most influential people in the world.


Isaac Asimov Memorial Debate

The late Dr. 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—a panel series, generously endowed by relatives, friends, and admirers of Isaac Asimov and his work. This event brings 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 Debate benefit the scientific and educational programs of the Hayden Planetarium.

- 2001 The Theory of Everything*
- 2002 The Search For Life In the Universe*
- 2003 The Big Bang*
- 2004 The Dark Side*
- 2005 The Enigma of Alien Solar Systems*
- 2006 Universe: One or Many?*
- 2007 The Pioneer Anomaly*



To add your name to the
Hayden Planetarium's star-struck
e-list for sky phenomena and Hayden
events, send a blank e-mail to
star-struck-join@sts.amnh.org.

American Museum of Natural History
www.amnh.org
212 769 5100

Hayden Planetarium Science Visualization
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212 769 5900

Hayden Public Programs
www.amnh.org/hayden
212 769 5200

Hayden Planetarium Q&A Hotline
212 769 5901

Hayden Planetarium SkyReporter
212 769 5917

Department of Astrophysics
research.amnh.org/astrophysics
212 769 3650

Flyer design: Wonho Lee, Suzanne Morris, Shawn Tymon
Image: <http://blogs.answersingenesis.org/museum/pictures/Panel-6-Solar-System.jpg>