# \*\*\*TOPICALITY – SOPHOMORES – NDI 2011\*\*\*

\*\*\*TOPICALITY – SOPHOMORES – NDI 2011\*\*\* 1

\*\*\*NEGATIVE\*\*\* 2

EXPLORATION = COLONIZATION --- 1nc 3

EXPLORATION = DEEP SPACE --- 1nc 4

EXPLORATION =/= OBSERVATORIES OR SATELLITES --- 1nc 5

Space Exploration = Non-Military --- 1nc 6

Space Exploration = Non-Military --- 2NC extension 7

SUBSTANTIALLY INCREASE = $1B --- 1nc 8

Substantially Increase = Extend Current Policies --- 1nc 10

DEVELOPMENT = SPACECRAFTS/STATIONS --- 1nc 11

DEVELOPMENT = SPACE BUISINESSES --- 1nc 12

Beyond the Mesophere --- 1nc 13

USFG 14

Substantially Increase Definitions 15

ITS 17

Exploration 19

Development 22

Beyond The Earth’s Mesosphere 25

Violation Stuff (I Think) 26

\*\*\*AFFIRMATIVE\*\*\* 29

Substantially Increase 30

ITS 32

Exploration 33

Development 34

And/Or 35

# \*\*\*NEGATIVE\*\*\*

## EXPLORATION = COLONIZATION --- 1nc

**A) Interpretation – Space exploration is the extension of human presence in space through colonization**

Peter 8 (Nicolas Peter, Research Fellow - European Space Policy Institute (ESPI), August 14, 2008, p. 32, ESPI, “SPACE EXPLORATION 2025: GLOBAL PERSPECTIVES AND OPTIONS FOR EUROPE,” http://www.espi.or.at)

Using ESA definition from the document entitled “European Objectives and Interests in Space Exploration. ESA 2007”, space exploration is defined as to “extend access and a sustainable presence for humans in Earth- Moon-Mars space, including the Lagrangian Points and Near-Earth objects.” In the context of this study it encompasses therefore both robotic and human exploration activities.

**B) Violation – By [doing the plan] the affirmative doesn’t colonize space**

**C) Implications –**

**1. Predictable limits: Allowing this [the plan] to be topical would justify doing anything in space where we already have a presence. The hundreds of plans that could put something just outside of the mesosphere would be topical. This increases an already heavy research burden for the negative.**

**2. Negative ground: If we already have a presence in the space the aff supposedly explores, then we would have no disads unique to the plan. It ruins topic-specific education by forcing us to resort to generic disads that don’t teach us anything.**

## EXPLORATION = DEEP SPACE --- 1nc

**A) Interpretation – Space** **exploration refers to traveling to deep space**

Schmitt 3 **(Harrison, He is the Chairman Of Interlune-Intermars Initiative, Inc. and Apollo 17 Astronaut, “Testimony on the Commercial Development of Lunar Resources,” Chicago Society for Space Studies, 11/6/3)** http://www.chicagospace.org/schmitttestimony.html

The term "space exploration" implies the exploration of the Moon, planets and asteroids, that is, "deep space," in contrast to continuing human activities in Earth orbit. Human activities in Earth orbit have less to do with exploration and more to do with international commitments, as in the case of the Space Station, and prestige and technological development, as in the case of China and Russia. There are also research opportunities, not fully recognized even after 40 years that exploit the opportunities presented by being in Earth orbit. Deep space exploration has been and should always be conducted with the best combination of human and robotic techniques. Many here will argue the value of robotics. I will just say that any data collection that can be successfully automated at reasonable cost should be. In general, human being's should not waste their time with activities such as surveying, systematic photography, and routine data collection. Robotic precursors into situations of undefined or uncertain risk also are clearly appropriate.

**B) Violation – By [doing the plan] the affirmative doesn’t explore further than the Earth’s orbit**

**C) Implications –**

**1. Predictable limits: Allowing [the plan] would justify doing anything in space whatsoever. The aff could add an expensive satellite to the Earth’s orbit and call it topical. The aff would justify hundreds of changes in space that the neg could never account for.**

**2. Negative ground: The neg loses all ground to topic-specific disads that link to actual exploration. It forces the debate away from the topic and into a generic DA debate.**

## EXPLORATION =/= OBSERVATORIES OR SATELLITES --- 1nc

### A) Interpretation and violation – Space-based observatories and unmanned satellites are not space exploration

British National Space Centre 2009 (“Space Exploration Review” December 2009, http://www.lpi.usra.edu/lunar/strategies/UKSpaceExporationReview2009.pdf)

Excluded from this definition of space exploration is the purely scientific exploration of the outer Solar System (since we cannot yet build space vehicles able to carry and protect astronauts on such voyages), as well as space-based observatories used to study the stars and universe beyond. Likewise unmanned satellites in Earth orbit are excluded – for example those providing Earth observation, communications and navigation services). Both robotic and human activities are included – exploration per se does not favour one over the other, though in many cases a combination of both is the best approach.

### B) Implications:

### 1. Predictable Limits: Allowing an aff that justifies placing unmanned satellites or observatories in space explodes the limits. There is no way that the neg could research all of the possible types of satellites or observatories that could be made. It forces the neg to use generic disads and CPs, which don’t provide a proper CBA or topic-specific education.

## Space Exploration = Non-Military --- 1nc

### A) Interpretation – Space exploration is non-military

ESA 2010 (European space agency, “EC-ESA Workshop on Exploration and Innovation Industrial Competitiveness and Technological Advance” harwell Science and Innovation Campus, Oxfordshire, UK, April, 29, 2010) [Merens/Hegyi]

Space exploration can be considered as the combination of robotic and human activities for the discovery of extra-terrestrial environments - that will open up new frontiers for the acquisition of knowledge and peaceful expansion of humankind

**B) Violation- The Affirmative conducts military action in space**

**C) Implications-**

**1. Limits-**

**Allowing military actions to be topical explodes the research burden for the Neg**

**GAO 02** (United States General Accounting Office, “Report to the Secretary of Defense” December 2002, <http://www.gao.gov/new.items/d02738.pdf>) Hegyi

DOD’s current space network is comprised of constellations of satellites, ground-based systems, and associated terminals and receivers. Among other things, these assets are used to perform surveillance and intelligence functions; detect and warn of attacks; provide communication services to DOD and other government users; provide positioning and precise timing data to U.S. forces as well as other national security, civil, and commercial users; and counter elements of an adversary’s space system. DOD categorizes these assets into four space mission areas—each with specific operational functions. (See table 1 for a description of space mission areas, operational functions, and related examples of systems and activities.)Space control Space surveillance, protection, prevention, and negation Space surveillance network This space control asset is a network that provides space object cataloging and identification, satellite attack warning, timely notification to U.S. forces of satellite flyover, space treaty monitoring, and scientific and technical intelligence gathering. Force enhancement Navigation, satellite communications, environmental monitoring, surveillance and threat warning, command and control, and information operations Global Positioning System (GPS) This network of satellites and supporting ground stations provides all-weather, day/night, three-dimensional positioning information and precise timing data to landbased, seaborne, and airborne U.S. and allied forces, as well as other national security, civil, and commercial users. GPS enhances force coordination, command and control, target mapping, target acquisition, flexible routing, and weapon accuracy, especially at night and in adverse weather. Space support Launch operations, satellite operations, modeling, simulation, and analysis/force development evaluation Air Force satellite control network This is the primary command, control, and communications support capability for DOD space systems. As a network of systems, it performs a multitude of functions, including data processing, tracking, telemetry, satellite commanding, communications, and scheduling. The network has 15 worldwide fixed antennas, one transportable system, and two mission critical nodes. Force applications Intercontinental ballistic missile

sustainment, conventional strike Minuteman III Sustainment This program sustains the U.S. strategic ballistic missile system.

## Space Exploration = Non-Military --- 2NC extension

### Military Affs don’t provide any knowledge about future space policy – Obama refuses to engage in military space actions

**IOAG 10** (Interagency Operations Advisory Group, “Announcements: United States National Space Policy” 1-7-2010, <https://www.ioag.org/Lists/Announcements/DispForm.aspx?ID=30>) Hegyi

Our policy reflects the ways in which our imperatives and our obligations in space have changed in recent decades. No longer are we racing against an adversary; in fact, one of our central goals is to promote peaceful cooperation and collaboration in space, which not only will ward off conflict, but will help to expand our capacity to operate in orbit and beyond. In addition, this policy recognizes that as our reliance on satellites and other space-based technologies increases, so too does our responsibility to address challenges such as debris and other hazards. No longer is space just a destination to reach; it is a place where we must be able to work in ways that are responsible, sustainable, and safe. And it is central to our security and the security of our allies, as spaced-based technology allows us to communicate more effectively, to operate with greater precision and clarity, and to better protect our men and women in uniform.

## SUBSTANTIALLY INCREASE = $1B --- 1nc

**A) Interpretation - A substantial increase is at least $1 billion**

Foust 10**, (**Dr Jeff Foust is an aerospace analyst, journalist and publisher.He has a [bachelor's degree](http://en.wikipedia.org/wiki/Bachelor%27s_degree) in [geophysics](http://en.wikipedia.org/wiki/Geophysics) from the [California Institute of Technology](http://en.wikipedia.org/wiki/California_Institute_of_Technology) and a Ph.D in [planetary sciences](http://en.wikipedia.org/wiki/Planetary_science) from the [Massachusetts Institute of Technology](http://en.wikipedia.org/wiki/Massachusetts_Institute_of_Technology), “NASA budget compromises, getting Congress to go along,” http://www.hobbyspace.com/nucleus/index.php?itemid=19781, 7/20/11) Hou

A comment by "Red" in the previous item discusses some of the budget implications of continuing the Shuttle, adding Shuttle-C development plus Orion-Lite and an EELV for it. It appears that **a substantial increase, at least an extra billion** per year, over the President's proposed budget through 2015 would be needed. The rumored plan has some similarities **to** the Augustine panel's Flexible Path Option 5C, which assumed that **NASA's funding** would rise to about $3B above the baseline 2010 budget by 2014. Even with that much extra money, the Shuttle Derived heavy lifter didn't come on line till 2022

**B) Violation- the aff isn’t an increase of $1 billion**

**[CARD WITH PRICE OF AFF]**

**C) Implications-**

**1. Limits- Allowing these small affs opens the floodgates to an unlimited number of affs because of all the things NASA can do that includes even the slightest change is space, makes the aff unpredictable and unfairly over burdens the neg who has to research all these potential affs making it impossible to win.**

**2. Neg Ground- Allowing these tiny affs cuts links to core neg disads like politics or the spending disad, which are key to current event education.**

**2NC EXTENSIONS:**

**OVERVIEW:**

**Our interpretation is that a substantial increase in space exploration and/or development is that of at least $1 billion – that’s Foust 10. The affirmative is in violation because [doing the plan] does not require at least $1 billion. Topicality is about competing interpretations. [This affirmative] justifies any minuscule change in space policy, exploding the limits. It also guts neg ground to disads that are key to this topic. It’s not about what you do but what you justify.**

**Prefer our interpretation:**

**a) Predictable limits: Allowing any small change in space policy explodes the limits of an already large resolution. The negative’s research burden will be too large actually research anything. If the neg can’t properly research and develop good arguments, it destroys a proper cost-benefit analysis from the judge, ruining the purpose of debate. It also ruins advocacy skills because the affirmative won’t ever actually have to learn how to defend their plan.**

**b) Negative ground: Allowing such small plans allows the aff to get away with avoiding any topic-specific disads. This ruins advocacy skills because the neither side can actually properly argue a point.**

**c) Talking about big projects is key- sustains our scientific community and key to smaller programs**

Margon 06 (Bruce, is associate director for science at the Space Telescope Science Institute in Baltimore. The institute is operated by the Assn. of Universities for Research in Astronomy Inc., under contract to NASA, “Small is Beuatiful, Big is necessary” Aviation Week& SpaceTechnology, March 27, 2006, <http://www.jwst.nasa.gov/resources/AWST_margon_oped.pdf> Smith)

I disagree. The case for flagships has never been stronger, for multiple reasons: scientific uniqueness, productivity and, perhaps counter-intuitively, contributions to “small science.” It should be self-evident that future missions such as the James Webb Space Telescope or Space Interferometry Mission are large due to unique capabilities that are aimed at the most imperative questions. But when money gets scarce, physics is sometimes forgotten, and the seduction reappears that “smaller, faster, cheaper” can do it all. However, many of the most vital problems in space science involve phenomena for which nature provides a tiny flux of particles or light photons arriving at Earth. As today’s detectors often sense nearly 100% of incident radiation, no clever technology will induce nature to deliver more information. The only option for more signal then is a larger collecting area—implying larger, heavier and, sadly, more expensive spacecraft to carry these instruments. If we want to understand physics near the Big Bang, or find exceptionally faint traces of planets orbiting nearby stars, or return Martian samples to Earth, we do not have the luxury of claiming that the same quality of science is obtained with small or medium missions. If flagship missions end, we retreat from many of the otherwise soluble key problems, and thus from international leadership in the field. Yes, flagships are expensive, but they are astoundingly productive. The Hubble Space Telescope has yielded more than 5,000 refereed scientific papers since launch, with the annual rate steadily increasing, to more than 600—a dozen publishable discoveries every week—in 2005. Part of this is straightforward: Significant progress on the most important problems rapidly stimulates more follow-up work and a cascade of related discoveries. But large projects also require a critical mass of human and software resources, to which by definition a low-cost project can never aspire. Calibration, reduction and archive software for flagships is usually well standardized and portable, as it is written, tested and maintained by specialists. Any investigator with a competitive idea can use these flagships, limited only by scientific skills and imagination, and not by a raft of undeveloped analysis tools. The “critical mass” factor also applies to issues of public science literacy, a key goal of all NASA science. While a professor can make an important discovery, she cannot employ a cadre of professionals familiar with mandated educational standards in numerous different states and grade levels. A flagship project can: Is there a K-12 school in the U.S. that does not display a Hubble image? Finally, to our counter-intuitive point: Small science flourishes around large projects. In huge demand, flagships are used by a very large number of investigators. They are funded for analysis of results by NASA grants that support students, postdoctoral fellows and equipment. In a typical year, 200 Hubble users each receive a grant averaging well under $100,000—small science, and lots of it. The three NASA “Great Observatories”—Hubble, Spitzer and Chandra—combine to distribute nearly $70 million annually for analysis, a sum far greater than the total of National Science Foundation grants to individual investigators in astronomy. The financial health of the U.S.’s space science community depends not just on NASA’s research and analysis programs, but also equally on the vigor of current and future flagships. Similarly, several dozen investigators get started or maintain footholds in the field each year with Explorer, sounding rocket and balloon projects, but the Great Observatories continually support several thousand U.S. astronomers. NASA’s space science program requires a mix of large, medium and small projects, both in times of budget sickness and health. In difficult times, the solution is not to choose which of our children to execute, but rather ensure that the scientific community, Congress, NASA and voters engage in sufficient dialogue that we emerge with a space program that is not just affordable, but inspires and challenges the American people.

## Substantially Increase = Extend Current Policies --- 1nc

### Only extending current policies is substantial

**Kotchen and Powers, 04** (Matthew J. Kotchen, Department of Economics, Williams College, and Shawn M. Powers, Department of Economics, Williams College, Explaining The Appearance and Success of Voter Referenda For Open-Space Conservation, http://web.williams.edu/Economics/wp/kotchenospace.pdf, 7/19/11)

Another factor that may influence voting outcomes is whether the referendum extends an existing policy or initiates a new one. The results provide evidence that voters were more likely to reauthorize an existing open-space policy. The coefficient on Extend is positive in all three models and statistically significant in the pooled and state-county models. The magnitude of the coefficient in the state-county model implies that, starting from 60 percent of the voters voting yes, having the initiative be an extension increases the percent voting yes to 73.1 percent a substantial increase. This result is intuitive because jurisdictions with extensions have already revealed a preference and willingness to pay for open space.

**The aff doesn’t meet- they create a brand new program**

**Implications-**

**Limits- there is an unlimited amount of projects that NASA could do, that creates and endless number of affs for the neg to be prepared against destroying fairness. Existing programs are the only predictable limits on this topic, still gives the neg variety of choices, but provides limits.**

**Depth over breadth- the unlimited number of affs promotes debates on generics destroying the education we get from specific case and counterplan arguments which are critical to learning about the subject.**

## DEVELOPMENT = SPACECRAFTS/STATIONS --- 1nc

**A) Interpretation: Space development only involves spacecrafts and/or space stations.**

UNOOSA ’03 (The United Nations Office for Outer Space Affairs (UNOOSA) is the United Nations office responsible for promoting international cooperation in the peaceful uses of outer space. UNOOSA serves as the secretariat for the General Assembly's only committee dealing exclusively with international cooperation in the peaceful uses of outer space: the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS), “Space and atmospheric science: Education curriculum”, REGIONAL CENTRES FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION/United Nations, June 2003, <http://www.oosa.unvienna.org/pdf/sap/centres/Space_and_Atmospheric_Science.pdf>) [Hope Merens]

(b) Human exploration and development in space is being addressed by manned spacecraft and space stations. Although space and atmospheric science may occasionally use spacecraft and space stations as carriers of space experiments, it is not the primary user of those vehicles and does not involve the management of them;

**C) Implications:**

**1. Limits: The Aff interpretation of development allows them to pick basically anything and “develop” it in space—this opens up the floodgates for an infinite amount of Affs that the Neg can’t research well enough to answer.**

**2. Ground: If the Aff is expanding the plans it can run, it takes away the ability for the Neg to advocate for better forms of ‘development in space’. By choosing an obscure form of development, the Aff impedes Neg ability to compete.**

## DEVELOPMENT = SPACE BUISINESSES --- 1nc

A) Interpretation - Space development specifically refers to the development of space businesses.

SRI 09 (Space Renaissance Initiative, a non-profit organization dedicated to instituting a change in worldwide perception and policy towards space travel and utilization by increasing the monetary and human investment in space, “The Space Renaissance Manifesto,” 9-15-09, http://www.spacerenaissance.org/papers/The\_Space\_Renaissance\_Manifesto.pdf)[JHegyi14]

‘Exo-development’ means human industrial development out of Earth, while the term 'space development' was used traditionally for any space business, including the telecommunication satellites during the 40 years of use of space for Earth. Exo-development means use space for human development outside Earth, the new strategy, as Jeff Greason indicated clearly. According to David Dunlop, NSS is talking about bootstrapping the exo-development too

**B) Violation – the aff’s solvency mechanism does not involve developing businesses in space**

[possible card/reference of solvency card]

**C) Implications**

1. Limits – Allowing affirmatives that claim space development outside of this definition opens up the door for an infinite amount of affs. They could claim space development as just putting technology in space. This puts too large a burden on the negative because we have to research millions of affs – we can’t possibly be prepared for every single one.

2. Neg Ground – Affs that are limited to space business means that we can run disads to their specific solvency mechanism. Even if we don’t have specific DA’s to their plan we can still indict their solvency. It also makes the aff plans more predictable because there are only certain projects that businesses will take – having good indepth debates about the policy implementation are key to good cost benefit analysis.

## Beyond the Mesophere --- 1nc

A -- Interpretation – Beyond means farther than

MW 11 (Merriam Webster’s online dictionary 2011,

<http://www.merriam-webster.com/dictionary/beyond?show=0&t=1308841091%3E>)

**:** On or to the farther side: [farther](http://www.merriam-webster.com/dictionary/farther)

Space exploration must be in the thermosphere or higher

Atmospheric Chemistry Glossary – No Date (Sam Houston State University, date not given) <http://www.shsu.edu/~chm_tgc/Glossary/glos.html>

In the atmosphere, the region immediately above the stratosphere and immediately below the thermosphere. The mesosphere begins about 50 kilometers high at the stratopause and ends about 80 kilometers high at the menopause. The temperature in the mesosphere decreases sharply with increased altitude.

**Space refers to at least 50 miles from the Earth’s surface**

WC 11(The Weather Channel- weather glossary) http://www.weather.com/glossary/m.html

The layer of the [atmosphere](http://www.weather.com/glossary/a.html#atmo) located between the stratosphere and the ionosphere, where [temperatures](http://www.weather.com/glossary/t.html#temp) drop rapidly with increasing height. It extends between 31 and 50 miles (17 to 80 kilometers) above the earth's surface.

B - Violation – The affirmative does not increase exploration and/or development at least 80KM above the Earth’s surface.

C - Standards

1. Predictable Limits – A firm interpretation of what the mesosphere refers to is required to limit the enormous topic – affirmatives that develop below the mesosphere shatter the negative’s research burden.

2. Ground – the mesosphere separates outer space from Earth’s environment – our specific space disads don’t relate to affirmatives that develop below the mesosphere.

D - Topicality is a voter for fairness and education. Evaluate the debate round under competing interpretations because it is the most objective way to view the debate.

## USFG

### United States Federal government is in Washington, D.C.

WEST'S LEGAL THESAURUS/DICTIONARY 85 (pg. 744. “federal government”)

United States Federal Government: Means the federal government centered in Washington, D.C.

## Substantially Increase Definitions

### A substantial increase is $291 billion

**NASA Conference Report, 05** (CONSOLIDATED APPROPRIATIONS BILL Division I—Department of Veterans Affairs, Housing and Urban Development, and Independent Agencies, NASA Conference Report, http://www.nasa.gov/pdf/103507main\_FY05\_conf\_rept.pdf, 7/19/11) **Hou**

The conferees agree that from within the funding provided, **$291,000,000 is** to be used for a servicing mission to the Hubble Space Telescope. The conferees believe a successful servicing mission to Hubble should be one of NASA's highest priorities and have provided **a substantial increase** in funding **to** accomplish this goal. The conferees direct **NASA** to report to the Committees on Appropriations of the House and Senate on the status of their plan to service Hubble and the recommendations of the National Academy of Sciences within 90 days of enactment of this Act.

### A substantial increase in NASA’s budget is 3.2% of the previous year’s fiscal budget

Herridge, 06(Linda, Senior Staff Writer at Spaceport news, NASA’s newsletter, “Fiscal year ’07 budget rollout positive for space program,” http://www.nasa.gov/centers/kennedy/pdf/143176main\_feb17color.pdf, 7/19/11) Hou

**The** proposed **fiscal year 2007** NASA budget **is** $16.8 billion, which represents **an increase of 3.2 percent** from 2006. KSC’ s proposed budget for fiscal year 2007 **is** $2.1 billion, **a substantial increase** **over the** $1.8 billion **budget from 2006.**

### That means at least $590 million

Cabbage and Schierholz, 09 (Micheal and Stephanie, employees of NASA, “NASA Announces Fiscal Year 2010 Budget,” http://www.nasa.gov/home/hqnews/2009/may/HQ\_09-102\_FY2010Budget.html, 7/19/11) Hou

WASHINGTON -- **NASA announced** Thursday **an $18.69 billion budget for fiscal year 2010** to advance Earth science, complete the International Space Station, explore the solar system and conduct aeronautics research. The budget request represents an increase of $903.6 million, or 5 percent, above funding provided in the fiscal year 2009 Omnibus Appropriations Act. All totaled, an additional $2 billion has been added to NASA's 2009 and 2010 budgets under the Obama administration

### Only extending current policies is substantial

Kotchen and Powers, 04(Matthew J. Kotchen, Department of Economics, Williams College, and Shawn M. Powers, Department of Economics, Williams College, Explaining The Appearance and Success of Voter Referenda For Open-Space Conservation, http://web.williams.edu/Economics/wp/kotchenospace.pdf, 7/19/11)

**Another factor** that may influence voting outcomes **is whether the referendum extends an existing policy or initiates a new one**. **The results provide evidence that** voters were more likely to reauthorize an existing open-space policy. The coefficient on Extend is positive in all three models and statistically significant in the pooled and state-county models. The magnitude of the coefficient in the state-county model implies that, starting from 60 percent of the voters voting yes, having the initiative be **an extension** **increases** the percent voting yes **to** 73.1 percent **a substantial increase**. **This result is intuitive because jurisdictions with extensions have already revealed a preference and willingness to pay for open space**.

### A substantial increase is $1.2 billion

Alexander 08(Amir, Editor of The Planetary Society, “Planetary News, Space Policy,” http://planetary.org/news/2007/0703\_NASA\_Mars\_Program\_Threatened\_by\_Senate.html, 7/19/11) Hou

The Senate bill proposes these severe cuts to the Mars program despite the fact that overall it provides for a substantial increase in NASA funding. If approved, the bill will allocate NASA a total of $17.46 billion, $1.2 billion more than the agency’s 2007 budget, and $150 million more than the administration’s request for 2008. The proposal was crafted by the Senate Subcommittee on Commerce, Justice, and Science, and cleared the Senate Appropriations Committee on June 28, 2007.

### A substantial increase is at least $1 billion

Foust 10**, (**Dr Jeff Foust is an aerospace analyst, journalist and publisher.He has a [bachelor's degree](http://en.wikipedia.org/wiki/Bachelor%27s_degree) in [geophysics](http://en.wikipedia.org/wiki/Geophysics) from the [California Institute of Technology](http://en.wikipedia.org/wiki/California_Institute_of_Technology) and a Ph.D in [planetary sciences](http://en.wikipedia.org/wiki/Planetary_science) from the [Massachusetts Institute of Technology](http://en.wikipedia.org/wiki/Massachusetts_Institute_of_Technology), “NASA budget compromises, getting Congress to go along,” http://www.hobbyspace.com/nucleus/index.php?itemid=19781, 7/20/11) Hou

A comment by "Red" in the previous item discusses some of the budget implications of continuing the Shuttle, adding Shuttle-C development plus Orion-Lite and an EELV for it. It appears that **a substantial increase, at least an extra billion** per year, over the President's proposed budget through 2015 would be needed. The rumored plan has some similarities **to** the Augustine panel's Flexible Path Option 5C, which assumed that **NASA's funding** would rise to about $3B above the baseline 2010 budget by 2014. Even with that much extra money, the Shuttle Derived heavy lifter didn't come on line till 2022

### A substantial increase is at least 11.4%

NASA, 11 **(**National Aeronautics and Space Administration, “NASA FY11 Budget**,”** aau.edu/WorkArea/DownloadAsset.aspx?id=10160, 7/20/11) Hou

**The FY11 budget request includes $5 billion for NASA**’s Science portfolio, which consists of Earth Science, Planetary Science, Astrophysics, and Heliophysics. **This is $512 million, or 11.4 percent,** **above the FY10** enacted **a**mount of $4.4 billion. This **substantial increase in funding** for the directorate is due mostly to increased support for climate change research and study

### Substantial increase is defined as $2.6 billion

**The Planetary Society, 08** (a public website run by astronauts, scientists and entrepenuers from 125 different countries, “Planetary Updates,” 7/22/11, http://www.planetary.org/programs/projects/advocacy\_and\_education/space\_advocacy/updates.html)

On Wednesday, October 15, 2008, President Bush signed into law the NASA Authorization Bill passed by Congress last month. **By authorizing NASA to spend $20.21 billion in fiscal year 2009, the bill represents a** **substantial increase of $2.6 billion** over the administration's budget request for NASA earlier this year.

### A substantial increase is defined as an increase of 6.3%

Senate Appropriations Committee, 02 **(**AAAS R&D Budget and Policy Program, senate bill S. 2792, 7/24/11, http://www.aaas.org/spp/rd/nasa03s.pdf) Hou

On July 25, as part of a rush to draft all 13 FY 2003 appropriations bills before a month-long August recess, the Senate Appropriations Committee drafted an FY 2003 VA-HUD appropriations **bill** (S. 2797) that **would provide a substantial increase for R&D in** the National Aeronautics and Space **Administration (NASA). The** Senate would provide NASA with a total budget of $15.2 billion in FY 2003, $298 million or 2.0 percent more than FY 2002. This would exceed the Administration’s request of $15.0 billion. In the Senate plan, NASA’s **R&D funding would rise 6.3 percent for a total of $11.8 billion**, including a 12.4 percent boost in the key Science, Aeronautics and Technology (SAT) account to $9.0 billion(see Table). The Senate would go along with NASA’s request to shift money from the International Space Station project to NASA’s other R&D programs, and would add $126 million in congressionally designated projects and $105 million for a Pluto mission.

### Substantially increase is 500 Million

Klamper 2010 (Amy*is* a Space News staff writer covering NASA, Congress and U.S. space policy, “NASA Raises Bet on Commercial Cargo”, 2010, http://www.spacenews.com/civil/nasa-raises-bet-commercial-cargo.html) Connor Smith

The proposed funding would substantially increase NASA’s planned investment in the Commercial Orbital Transportation Services (COTS) program the agency began in 2006 as a $500 million effort to seed development of new logistics vehicles and rockets that were expected to be ready by 2010.

### Substantial increase is 298 million

AAAS 02 (“Senate adds $200 Million to NASA Request for Earmarks and Pluto Mission”, August 6 2002, http://www.aaas.org/spp/rd/nasa03s.pdf)

On July 25, as part of a rush to draft all 13 FY 2003 appropriations bills before a month-long August recess, the Senate Appropriations Committee drafted an FY 2003 VA-HUD appropriations bill (S. 2797) that would provide a substantial increase for R&D in the National Aeronautics and Space Administration(NASA). The Senate would provide NASA with a total budget of $15.2 billion in FY 2003, $298 million or 2.0 percent more than FY 2002. This would exceed the Administration’s request of $15.0 billion. In theSenate plan, NASA’s R&D funding would rise 6.3 percent for a total of $11.8 billion, including a 12.4percent boost in the key Science, Aeronautics and Technology (SAT) account to $9.0 billion (see Table). The Senate would go along with NASA’s request to shift money from the International SpaceStation project to NASA’s other R&D programs, and would add $126 million in congressionally designated projects and $105 million for a Pluto mission.

### A substantial increase is 512 million

NASA 10 ( “NASA FY 11 Budget Request Summary”, Feb 1 2010, aau.edu/WorkArea/DownloadAsset.aspx?id=10160)

The FY11 budget request includes $5 billion for NASA’s Science portfolio, which consists of Earth Science, Planetary Science, Astrophysics, and Heliophysics. This is $512 million, or 11.4 percent, above the FY10 enacted amount of $4.4 billion. This substantial increase in funding for the directorate is due mostly to increased support for climate change research and study.

## ITS

### Its is used to show possession or ownership

Grammar Glossary(No date given) **(“Term: Possessive Pronoun”, http://www.usingenglish.com/glossary/possessive-pronoun.html)**

Mine, yours, his, hers, its, ours, theirs are the possessive pronouns used to substitute a noun and to show possession or ownership.

### Government is separate from the privatized and commercial sectors—goals and funding differentiate

Lund, 99 **(Eric, member of the 1999 Washington Internships for Students of Engineering (WISE) Program, “Government Incentives to the Commercial Space Launch Industry,” Institute of Electronics and Electrical Engineers, 8/5/99, http://www.wise-intern.org/journal/1999/lund99.pdf) [Stryker]**

How will government involvement affect commercial investment firms, such as SpaceVest, which focus exclusively on space-related investments? The answer depends on how and who the government supports. To some investors, government involvement would increase the risk associated with their portfolio by giving capital to one or more competing firms. Investors, who hold stake in the companies in which the government also invests, believe federal involvement reduces their risk. Financial involvement by the federal government in the commercial space launch industry will have little affect on privately sponsored competitions like the X PRIZE and the Cheap Access to Space (CATS) Prize (see inset) but may affect the competitors after these competitions.

### The private sector is separate from NASA

NASA, Updated 6/10 **(National Aeronautics and Space Administration, “NASA - Commercial Crew & Cargo,” NASA, Updated 6/10/11, http://www.nasa.gov/offices/c3po/home/) [Stryker]**

NASA's Commercial Crew and Cargo Program is investing financial and technical resources to stimulate efforts within the private sector to develop and demonstrate safe, reliable, and cost-effective space transportation capabilities. The Program manages Commercial Orbital Transportation Services (COTS) partnership agreements with U.S. industry totaling $500M for commercial cargo transportation demonstrations and is investing $50M towards commercial crew development initiatives.

### NASA distinguishes itself as separate from the private sector

Mcalister 11 **(Phillip, Acting Director, Commercial Space Flight Division, Exploration Systems Mission Directorate, NASA Headquarters, Washington, D.C., 1/21/11, http://www.nasa.gov/news/media/audiofile/COMMERICAL\_CREW\_prt.htm) [S/N]**

**We felt like** it was time at this point to transfer this specific mission over to the private sector.We're not talking about all of exploration, that is NASA's role and going beyond low Earth orbit and exploring Mars and the asteroids with humans, that's still going to be NASA's primary role in exploration. **But the mission to low earth orbit, just transporting crew to the International Space Station and back, is a mission that we've been sort of doing for over four decades now. It's very similar to the Gemini program that we had in the 60s, where we just take a few astronauts, maybe as many as seven, up to low earth orbit and bring them back again. So it's a relatively well understood mission, and we believe that the time is right, the private sector has matured now, the space industrial base is more strong today than it has ever been, financially and technically, so we feel like we can shift this particular mission over to the private sector, save us some money, and** allow NASA to focus its resources on beyond LEO, beyond low Earth orbit exploration.

### The private sector is not part of the government

Cambridge Dictionary, No date **(Cambridge dictionary, “Definition of the private sector,” Cambridge, http://dictionary.cambridge.org/dictionary/british/the-private-sector) [S/N]**

The private sector definition: businesses and industries that are not owned or controlled by the government

### The private sector is distinctly separate from the government

Investopedia, 10 **(Encyclopedia of investment, “Private Sector Definition,” http://www.investopedia.com/terms/p/private-sector.asp) [S/N]**

**What Does** Private Sector **Mean?** The part of the economy that is not state controlled**, and is run by individuals and companies for profit.** The private sector encompasses all for-profit businesses that are not owned or operated by the government**. Companies and corporations that are government run are part of what is known as the public sector, while charities and other nonprofit organizations are part of the voluntary sector.**

### NASA funding of commercial space development is discrete from the government’s own programs

Berger 11**(**Eric, He is a reporter for the Houston Chronicle’s space, weather, and science reporter, “NASA still being torn between commercial space and its own rocket,” Houston Chronicle, 2/4/11) [S/N] <http://blog.chron.com/sciguy/2011/02/nasa-still-being-torn-between-commercial-space-and-its-own-rockets/>

The president’s budget for NASA released today **(**see**fact sheet**) is similar to the **Senate compromise** last year, but contains some key differences. Notably the issues remain how much to spend on a heavy lift rocket and launch vehicle, and how much to invest in private-sector initiatives, such as [SpaceX](http://blogs.chron.com/sciguy/archives/2011/01/spacex_sends_a_message_to_budgetcutting_lawmakers_1.html), which two months ago became the first commercial entity to launch a spacecraft into orbit and subsequently recover it upon its return to Earth. As has been the case for some time, NASA is being asked to straddle a fence and support both commercial access to low-Earth orbit and build its own fleet of new space vehicles. In this budget environment, however, there’s just not enough money to do both. Under last year’s Senate compromise, for 2012, NASA would spend $400 million to foster private development of commercial crew services to orbit, and $4.05 billion on a launch rocket and crew vehicle. In the President’s proposed budget, NASA would spend $850 million on commercial crew services, but just $2.8 billion on a new NASA rocket and crew vehicle.

### NASA based development is divergent from commercial development

Copulous, 84 (Milton, He is a senior policy expert at Heritage Foundation- Leadership For America, “The Perils of a NASA Space Monopoly,” Heritage Foundation, no date given**)-** [S/N]<http://www.heritage.org/research/reports/1984/06/the-perils-of-a-nasa-space-monopoly>

The outcome of the debate over expendable launch vehicles will play a crucial role in determining the future of space commercialization. If the private sector is to bring the full weight of its resources, talent, and imagination to bear on the task of harnessing the vast potential of man's final frontier, it must not be constrained by artificial government barriers. A NASA-dominant commercialization strategy would inevitably lead to such barriers. Therefore, it is critical that NASA's role be limited to research and development. There is room for many actors in the development of space. Both NASA and the private sector can make important contributions. But the commercialization of space should be undertaken by the sector with appropriate incentives and skills--American business. Attempts by NASA to monopolize space transportation, protect its agency prerogatives, and ensure ever-increasing budgets will only thwart the nation's commercial future in space.

## Exploration

### Space exploration is exploration of the moon, mars, and near earth asteroids

Johns 11**( Katie, Aerospace Engineering Undergraduate Student, “Engaging the public through participatory exploration”, May 2011,**[**https://fs20.formsite.com/vablonde25/files/f-15-1-5535377\_FJ6N2NAg\_PROJECT\_UNITY.pdf**](https://fs20.formsite.com/vablonde25/files/f-15-1-5535377_FJ6N2NAg_PROJECT_UNITY.pdf)**) Connor Smith**

 The new era of ‘space exploration’ is defined as “to explore by robots and later with humans,

the Moon, Mars, and near-Earth asteroids.”  This new era creates opportunities that can inspire new ideas, encourage new generations to get involved and foster collaboration between countries.  During the 1950s and 1960s, the ‘space race’ brought excitement to many people and the nation. These days, present space missions lack the luster of their predecessors like Apollo and appear to be unexciting and just a thing of the past.  Government and the society as a whole consider environment, economy,population, and climate change as greater priorities than human space exploration.  Space probes and satellites built by NASA for Earth studies are launched frequently, but their functions are mostly ambiguous and removed from the everyday public consciousness [2]. However, convincing the public of the importance of NASA research and all its applications is imperative.  NASA needs to incorporate public concerns about the environment into their publicity and outreach, in order to attract the attention of the public.

### Space exploration is the use of astronomy and space tech to explore outer space

O’Keefe 11**(Sean, NASA administrator, “Space Exploration History”, 2011,**[**http://www.pastreunited.com/id299.html**](http://www.pastreunited.com/id299.html)**) Connor Smith**

Space exploration is defined as the use of astronomy and space technology to explore outer space. Exploration has taken space by human spaceflight and robotic space craft.

### Space exploration excludes exploration towards earth

Space Technology 2011 (an academic resource dedicated to the study of aeronautics and space technology, “Space Exploration”, 2011 http://www.contour2002.org/article/space-exploration,

Space exploration is defined as the use of astronomy and space technology to explore outer space. Exploration has taken space by human spaceflight and robotic space craft.

### Space exploration is about connecting with people, not just reviewing machine data.

Standard Freeholder 2011 (Canadian news in Ontario, Canada, “Life Changing Experience”, 2011, http://www.standard-freeholder.com/ArticleDisplay.aspx?e=32194600

"Tears don't run in space," explains Indira. "They just pool up." Drew says the experience proved that space exploration is about connections with other people and not just data collected by machines. "All of what we do is based on human interaction," he says. That's partly why he's not worried about the end of the shuttle era.

### Space exploration includes gaining knowledge for the good of humanity.

Britannica Academic Edition 2011 ( Encyclopedia Britannice “Space Exploration” 2011, http://www.standard-freeholder.com/ArticleDisplay.aspx?e=3219460)

Space exploration by means of manned or unmanned spacecraft of the reaches of the universe beyond the Earth’s atmosphere and the use of the information so gained to increase knowledge of the cosmos and benefit humanity.

### Space exploration is both in space and on extraterrestrial ground

Grogan et al 09 (Paul T. Grogan, Afreen Siddiqi, Olivier L. de Weck of Massachusetts Institute of Technology, Cambridge, “Matrix Methods for Optimal Manifesting of Multi-Node Space Exploration Systems” presented to American Institute of Aeronautics and Astronautics, 2009, http://strategic.mit.edu/docs/2\_38\_JSR\_MatrixManifesting\_final.pdf)

This paper presents matrix-based methods for determining optimal cargo manifests for space exploration. An exploration system is defined as a sequence of in-space and on-surface transports between multiple nodes coupled with demands for resources

### Space exploration is only peaceful

ESA 2010 (European space agency, “EC-ESA Workshop on Exploration and Innovation Industrial Competitiveness and Technological Advance” harwell Science and Innovation Campus, Oxfordshire, UK, April, 29, 2010) [Merens/Hegyi]

Space exploration can be considered as the combination of robotic and human activities for the discovery of extra-terrestrial environments - that will open up new frontiers for the acquisition of knowledge and peaceful expansion of humankind

### Space exploration excludes purely scientific programs

British National Space Centre 2009 (“Space Exploration Review” December 2009, http://www.lpi.usra.edu/lunar/strategies/UKSpaceExporationReview2009.pdf)

Excluded from this definition of space exploration is the purely scientific exploration of the outer Solar System (since we cannot yet build space vehicles able to carry and protect astronauts on such voyages), as well as space-based observatories used to study the stars and universe beyond. Likewise unmanned satellites in Earth orbit are excluded – for example those providing Earth observation, communications and navigation services). Both robotic and human activities are included – exploration per se does not favour one over the other, though in many cases a combination of both is the best approach.

### Exploration excludes satellites in low earth orbit

Gibbs and Pryke 97 (G. Head of wahington Office, Canadian Space Agency, Washington DC, I, Head of ESA Washington Office, Washington DC “International Cooperation In Space- Developing New Approaches” Feb. 2009, http://www.esa.int/esapub/bulletin/bullet89/gibbs89.htm)

The working group defined space exploration as human and robotic activity beyond Earth orbit (both low-Earth and geosynchronous), such as exploration of the Moon and Mars. The group concluded it was unlikely that a country or group of countries would, during the next ten to fifteen years, make a commitment to a single, long-term, large-scale space-exploration initiative. So, until such a commitment is possible, exploration is likely to focus on robotic missions rather than on human spaceflight. The working group considered that:

### There are 270 military satellites- too large a research burden for the Neg

Postnote 06(Parliamentary Office of Science and Technology, “MILITARY USES OF SPACE,” December, 2006) Hegyi

There are over 270 military satellites as well as ~600 civil, commercial and multi-purpose satellites. Satellites are increasingly ‘dual-use’ (can be used for both military and non-military purposes). Military uses include: • imagery: from identifying targets to detecting the effects of underground nuclear detonations. Some US satellites can spot objects a few tens of centimetres across. • navigation: from target location to guiding weapons systems. There are two main systems: the US military’s global positioning system or GPS (used by the UK armed forces) and the Russian GLONASS system. GPS is usually accurate to within a few metres. • signals intelligence (SIGINT): detecting communications, including broadcasting signals. US SIGINT gave early warning of Iraq’s invasion of Kuwait in July 1990, when an out-of-use radar in southern Iraq resumed operation; • telecommunications (telecoms): in military operations this enables exchange of information, for example between the ‘front-line’ and strategic commanders, so decisions can be based on up-to-date intelligence; • early warning: infrared satellite sensors can spot missile launches by detecting their hot plumes. However the technology to track missiles along their trajectory, from space, is in its early stages; • meteorology: to provide weather data for the military. The UK gains access to such data via EUMETSAT, which maintains Europe’s meteorological satellites. Satellites relay data to ground stations where it is processed. Most satellites communicate at radio frequencies.

\*Notes: satellites or types?

### The US engages solely in peaceful space activities- military affs don’t give educate on future space policy

UNGA 09(United Nations General Assembly, “U.S. Statement on Peaceful Use of Outer Space – Thematic Debate of UNGA first Committee,” 10-19-09, http://geneva.usmission.gov/2009/10/19/outerspace/) Hegyi

Mr. Chairman, although it is premature to predict the specific decisions on arms control that will result from this U.S. policy review, this Committee can rest assured that the United States will continue to uphold the principles of the 1967 Outer Space Treaty, which provides the fundamental guidelines required for the free access to, and use of, outer space by all nations for peaceful purposes. The United States will continue to support the inherent right of individual or collective self-defense, as reflected in the UN Charter. The United States also will continue to: • Reject any limitations on the fundamental right of the United States to operate in, and acquire data from, space. • Conduct United States space activities in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding. • Highlight the responsibility of states to avoid harmful interference to other nations’ peaceful exploration and use of outer space. • Take a leadership role in international fora to promote policies and practices aimed at debris minimization and preservation of the space environment. To further these goals, the United States will seek opportunities to work with other like-minded nations here in the United Nations and in other fora in the furtherance of international norms and standards that can help advance the common good and enhance stability and security in outer space. The United States stands ready to begin a new chapter of international cooperation in outer space that recognizes the rights and responsibilities of all nations. Together, we can build the future in outer space which all people that on Earth do dwell so richly deserve.

### Allowing military actions to be topical creates a research burden for the Neg

GAO 02 (**United States General Accounting Office, “Report to the Secretary of Defense” December 2002,** <http://www.gao.gov/new.items/d02738.pdf>) **Hegyi**

**DOD’s current space network is comprised of constellations of satellites, ground-based systems, and associated terminals and receivers. Among other things, these assets are used to perform surveillance and intelligence functions; detect and warn of attacks; provide communication services to DOD and other government users; provide positioning and precise timing data to U.S. forces as well as other national security, civil, and commercial users; and counter elements of an adversary’s space system. DOD categorizes these assets into four space mission areas—each with specific operational functions. (See table 1 for a description of space mission areas, operational functions, and related examples of systems and activities.)Space control Space surveillance, protection, prevention, and negation Space surveillance network This space control asset is a network that provides space object cataloging and identification, satellite attack warning, timely notification to U.S. forces of satellite flyover, space treaty monitoring, and scientific and technical intelligence gathering. Force enhancement Navigation, satellite communications, environmental monitoring, surveillance and threat warning, command and control, and information operations Global Positioning System (GPS) This network of satellites and supporting ground stations provides all-weather, day/night, three-dimensional positioning information and precise timing data to landbased, seaborne, and airborne U.S. and allied forces, as well as other national security, civil, and commercial users. GPS enhances force coordination, command and control, target mapping, target acquisition, flexible routing, and weapon accuracy, especially at night and in adverse weather. Space support Launch operations, satellite operations, modeling, simulation, and analysis/force development evaluation Air Force satellite control network This is the primary command, control, and communications support capability for DOD space systems. As a network of systems, it performs a multitude of functions, including data processing, tracking, telemetry, satellite commanding, communications, and scheduling. The network has 15 worldwide fixed antennas, one transportable system, and two mission critical nodes. Force applications Intercontinental ballistic missile sustainment, conventional strike Minuteman III Sustainment This program sustains the U.S. strategic ballistic missile system.**

### Peaceful space exploration is best for humanity

UNOOSA, 58**(United Nations Office for Outer Space Activities**, “Question of the peaceful use of outer space,” 12-13-58, <http://www.oosa.unvienna.org/oosa/SpaceLaw/gares/html/gares_13_1348.html>) Hegyi

**Recognizing the common interest of mankind in outer space and recognizing that it is the common aim that outer space should be used for peaceful purposes only, Bearing in mind the provision of Article 2, paragraph 1, of the Charter of the United Nations, which states that the Organization is based on the principle of the sovereign equality of all its Members, Wishing to avoid the extension of present national rivalries into this new field, Desiring to promote energetically the fullest exploration and exploitation of outer space for the benefit of mankind, Conscious that recent developments in respect of outer space have added a new dimension to man's existence and opened new possibilities for the increase of his knowledge and the improvement of his life, Noting the success of the scientific co-operative programme of the International Geophysical Year in the exploration of outer space and the decision to continue and expand this type of co-operation, Recognizing the great importance of international cooperation in the study and utilization of outer space for peaceful purposes, Considering that such co-operation will promote mutual understanding and the strengthening of friendly relations among peoples, Believing that the development of programmes of international and scientific co-operation in the peaceful uses of outer space should be vigorously pursued, Believing that progress in this field will materially help to achieve the aim that outer space should be used for peaceful purposes only, Considering that an important contribution can be made by the establishment within the framework of the United Nations of an appropriate international body for co-operation in the study of outer space for peaceful purposes, Desiring to obtain the fullest information on the many problems relating to the peaceful uses of outer space before recommending specific programmes of international co-operation in this field,**

### Obama will only engage in peaceful collaboration in space- military Affs don’t provide any topic based education

IOAG 10 **(Interagency Operations Advisory Group, “Announcements: United States National Space Policy” 1-7-2010,** <https://www.ioag.org/Lists/Announcements/DispForm.aspx?ID=30>) **Hegyi**

**Our policy reflects the ways in which our imperatives and our obligations in space have changed in recent decades. No longer are we racing against an adversary; in fact, one of our central goals is to promote peaceful cooperation and collaboration in space, which not only will ward off conflict, but will help to expand our capacity to operate in orbit and beyond. In addition, this policy recognizes that as our reliance on satellites and other space-based technologies increases, so too does our responsibility to address challenges such as debris and other hazards. No longer is space just a destination to reach; it is a place where we must be able to work in ways that are responsible, sustainable, and safe. And it is central to our security and the security of our allies, as spaced-based technology allows us to communicate more effectively, to operate with greater precision and clarity, and to better protect our men and women in uniform.**

## Development

### Space development refers to technical production

Space Development Promotion Act ’05 **(The Republic of Korea (South Korea or ROK) is a highly developed, stable, democratic republic, “SPACE DEVELOPMENT PROMOTION ACT OF**

**THE REPUBLIC OF KOREA, Space Development Promotion Act, May 2005,** [**http://www.spacelaw.olemiss.edu/library/space/Korea/Laws/33jsl175.pdf**](http://www.spacelaw.olemiss.edu/library/space/Korea/Laws/33jsl175.pdf)**) [Hope Merens]**

Definitions of terms used in this Act are as follows:(a) The term “space development” means one of the following:(i) Research and technology development activities related to design, production, launch, operation, etc. of space objects;(ii) Use and exploration of outer space and activitiesto facilitate them;

### Space development refers to psychological development in space.

Bluth 2000**(B.J., sociology department of California State University, "Sociology and Space Development", California State University, February 2000,** [**http://er.jsc.nasa.gov/seh/sociology.html**](http://er.jsc.nasa.gov/seh/sociology.html)**) [Hope Merens]**

Sociology organizes knowledge to identify and analyze more of the hidden potential in human behavioral systems. The tests of sociological concepts are in behavior, i.e., does the concept work in real life? Systems of sociological concepts can be broken into three basic categories: social systems, or systems of ways of doing things; cultural systems, or systems of meaning (e.g., language, values, beliefs, ideas); and personality systems, or systems of need dispositions (internalized cultural and social systems). Using each of these systems, sociologists attempt to identify patterns of relationships between events and the systems, as well as among sets of systems and events. Sociologists thus examine the consequences of behaviors resulting from social, cultural, and personality systems and from interactions among those systems. Sociologists also seek ways to encourage desired consequences. Because sociology constitutes a way of organizing knowledge about human behavioral systems, the discipline applies to any type of human activity. The study of human behavioral systems encompasses almost every aspect of space development in the near and far term. Presently, sociological issues include astronaut survival and safety and mission effectiveness. As the presence of humans in space expands in scope and duration, the quality of life in space as well as on Earth becomes pertinent. Moreover, the unique environments of spacecraft and early space missions, the limited crew sizes, and the constrained Earth-space communication flows may enable sociologists to identify fundamental social processes to a degree not previously possible. In space, external influences are minimized, and information about behavior systems and their consequences is increased, but not beyond a manageable scope. Perhaps space development will be to the study of behavioral systems what the linear accelerator was to physics, enhancing the significance and development of human behavioral systems as a science.

### Space development includes the development of space weapons.

Malin ’01 **(Martin, The Program Director of CISS, Martin Malin, is also Director of the Academy's newly organized program on Science, Security, and International Cooperation., “Reconsidering the Rules of Space”, Bulletin of the American Academy for Arts and Sciences, 2001,** [**http://www.jstor.org.turing.library.northwestern.edu/stable/3824252?seq=3&Searc h=yes&searchText=%22space+development+is%22&list=show&searchUri=%2Faction%2FdoBasicSearch%3FQuery%3D%2522space%2Bdevelopment%2Bis%2522%26acc%3Don%26wc%3Don&prevSearch=&item=4&ttl=400&returnArticleService=showFullText&resultsServiceName=null**](http://www.jstor.org.turing.library.northwestern.edu/stable/3824252?seq=3&Searc%20h=yes&searchText=%22space+development+is%22&list=show&searchUri=%2Faction%2FdoBasicSearch%3FQuery%3D%2522space%2Bdevelopment%2Bis%2522%26acc%3Don%26wc%3Don&prevSearch=&item=4&ttl=400&returnArticleService=showFullText&resultsServiceName=null)**) ]Hope Merens]**

A central issue of space development is whether the deployment of advanced weapons systems will be attempted in defiance of legitimate international objection and in violation of legal procedure. Sagdeev outlined the existing international, multilateral, and bilateral agreements governing the use of space, as well as a number of important national policies shaping the legal realm. He noted that while the placement of weapons of mass destruction in space is banned under the 1967 Outer Space Treaty, there are no provisions to limit the deployment of other types of weapons, including antisatellite weapons. Moreover, he said, the United States has not responded to calls, primarily from China and Russia, to develop such provisions.

### Space development only involves spacecrafts and space stations

UNOOSA ’03 (The United Nations Office for Outer Space Affairs (UNOOSA) is the United Nations office responsible for promoting international cooperation in the peaceful uses of outer space. UNOOSA serves as the secretariat for the General Assembly's only committee dealing exclusively with international cooperation in the peaceful uses of outer space: the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS), “Space and atmospheric science: Education curriculum”, REGIONAL CENTRES FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION/United Nations, June 2003, <http://www.oosa.unvienna.org/pdf/sap/centres/Space_and_Atmospheric_Science.pdf>) [Hope Merens]

(b) Human exploration and development in space is being addressed by manned spacecraft and space stations. Although space and atmospheric science may occasionally use spacecraft and space stations as carriers of space experiments, it is not the primary user of those vehicles and does not involve the management of them;

### Space development only applies to objects in low Earth orbit.

Dolman & Hickman ’10 **(Everett & John, , “Resurrecting the Space Age: A State–Centered**

**Commentary on the Outer Space Regime”, Comparative Strategy, November 2010,** <http://www.tandfonline.com/doi/pdf/10.1080/014959302317350855>**) [Hope Merens]**

Currently, **space development is confined to Low Earth Orbit** (LEO). Several states joined the United States and the Soviet Union in space, yet space exploration and development beyond LEO has fallen far short of what is possible given technology and treaty constraints. The authors examine this puzzle of collective inaction, offer **insights** that **contradict much of the conventional wisdom about the development of space,** and conclude with a legal–institutional remedy which would solve the collective inaction problem.

### Space development involves privatization and commercialization

Weeks ’10 **(Edythe, Edythe Weeks is an adjunct professor of international space law at Webster University in St. Louis and coordinator of Webster's online international relations program, “Outer Space Development: Including Everyone in the Process”, International Relations, July 2010,** [**http://www.e-ir.info/?p=4545**](http://www.e-ir.info/?p=4545)**) [Hope Merens]**

**The term used herein, “outer space development” involves a culmination of forces – historical, legal, ideological, institutional, political, economic, psychological and structural all operating together in the post Cold War era so that space commercialization and privatization are widespread accepted norms.[i] Recently, a new trend is being set by U.S. policy. In 2004 a new policy was instituted in accordance with the President’s Commission Report which lays the foundation of U.S. development of the outer space territory[ii]. Also in 2004 a new U.S. law[iii] was passed facilitating the legality of private space travel as a new industry being called “space tourism”. In addition the NASA Authorization Act of 2005 made funding available to carry out the New Vision U.S. Space Exploration Policy.[iv] This policy, to a large extent calls for more participation from the private-sector in space exploration and other programs. Already a critical number of space entrepreneurs have paved the way towards new space industries, as they did during the satellite telecommunications revolution during the 1980s and 1990s. This is only the beginning of a new trend towards further space commercialization and privatization.**

### Space development implies industrialization

Minquing ’04 **(Han, Vice President of Shandong Academy of Social Science, Director of New Industrialization Research Center, “The Space Development Strategy of China’s New Industrialization”, Shandong Social Science, 2004,** [**http://www.chinasecurity.us/index.php?option=com\_content&view=article&id=254&Itemid=8**](http://www.chinasecurity.us/index.php?option=com_content&view=article&id=254&Itemid=8)**) [Hope Merens]**

**This article is representative of a large amount of writing urging China to fulfill ambitious goals in space. According to Han, the development of space will largely define the modern age of industrialization. Space development includes resource exploitation, which encompasses new energy sources, materials and the establishment of new settlements. The pursuit of knowledge of outer space and the scientific and technological means to conquer it will be a central driving force in exploring this new frontier. If China is to be a world power, it must be a space power, argues the author. He looks far into the future and urges China to pursue construction of lunar bases for deep space exploration and acquiring new energy sources and materials. Following this, China should establish bases on Mars. Accomplishing these feats will require major breakthroughs in launch vehicle capability, artificial intelligence, space networking technologies, chemistry and life sciences.**

### Development includes objects in Low Earth Orbit

Balaji & Meulenberg ’11 **(Karthik and Andrew, NAv6 Center of Excellence, Universiti Sains Malaysia, National Institute of Technology, Karnataka, Surathkal, India, “The LEO Archipelago: A system of earth-rings for communications, mass-transport to space, solar power, and control of global warming.”, Acta Astronautica/Elsevier, June 2011,** <http://web.ebscohost.com.turing.library.northwestern.edu/ehost/detail?sid=13c71d91-bb86-411a-b1b0-b4a6cc754cc3%40sessionmgr104&vid=1&hid=112&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=aph&AN=60157729>) **[Hope Merens]**

**Abstract: Man''s quest to get into space is hindered by major problems (e.g., system-development and capital costs, expense of putting mass into orbit, trapped-radiation belts, and environmental impact of a large increase in rocket launches). A multi-purpose low-earth-orbit system of rings circling the earth – the “LEO ARCHIPELAGO<sup>TM</sup>” – is proposed as a means of solving or bypassing many of them. A fiber-optic ring about the earth would be an initial testing and developmental stage for the Ring Systems, while providing cash-flow through a LEO-based, high-band-width, world-wide communication system. A low-earth-orbit-based space-elevator system, “Sling-on-a-Ring<sup>TM</sup>”, is proposed as the crucial developmental stage of the LEO Archipelago. Being a LEO-based heavy-mass lifter, rather than earth- or GEO-based, it is much less massive and therefore less costly than other proposed space-elevators. With the advent of lower-cost, higher-mass transport to orbit, the options for further space development (e.g., space solar power, radiation, and space-debris dampers, sun shades, and permanent LEO habitation) are greatly expanded. This paper provides an update of the Sling-on-a-Ring concept in terms of new materials, potential applications, and trade-offs associated with an earlier model. The impact of Colossal Carbon Tubes, CCT, a new material with high tensile strength, extremely-low density, and other favorable properties, and other new technologies (e.g., solar-powered lasers, power beaming to near-space and earth, and thermal-control systems) on the development of associated LEO-Ring systems is also explored. The material''s effect on the timeline for the system development indicates the feasibility of near-term implementation of the system (possibly within the decade). The Sling-on-a-Ring can provide a less-expensive, environment-friendly mode of access to space. This would pave the way (via eventual operation at >1000t per day by 2050) for large scale development of space-based technologies.**

### Any attempt to exploit space—through weaponization, industrialing—does not qualify as space development.

Nomura 95 **(Tamiya, Professor of Electronic Engineering University of Tokyo “Japan’s new long term vision Creating a space age in the new century,” Space Policy, February 1995, http://www.sciencedirect.com/science?\_ob=MImg&\_imagekey=B6V52-3XWRMXY-X-1&\_cdi=5774&\_user=1458830&\_pii=)[JHegyi14]**

The basic premise of space development is that it should ‘enable access to the vastness of space and use the infinite potential of space as the common property of all mankind, thereby making a full and effective contribution to the enduring prosperity of all inhabitants on earth.’ If all the concerned nations in the world can share this philosophy in carrying out their space activities, the result will be a deepening mutual understanding and trust, leading to the development and stabilization of international societies and the maintenance of world peace.

### Space development specifically refers to the development of space businesses.

SRI 09 (Space Renaissance Initiative, a non-profit organization dedicated to instituting a change in worldwide perception and policy towards space travel and utilization by increasing the monetary and human investment in space, “The Space Renaissance Manifesto,” 9-15-09, http://www.spacerenaissance.org/papers/The\_Space\_Renaissance\_Manifesto.pdf)[JHegyi14]

‘Exo-development’ means human industrial development out of Earth, while the term 'space development' was used traditionally for any space business, including the telecommunication satellites during the 40 years of use of space for Earth. Exo-development means use space for human development outside Earth, the new strategy, as Jeff Greason indicated clearly. According to David Dunlop, NSS is talking about bootstrapping the exo-development too

## Beyond The Earth’s Mesosphere

### “Beyond the Earth’s mesosphere” refers to exploration occurring 50 miles above the Earth’s surface.

WC 11(The Weather Channel- weather glossary) http://www.weather.com/glossary/m.html

The layer of the [atmosphere](http://www.weather.com/glossary/a.html#atmo) located between the stratosphere and the ionosphere, where [temperatures](http://www.weather.com/glossary/t.html#temp) drop rapidly with increasing height. It extends between 31 and 50 miles (17 to 80 kilometers) above the earth's surface.

### “Beyond the Earth’s mesosphere” must be in the thermosphere or higher

Atmospheric Chemistry Glossary 11 (Sam Houston State University, no date given) <http://www.shsu.edu/~chm_tgc/Glossary/glos.html>

In the atmosphere, the region immediately above the stratosphere and immediately below the thermosphere. The mesosphere begins about 50 kilometers high at the stratopause and ends about 80 kilometers high at the menopause. The temperature in the mesosphere decreases sharply with increased altitude.

### Beyond means “farther than”

MW 11 (Merriam Webster’s online dictionary 2011, <http://www.merriam-webster.com/dictionary/beyond?show=0&t=1308841091%3E>)

**Beyond:** on or to the farther side **:** [farther](http://www.merriam-webster.com/dictionary/farther)

### The mesosphere is an important boundary between Earth and space.

Athena 10 **(The Upper Atmosphere Wiki, “Mesosphere”, 4/26/10)** [**http://www.athena-spu.gr/~upperatmosphere/index.php/ Mesosphere**](http://www.athena-spu.gr/~upperatmosphere/index.php/%20Mesosphere)

Being the “gateway” that connects Earth’s environment and space, the mesosphere is a region of great importance in energy balance processes and a link in vertical energy transfer, as it is in these layers that great surges of energy meet: solar radiation and particles contribute to downward energy transfer, whereas gravity waves, planetary waves and tides contribute to upward energy transfer from the stratosphere. Thus this region is a boundary layer that determines the temperature and density characteristics of the surrounding layers. In addition, in a time of increased concern about global climate change, the fact that the mesosphere might act as a “canary in a coal mine”, being a sensitive indicator of global temperature change, makes its long-term study an increasingly pressing matter. Finally, the continuous and ever-increasing presence of mankind in space, and the importance of the behavior of this region to multiple issues related to aerospace technology, such as orbital calculations, vehicle re-entry, space debris lifetime etc., make its extensive study a pressing need.

### The Mesosphere is 31-53 miles up in the atmosphere

Randy Russell 2008 (has a BS in astrophysics from Michigan State University, and a masters in aerospace engineering from University of Maryland, “The Mesosphere”, July 17 2008, <http://www.windows2universe.org/earth/Atmosphere/mesosphere.html>)

This picture explains about the [mesosphere](http://www.windows2universe.org/earth/Atmosphere/mesosphere.html). The mesosphere is a layer of Earth's atmosphere. It starts about 50 km (31 miles) above the ground and goes all the way up to 85 km (53 miles) high. The layer below it is called the [stratosphere](http://www.windows2universe.org/earth/Atmosphere/stratosphere.html). The layer above it is the[thermosphere](http://www.windows2universe.org/earth/Atmosphere/thermosphere.html). The border between the mesosphere and the thermosphere is called the mesopause. Most[meteors](http://www.windows2universe.org/our_solar_system/meteors/meteors.html) burn up in the mesosphere. A type of lightning called sprites sometimes appears in the mesosphere above thunderstorms. Strange, high-altitude clouds called [noctilucent clouds](http://www.windows2universe.org/earth/Atmosphere/NLC.html) sometimes form in this layer near the North and South Poles. It is not easy to study the mesosphere directly. Weather balloons can't fly high enough and satellites can't orbit low enough. Scientists use sounding rockets to study the mesosphere. The top of the mesosphere is the coldest part of the atmosphere. It can get down to -90° C (-130° F) there! As you [go higher in the mesosphere, the air gets colder](http://www.windows2universe.org/earth/Atmosphere/mesosphere_temperature.html).

## Violation Stuff (I Think)

### **Knowledge about space policies is key to comprehending them**

Gleason, 10 (Lieutenant Colonel Micheal P. Gleason, Ph.D, "Space Policy Primer," Eisenhower Center for Space and Defense Studies, 7/24/11, http://web.mac.com/rharrison5/Eisenhower\_Center\_for\_Space\_and\_Defense\_Studies/Space\_Policy\_Primer\_files/Space%20Policy%20Primer%20022810.pdf) Hou

The purpose of this primer was to provide a quick sketch of the key paradigms that structure thinking about United States space policy; provide a brief introduction to international space law; and introduce the key actors in space policymaking and space policy implementation. It also summarized some of the key space policy issues confronting the United States. Armed with this knowledge, the reader will hopefully make it easier to comprehend the difficult space policy questions America faces.

### The biggest debate in the space community is whether to explore the moon or Mars

Sichone, 09 (Billy Sichone, MBA, Manager of Zambia’s Area Development Program, “Earth, Moon, Mars, or beyond?” 7/25/11, http://www.scribd.com/doc/53411336/Earth-Moon-Mars-or-beyond-Being-the-space-debate-of-the-times#outer\_page\_109) Hou

For some time after the conquestof space and the moon**,** people from all corners of the globe were excited and naturally wanted to see more speedy action to set up a permanent base on the moon. Movies like Star Trek (1966) and Space 1999 (of the seventies) really helped to push this agenda for humans longed to live and work in space or the lunar surface. But alas, with the passage of time, economic recessions, wars and change of governments, the euphoria was soon eclipsed by other things. For a while, people talked less about space exploration and more about improved quality of life here on the earth to the extent that people are now questioning the relevance of space exploration! The basic question is “Is space travel and exploration necessary or not?” Further still, we could put the hypothesis as “Space exploration is not necessary and sheer waste of time and resources.”! Many people today do not mince their words and simply trash the subject, including some serious policy makers in the developed world. Thus, NASA and other space agencies must continuously come up with new strategies to convince their governments to remember them, if not increase the budget allocation. With the passage of years, NASA has suffered budget cuts or reductions signaling a decline in space interest by the once enthusiastic American public. The Shuttle disasters of 1986 and 2003 both indicated that the security and safety standards were compromised in the quest to rationalize the limited resources. The Russians (especially USSR) have not done any better although they have innovatively brought in innovative ways to finance their budgets by encouraging ‘space tourism’ where individuals cough up as much as $ 20 million to get a ride into space , visiting the ISS in the process. But how sustainable and safe is this strategy? While commendable and encouraged, there is need for serious reinvestment by the already cash strapped Governments. The necessity of space exploration question has hit at the core and root of the entire adventure. But there are other issues hovering around the race to colonize the celestial bodies. There is evident fear, especially by the USA and Russia that the emerging nations will eventually overtake them in space technology and travel. At the moment, while people are focusing on Mars, there is a possibility that the Chinese, Japanese or Indians will swiftly outwit them to the moon, set up a permanent base and colonize large chunks of territory that has valuable mineral deposits. We shall dwell on this issue in more detail in a later chapter but suffice it to say that new ‘space race entrants’ are threatening to change the rules of how space exploration and exploitation is handled. Coupled with this is the concern of increasing space junk now crowding the planet making it dangerous for future space crafts. There is still another issue**:** The Earth and its inhabitants. As the planet has progressively become crowded, the resources are reducing in an inversely proportional manner. In keeping with what Malthus of old once postulated, the 6+billions earth inhabitants pose a greater pressure on the world’s meager and limited resources. Today, very few have good quality life, let alone access to good clean and hygienic water. The evolution of human settlements, technological development, improved travel and communication all have a telling effect on how people live and conduct business. A decision that once took many months to make can now be done within seconds at the click of the mouse. Thus, the argument is: “Why waste so much tax dollars on space exploration when myriads, yea, countless souls go to bed hungry? Why take billions to “empty space” when the money could have been profitably channeled to save a dying child somewhere in Africa or Asia?” These are not small questions which must be trivialized but given due attention. This book however is not primarily about justifying this position or other but will touch on some of these areas with a view to stimulate debate. Manned space flights, whilst being exciting and motivating have proved far too costly to maintain. To keep people safe and sound up there in space for any extra hour costs thousands of Dollars because each movement must be meticulously monitored both from space and on the ground (Mission control centre). For instance, to keep a space shuttle one day longer in space entails over a million dollars gobbled. Thus, a fourteen day voyage will suck in many millions. Imagine that same amount was channeled towards President Obama’s Health care plan, things would be far better. There is also another side to this question that begs answering-the safety of the astronauts or cosmonauts. Why hazard their lives when a machine would do as well if not far much better. Why keep a human suspended for over three months in the orbiting space station when a robotic satellite could have equally done equally at a cost effective rate? Robots can carryout most experiments was as well as humans, provided they are designed and programmed to do that. Look at the Mars Rovers (Opportunity and Spirit), they did a fantastic job while they lasted. Can’t we just improve on this and do much better at a far cheaper price? They well ‘geologists’ par excellence. Environmental degradation and its attendant effects are also another point of contention though to a lesser degree. As the planet plunges into peril resulting from the continued indiscriminate reckless anthropogenic activity, there is an increase in concern surrounding pollution matters (air, water, dust, noise etc) because the equilibrium that enables the earth to renew itself has been over stretched by far. The planet is now giving its back lash as seen in rising global temperatures and sea tide, erratic weather pattern, frequent natural disasters, increased disease burden among many others. Thus, voices of concern are heard from across the globe relating to the pollution resulting from frequent rocket flights through the atmosphere, although the other school argues that this degradation is minimal, if not negligible. To the contrary, most spacecrafts use Liquid Hydrogen, deposit chlorine which significantly pollutes the atmosphere in the long run. The other issue worth pondering over involves agreed space pundits who do not for a moment question the need for space exploration. They think and know it is crucial both for the present and future generations. For instance, should the earth become overcrowded some day, part of this population can be safely and conveniently “exported” to another world, allowing the earth to recover and regenerate itself. However, this group is in two camps as to where to go next. The first group argues that humans have “unfinished business” with the moon, to colonize and exploit it. They contend that the thrill of walking on lunar surface is alive still and must be pursued from where the Apollo project left off in 1973. They further contend that a permanent moon base must be established by as early (or is it “late” because Man should have been resident there by 1999)as 2020-24. There is considerable debate around the time line and frame. They further argue that the moon could be a powerful outpost for interplanetary travel. A space craft could take off from earth, visit the space station (or by pass it), land on the moon to refuel, refresh and then hurtle out into deep space. This looks perfectly reasonable, they argue, not mentioning the mining and exploration prospects on the planet terrain! The second group of space farers asserts that the moon is “boring” and not as exciting as it once was. There is need for a new thrill, Mars! They argue this for several reasons which include the following: The Planet holds more promise for some potential organic life form. Secondly, the planet probably closest resembles the earth in terms of features and conditions. The polar caps most likely have ice of some sort while the terrain shows evidence of having had liquid flowing on its surface, not forgetting the winds there. They further argue that the planet is not too far out in space and humans can safely make around trip, given the right technology and positioning. In that way, more can be learnt and planet colonization can progress hence. They also argue that a lot of research has already gone into surveying the planet and much already is known unlike the moon. Lastly, they argue that going back to the moon will be like “reversing” instead of driving full speed ahead. Why spend valuable scarce resources on a ‘dead rocky body’ when there is one that holds more promise? After all, Mars would be a more reasonable “stopover” base in the quest to conquer the outer reaches of space rather than the moon. In other words, they argue that Mars should be a “one stop shop” where space farers can get all they need to survive on the planet or on their interplanetary travel. They postulate that massing resources on one planet is better than slicing resources thinly all over the solar system. The debate rages on endlessly. We scarcely have time to talk about atmospheric pollution, space junk and a whole host of other interesting issues of our times. Thus, in coming to handle this amazing subject, we must bear in mind the touchy points raised above and many others that have not been documented here. Having dealt with some issues, it is fitting to give a birds’ eye view of the issues that have generated such debate and contention across the world. We shall briefly consider them one after the other.

### Space terminology is defined differently for policy makers than scientists

Williamson, 02 ((Mark Villiamson, Space Technology Consultant, "Space Terminology - Agreement and Dissemination," 7/25/11, http://www.sciencedirect.com.turing.library.northwestern.edu/science/article/pii/S0094576501001965) Hou

One of the most difficult aspects of compiling a dictionary of terms is deciding what to include and what to omit. There are probably as many opinions on the possible content as there are interested parties, since everyone has slightly different interests and often very different backgrounds and knowledge of space technology. Since space technology is, in essence, a technical subject there is no denying that many of the definitions will be technical in nature, which means science and technology based. However, the wide variety of potential users of a dictionary must be recognized at all stages; they will represent an equally wide variety of needs and expectations of the content of the dictionary. At one end of the “user spectrum”, there are space scientists, engineers and technologists whose daily work involves the use of space terminology, often in a very narrow field but sometimes in a wider sense. At the other end of the user spectrum are the practitioners on the periphery of the technology, not directly involved in its development, but concerned with its applications, its effects and occasionally its abuse. This latter group includes space policy makers, politicians, space lawyers, educators, journalists and marketing personnel, to name a few examples. The most important barrier to agreement on the scope of definitions is the fact that, by and large, there is no significant coordination between interested parties and no obvious, formal mechanism for the agreement of the scope and content of the definitions. To put it another way, the disparate interest groups are not talking to each other.

### **Standard definitions are essential**

Williamson, 02 ((Mark Villiamson, Space Technology Consultant, "Space Terminology - Agreement and Dissemination," 7/25/11, http://www.sciencedirect.com.turing.library.northwestern.edu/science/article/pii/S0094576501001965) Hou

Given that sufficient practitioners recognize the need for a unified structure to the database and a standard form of definitions, one remaining problem is obtaining agreement on the scope and form of those definitions. Most would agree that a mechanism for this agreement is required; some would no doubt argue that it already exists as part of the ongoing compilation of the multilingual terminology database. However, it is debatable that agreement within the MTDB committee is representative of agreement throughout the spectrum of potential database users. It would be interesting, for instance, to know the relative proportions of technical and non-technical users on that committee.. There is a danger that a number of user groups are working in parallel with no formal mechanism for coordination. It is time to consider a mechanism for coordination of our disparate requirements and for the dissemination of our respective conclusions. Perhaps more importantly, it is time to consider the dissemination of the database itself. Agreement on the definition of terms is not optional, it is essential. If the MTDB is not based on agreement across the spectrum of potential users, it will be nothing more than a narrow, academic exercise. It follows, therefore, that the energy and dedication devoted to compilation should be matched by an equivalent amount for agreement and dissemination.

### **Procedure requires NASA to specifically define all parts of tasks**

NASA 07 (National Aeronautics and Space Administration, “NASA Procedural Requirements,” NPR http://nodis3.gsfc.nasa.gov/npg\_img/N\_PR\_7123\_001A\_/N\_PR\_7123\_001A\_\_AppendixF.pdf, 7/26/11) Hou

Tailoring specific tasks requires definition of the depth of detail, level of effort, and the data expected. Tailoring is performed to both breadth and depth based on the project and specific phase of the life cycle. "Tailoring in breadth" deals with factors that can include types and numbers of systems impacted by the development of a new subsystem, the numbers and types of assessments, and numbers and types of reviews. "Tailoring in depth" involves decisions concerning the level of detail needed to generate and substantiate the requirements. The depth of the SE effort varies from project to project in relation to complexity, uncertainty, urgency, and the willingness to accept risk.

### “In the box” thinking is key to decision making

Bandrowski 09 (James, *Jim Bandrowski*, president of Strategic Action Associates, is a consultant, facilitator, keynote speaker, and author who is internationally known, “Thinking Outside The Box”, 2009, <http://pbmo.wordpress.com/2011/04/11/thinking-outside-the-box/>)

What is encompassed by the words ‘inside the box’ is analogous with the current, and often unnoticed, assumptions about a situation. Creative thinking acknowledges and rejects the accepted paradigm to come up with new ideas. On the other hand, the process of thinking ‘inside the box’ need not be construed in a pejorative sense. It is crucial for accurately parsing and executing a variety of tasks — making decisions, analyzing data, and managing the progress of standard operating procedures, etc.

### Precise language key to scientific discussions

UNC 07(University of North Carolina Writing division, “Writing in the Sciences”, 2007, <http://www.unc.edu/depts/wcweb/handouts/sciences.html>) Connor Smith

Theories in the sciences are based upon precise mathematical models, specific empirical (primary) data sets, or some combination of the two. Therefore, scientists must use precise, concrete language to evaluate and explain such theories, whether mathematical or conceptual. Here are a few strategies for avoiding ambiguous, imprecise writing:

### Nasa takes part in an extensive amount of missions – limits are especially significant on this topic

NASA 10(National Aeronautics and Space Administration, “About NASA,” 2/1/10)

http://www.nasa.gov/about/highlights/what\_does\_nasa\_do.html,

NASA Today NASA conducts its work in four principal organizations, called mission directorates: Aeronautics: pioneers and proves new flight technologies that improve our ability to explore and which have practical applications on Earth. Exploration Systems: creates capabilities for sustainable human and robotic exploration. Science: explores the Earth, solar system and universe beyond; charts the best route of discovery; and reaps the benefits of Earth and space exploration for society. Space Operations: provides critical enabling technologies for much of the rest of NASA through the space shuttle, the International Space Station and flight support. In the early 21st century, NASA's reach spans the universe. Spirit and Opportunity, the Mars Exploration Rovers, are still studying Mars after arriving in 2004. Cassini is in orbit around Saturn. The restored Hubble Space Telescope continues to explore the deepest reaches of the cosmos. Closer to home, the latest crew of the International Space Station is extending the permanent human presence in space. Earth Science satellites are sending back unprecedented data on Earth's oceans, climate and other features. NASA's aeronautics team is working with other government organizations, universities, and industry to fundamentally improve the air transportation experience and retain our nation's leadership in global aviation. The Future NASA is making significant and sustained investments in: Transformative technology development and demonstrations to pursue new approaches to space exploration, including heavy-lift technologies; Robotic precursor missions to multiple destinations in the solar system; U.S. commercial spaceflight capabilities; Extensions and increased utilization of the International Space Station; Cross-cutting technology development in a new Space Technology Program; Climate change research and observations; NextGen and green aviation; and Education, including focus on Science, Technology, Engineering and Math (STEM).

# \*\*\*AFFIRMATIVE\*\*\*

## Substantially Increase

### Space mining costs $100 billion

Lee 09, (Ricky J. Lee, PhD from Murdoch University, “Creating a Practical Legal Framework for the Commercial Exploitation of Mineral Resources in Outer Space,” 7/22/11, http://researchrepository.murdoch.edu.au/1665/2/lee02Whole.pdf) Hou

It is not difficult to anticipate the estimated costs involved in **a space mining venture**, regardless of whether the venture is by its nature, commercial or governmental. Kargel had suggested that a typical asteroid mining venture **could require** a capitalization of at least U.S**. $100 billion**, presumably at 1996 values when his analysis was conducted.

### Asteroid detection costs over 1 billion dollars

Daily Planet Media 07 (“Billion dollars to track deadly asteroids”, 2007, <http://www.dailyplanetmedia.com/more_stories.php?id=4470&mode=10>)

An asteroid-hunting space telescope could go a long way toward playing catch-up and reaching the survey goal by 2022, but at the hefty cost of more than $1 billion. Even if scientists spot a looming asteroid threat, few immediate solutions exist. The NRC runs down past proposals that range from "slow push" or "slow pull" gravity tractors to small kinetic collisions by spacecraft that could nudge a space rock off course -- assuming that there's decades to spare. But only nuclear explosions stand ready as the current practical means for dealing with the biggest threats in the form of space rocks greater than 1 km in diameter.

### NASA needs an additional 1 billion dollars to make detection possible

Daily Planet Media 07 (“Billion dollars to track deadly asteroids”, 2007, <http://www.dailyplanetmedia.com/more_stories.php?id=4470&mode=10>)

NASA needs an additional $1 billion in funding over the next 15 years to attain its goal of cataloguing all potentially threatening asteroids. Today NASA's Near Earth Object Program is aware of and tracking 6,691 objects.

### Asteroid detection systems cost up to $2 billion

**Matheny 07,** (Jason G. Matheny, Ph.D. Applied Economics, Johns Hopkins University, "Reducing the Risk of Human Extinction," 7/22/11, http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full) Hou

**A system to detect all large, near-Earth asteroids would cost between $300 million and $2 billion** ([Chapman, 2004](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#b10); [NASA, 2006](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#b57), pp. 251–254), while a system to deflect large asteroids would cost between $1 and 20 billion to develop ([Gritzner, 1997](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#b25), p. 156; [NASA, 2006](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#b57), pp. 251–254; [Sommer, 2005](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#b75), p. 121; [Urias et al., 1996](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#b78)).[13](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#fn13) Suppose a detect-and-deflect system costing a total of $20 billion would buy us a century of protection, reducing the probability of an extinction-level impact over the next century by 50%.[14](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#fn14) Further suppose this cost is incurred even if the deflection system is never used, and the system offers no benefit besides mitigating extinction-level asteroid impacts.[15](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#fn15) Then the cost effectiveness of the detect-and-deflect system is $20 billion/8 billion life-years = $2.50 per life-year.

### Asteroid deflection systems cost up to $20 billion

Matheny 07**,** (Jason G. Matheny, Ph.D. Applied Economics, Johns Hopkins University, "Reducing the Risk of Human Extinction," 7/22/11, http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full) Hou

A system to detect all large, near-Earth asteroids would cost between $300 million and $2 billion ([Chapman, 2004](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#b10); [NASA, 2006](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#b57), pp. 251–254), while a system to deflect large asteroids would cost between $1 and 20 billion to develop ([Gritzner, 1997](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#b25), p. 156; [NASA, 2006](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#b57), pp. 251–254; [Sommer, 2005](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#b75), p. 121; [Urias et al., 1996](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#b78)).[13](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#fn13) Suppose **a** detect-and-**deflect system costing a total of $20 billion** would buy us a century of protection, reducing the probability of an extinction-level impact over the next century by 50%.[14](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#fn14) Further suppose this cost is incurred even if the deflection system is never used, and the system offers no benefit besides mitigating extinction-level asteroid impacts.[15](http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2007.00960.x/full#fn15) Then the cost effectiveness of the detect-and-deflect system is $20 billion/8 billion life-years = $2.50 per life-year.

### Space Colonization costs $182 billion

Benford, 00 (Gregory, [astrophysicist](http://en.wikipedia.org/wiki/Astrophysicist) who is on the faculty of the Department of Physics and Astronomy at the [University of California, Irvine](http://en.wikipedia.org/wiki/University_of_California,_Irvine), “Spacelife,” <http://free-ebookslink.com/ebooks/English%20Ebooks/English%20Novals%20Ebooks/B/Benford,%20Gregory/Gregory%20Benford%20-%20Skylife.pdf>, 7/23/11) Hou

Historical parallels abound. The immigrants of the Mayflower and the Mormons who moved to Utah came with about two tons per person of investment goods. Freeman Dyson in Disturbing the Universe argued that these are better societal models for **space colonization** than the O'Neill notion of totally planned homes. O'Neill's detailed "Island One" **project would cost about $96 billion in 1979 dollars,** and perhaps **twice that today**. Clearly, such a project would be so massive that only governments could run it. As Dyson remarked, "[Government] can afford to waste money but it cannot afford to be responsible for a disaster."

### A substantial increase is defined as $99.8 million

Nye, 11(Joseph S. Nye, [Ph.D.](http://en.wikipedia.org/wiki/Ph.D.) in political science from Harvard, “Final Frontier Week Part 2: The President’s Budget and Earth Observation Satellites,” 7/24/11, http://www.cnas.org/blogs/naturalsecurity/2011/02/final-frontier-week-part-2-president-s-budget-and-earth-observation-sa)

To better integrate the interagency Landsat program, the Obama administration’s new budget would create a new account for it, and it requests [$99.8 million dollars for FY 2012](http://www.doi.gov/budget/2012/12Hilites/BH051.pdf) – a noticeable increase from the $59.6 million Landsat is slated to receive this year. In addition to maintaining the two current satellites, [Landsat-5](http://landsat.gsfc.nasa.gov/about/landsat5.html) and [Landsat-7](http://landsat.gsfc.nasa.gov/about/landsat7.html), this funding increase will help ensure the viability of the Landsat program in the years to come. For instance, the administration is requesting $13.4 million towards operations for Landsat-8, a mission that is set to launch in December 2012, as well $48 million for planning the Landsat-9 mission. The [Landsat Data Continuity Mission (LDCM)](http://landsat.usgs.gov/about_ldcm.php), which Landsat-8 and Landsat-9 are together called, will replace the current satellites in providing continuous earth imagery

## ITS

### Relation to NASA qualifies as an agent to “its”

Merriam-Webster(No date given) **(Dictionary, “Its – Definition and more from the free Merriam-Webster dictionary”, http://www.merriam-webster.com/dictionary/its?show=0&t=1311124111)**

Definition of ITS: of or relating to it or itself especially as possessor, agent, or object of an action

### The plan just has to be associated with NASA to be “its”

Oxford Dictionary **(No date given) (Dictionary, “definition of its from Oxford Dictionaries Online”, http://oxforddictionaries.com/definition/its?region=us)**

possessive determiner: belonging to or associated with a thing previously mentioned or easily identified

### NASA already takes part in commercial development – the lines are blurred

Moskowitz, 11 (Clara, she is a senior writer for both Space. com and LiveScience, “55 Space Leaders to Congress: Support Private Spaceflight Now”, [www.space.com](http://www.space.com), no date given)- [S/N]

<http://www.space.com/11021-nasa-budget-congress-commercial-spaceflight.html>

A group of more than 55 space leaders is petitioning Congress to support commercial spaceflight in an open letter this week. The plea comes as lawmakers are debating a new federal budget, including the question of [how much money to devote to NASA](http://www.space.com/11008-nasa-chief-space-budget-congress.html). President Obama and NASA chief Charlie Bolden are advocating for more funds to spur the development of private spaceships to replace the iconic space shuttle as the flagship of U.S. astronaut transportation to the International Space Station. That plan, they say, would allow NASA to invest in a longer-term project to build a rocket that can carry astronauts beyond low-Earth orbit to asteroids and Mars. But some members of Congress want NASA to spend less on commercial spaceflight and divert those funds to building its own next-generation spacecraft. [[What Obama and Congress Should Do for Spaceflight](http://www.space.com/10985-obama-congress-space-exploration-budget.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed:+spaceheadlines+%28SPACE.com+Headline+Feed%29)]

### NASA depends on private suppliers but that is a part of government development – and it is validly distinct from commercial development that NASA might support

**Space Island Group, 11** – (Space Island Group is a space, research, commerce, and tourism company , “Vehicles & Launch Systems,” no date given) [S/N]

<http://www.spaceislandgroup.com/vehicles-systems.html>

As a government agency, NASA is prohibited from operating a commercial enterprise. Their mandate is to develop the hardware, then let private industry take over. But the firms that built the shuttles and ETs for NASA, the space divisions of Boeing and Lockheed Martin, only work on government-funded projects. They have no contact with commercial companies who could buy or lease these shuttles and stations. Their design, construction and purchasing procedures, geared to complex government requirements and very small production runs, can't mass-produce the dozens of shuttles and thousands of ETs this project will need. Our management structure will have far more in common with the auto and computer industries than with the defense industry.

### Ownership creates a fine line - government development means the government has complete ownership of what is being developed – even if private contractors construct it.

Bennett 10 ( He is a leading expert on the space policymaking environment, as the President of Wyoming Aerospace LLC, Laramie, WY which specializes in space regulatory, policy and business subcontracting support primarily to entrepreneurial start-ups in the space, IT, and medical telecommunications fields, “Space: Britain’s New Frontier,” 10/7/10)- [S/N]

http://www.economicpolicycentre.com/wp-content/uploads/2010/10/SPACE-Britains-New-Frontier.pdf

The initial model of space development and operations -- the classic Space Race of the late 1950s and 1960s – was one of government financing, development, ownership, and operation of all space assets, although private contractors in the USA and UK performed the bulk of the actual technical work. This model was natural, given the military origins of the technology, and the fact that most real (as opposed to symbolic) uses of spaceflight were military, in particular, military reconnaissance.

## Exploration

### Space exploration includes missions carried out by both human and robotic means

US space agency 2011 (Department for Business Innovation and Skills, “Exploring the universe”, 2011 http://www.bis.gov.uk/ukspaceagency/wha)t-we-do/exploring-the-universe

Space exploration is defined as the exploration using both robotic and human means of planetary destinations upon which humans could one day live and work. At present, most experts think that the feasible destinations for space exploration are restricted to the Moon, Mars and certain asteroids. It is at present hard to conceive of human missions to Jupiter, Saturn or beyond owing to the formidable challenges of providing power, food and water, long term protection from the radiation environment of deep space, and propulsion to make the missions possible within a reasonable time. The European Mars exploration programme has now been expanded to become a long-term collaboration with NASA.

### Space exploration does not need to explore with a purpose

Debate Central 11( the largest center of information for high school and policy debate, “2011-2012 Topic Overview”, 2011,<http://debate-central.ncpa.org/wp-content/uploads/2011/05/Outline-of-Space-Topic2.pdf>)

The historical record offers a rich set of examples of what we call exploration: Christopher Columbus sailing to the New World, Roald Amundsen driving his dogs towards the South Pole, and Neil Armstrong stepping into the soft dust of the Moon. Yet these examples illustrate the difficulty in pinning down exploration as an activity. If we define exploration as travel through an unfamiliar area in order to learn about it we exclude Columbus, whose discovery was serendipitous rather than purposeful. We would also have to exclude Amundsen and Armstrong, and indeed many of the pantheon of explorers, who tended to dash across new terrain rather than investigate it

## Development

### Activities related to research or space infrastructure are space development.

Journal of Space Law 07 (“Journal of Space Law Vol. 33,” University of Mississippi School of Law, Summer 2007, http://www.spacelaw.olemiss.edu/JSL/Back\_issues/JSL%2033-1.pdf)[JHegyi14]

- Article 2 defines several terms. Space development is defined as (i) research and technology development activities related to design, production, launch, operation, etc. of space objects or (ii) use and exploration of outer space and activities to facilitate them.

### \_\_\_(launch vehicles, SBSP, space tourism, communication satellites, space transportation systems) is development

Hsu and Cox 09 (Feng, NASA GSFC Sr. Fellow, Aerospace Technology Working Group and Ken Founder & Director, Aerospace Technology Working Group, “Sustainable Space Exploration and Space Development: A Unified Strategic Vision” An Aerospace Technology Working Group White Paper, 3-29-09, http://www.spacerenaissance.org/papers/A-UnifiedSpaceVision-Hsu-Cox.pdf­) [JHegyi14/Nikhil]

Even with adequate reform in its governance model, NASA would not be the right institution to lead or manage the nation’s business in Space Development projects. Human space development activities, such as creation of affordable launch vehicles, RLVs, space-based solar power, space tourism, communication satellites, and trans Earth or trans-lunar space transportation infrastructure systems are primarily commercial development endeavors that are not only cost-benefit-sensitive in project management, but also subject to fundamental business principles related to profitability, sustainability, and market development.

### Space development includes gathering knowledge or information, uses humans or technology.

KBS World ’05 **(KBS WORLD Radio, the voice of Korea, is the nation's sole foreign language promotional broadcaster, “S. Korea Eying Global Top 10 in Aerospace Industry”, KBS World, August 2008,** <http://rki.kbs.co.kr/english/news/news_zoom_detail.htm?No=970>**) [Hope Merens]**

Space development Space development refers to activities to increase new knowledge and information or directly benefit human life by sending people or observation equipment into outer space. Scientific aerospace development began from the latter half of the 20th century.

## And/Or

### And/or means both or one

Merriam-Webster 11 (An Encyclopedia Britannica Company, “And/or”, date not given,)

http://www.merriam-webster.com/dictionary/and/or

And/or —used as a function word to indicate that two words or expressions are to be taken together or individually

### And/or is either or both

Cambridge Dictionary 11 **(“**and/or”,date not given**)** <http://dictionary.cambridge.org/dictionary/british/and_1?q=and>

And/or- used to mean that either one of two things or both of them is possible