# Generic Impact Defense File

# \*\* A2 Aliens \*\*

## No Aliens Risk

### Aliens are not a threat, they probably don’t exist in the Milky Way and they would not harm humans if they visited Earth.

Zhu Jin, Director of the Beijing Planetarium, 2000, Global Times, “Aliens will be friendly” Global Times 11/10/10 http://beijing.globaltimes.cn/society/2010-11/590897.html

Aliens won't do harm to earthlings if they visit us one day, asserted director of the Beijing Planetarium after an awards ceremony where eight astronomy fans were granted the Worldwide Telescope (WWT) Universe Tours Competition Award at the planetarium Tuesday. "Extraterrestrial civilizations most likely exist. But the probability that they coexist with us in the Milky Way is slim," Zhu Jin, director of the Beijing Planetarium told the Global Times. "Personally I don't think they would hurt earthlings if they really come to Earth one day. Because they have to travel countless light-years to get to here, the feat itself indicates that their civilization has developed to such a degree that violence has become almost impossible," Zhu said, adding that the most probable way of making contact with other life forms is still through radio signals.

## No Aliens

### The probability of extraterrestrial life is 10 to the negative 144

Bohlin**,** Ex Dir – Probe Ministries, 2002(Raymond G., General Editor – Creation, Evolution, and Modern Science, 1997, 1998, and 2000 Research Fellow – Discovery Institutes Center for the Renewal of Science and Culture, PhD, Are We Alone in the Universe?, [www.probe.org/docs/lifemars.html](http://www.probe.org/docs/lifemars.html))

Over the last two decades scientists have begun tabulating many characteristics of our universe, galaxy, solar system, and planet that appear to have been finely-tuned for life to exist. Christian astronomer and apologist, Dr. Hugh Ross documents all these characteristics in his book Creator and the Cosmos,{3} and is constantly updating them. In the book's third edition (2001), Ross documents 35 characteristics of the universe and 66 characteristics of our galaxy, solar system, and planet that are finely-tuned for life to exist. Some examples include the size, temperature, and brightness of our sun, the size, chemical composition, and stable orbit of Earth. The fact that we have one moon and not none or two or three. The distance of the Earth from the sun, the tilt of the earth's axis, the speed of the earth's rotation, the time it takes Earth to orbit the sun. If any of these factors were different by even a few percent, the ability of Earth to sustain life would be severely compromised. Recently it has been noted that even the presence of Jupiter and Saturn serve to stabilize the orbit of Earth. Without these two large planets present exactly where they are, the Earth would be knocked out of its present near circular orbit into an elliptical one causing higher temperature differences between seasons and subjecting Earth to greater meteor interference. Neither condition is hospitable to the continuing presence of life.Ross has further calculated the probabilities of all these factors coming together by natural processes alone to be 1 in 10-166; that's a decimal point followed by 165 zeroes and then a one. A very liberal estimate of how many planets there may be, though we have only documented less than 100, is 1022 or 10 billion trillion planets, one for every star in the universe. Combining these two probabilities tells us that there are 10-144 planets in the entire universe that could support life. Obviously this is far less than one; therefore, by natural processes alone, we shouldn't even be here--let alone some kind of alien life form.

### No chance of life elsewhere in the solar system

Gurnett 2009 (Professor at University of Iowa. Experimental space plasma physics “The Search for Life in the Solar System” Trnas Am Clin Climatol Assoc. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2744519/)

In this presentation I give an overview of the long struggle to answer the age old question, does life exist anywhere else? The focus will be specifically on the search for life in the solar system, since this is the only region currently accessible to direct investigation. A hundred years ago many people believed that life, possibly even intelligent life, existed at the nearby planets Venus and Mars, and possibly elsewhere. The space age exploration of the planets has radically altered that view. We now know that Venus is a very hostile place, with no possibility for life, and that Mars is almost completely barren and very cold, with little prospect for life. The only remaining possibility appears to be in the interior of some of the moons of the outer planets where, due to an unlikely combination of factors, the conditions may be suitable for life.

### Earth-like planets are rare, so it is likely that other life doesn’t exist.

Ward and Brownlee 2000 (Ward-paleontologist and professor of Biology and of Earth and Space Sciences at the University of Washington. Brownle- a professor of astronomy at the University of Washington (Seattle) and the principal investigator for NASA's STARDUST mission. “Rare Earth: Why Complex Life is Uncommon in the Universe” Copernicus Books Google Books)

The model showed that the inbound delivery of water worked best in planetary systems where the intermediate planets, in the position of our giants Jupiter and Saturn, were far smaller. In solar systems such as our own, the efficiency of water being conveyed to the surface of an inner, Earth-like planet is relatively small. Yet in systems where the intermediate planets were much smaller-perhaps Uranus or Neptune-sized-water delivery was relatively frequent. But then another problem arises: in such a system, the rate of water-bearing comet impacts is great: the rate of asteroid impacts, however, is also so great that any evolving life might soon be obliterated. And oddly, it is not only the asteroid impacts, with their fireballs, dust storms, meteor showers, and “nuclear winters,” that cause a problem. An excess of water-bearing impacts can amount, in effect, to too much of a good thing: too much water produces planets entirely covered with water, and such an environment is not conductive to the rich evolution seen on our planet. Earth seems to be quite a gem-a rocky planet where not only can liquid water exist for long periods of time (thanks to Earth’s distance from the sun as well as its possession of a tectonic “thermostat” that regulates its temperature), but where water can be found as a healthy oceanful-not too little and not too much. Our planet seems to reside in a benign region of the Galaxy, where comet and asteroid bombardment is tolerable and habitable-zone planets can commonly grow to Earth size. Such real estate in our galaxy-perhaps in any galaxy-is prime for life. And rare as well.

### The harsh conditions of Venus and Mars indicate that the Earth is the only planet suitable for life in the solar system.

Gurnett 2009 (Professor at University of Iowa. Experimental space plasma physics http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2744519/)

In this presentation I have chronicled the long struggle to answer the basic question, does life exist anywhere else in the solar system? A century ago there were learned people who thought that there was most likely life, maybe even intelligent life, at our nearby planets Venus and Mars. The space age exploration of the planets has radically altered that view. Venus is now known to be extremely hostile to life, with a surface temperature above the melting point of lead, and almost completely devoid of water. Mars appears to be almost completely barren and in an ice age, with surface conditions that are hostile to life. These very sobering findings are, I believe, the most important scientific results of the space age. They show that Earth, with its moderate temperatures and abundant water, is indeed a very special place.

### Nearest galaxy is 2 million years away

Deem, Researcher/Specialist at Cedars-Sinai Medical Center. 6 (Rich, Aug 25, “UFO's and Extraterrestrial Aliens: Why Earth Has Never Been Visited”, http://www.godandscience.org/apologetics/ufo.html)

Have we been visited by extraterrestrial beings from elsewhere in the universe? First, I would like to eliminate the idea that we have been visited by beings located outside our own galaxy. Andromeda, the nearest galaxy to the Milky Way is 2 million light years distant. This means that if there were aliens in Andromeda, it would take them longer than 2 million years to come to earth.1 Another problem is why they would want to visit our galaxy. The Andromeda galaxy is considerably larger than our galaxy. If life were common in the universe, there should be many times more of it in Andromeda, than in our wimpy galaxy. Why would they even want to visit us? A third problem for potential aliens is detecting us. We have been sending radio waves for less than 100 years. It will be another 2 million years before those signals reach our closest neighboring galaxy. The light (and other electromagnetic signals) that they now see represent the way the earth looked 2 million years ago. Beings in other galaxies would have no way of knowing that advanced life forms existed in our galaxy.

### No physical evidence

Deem, Researcher/Specialist at Cedars-Sinai Medical Center. 6 (Rich, Aug 25, “UFO's and Extraterrestrial Aliens: Why Earth Has Never Been Visited”, http://www.godandscience.org/apologetics/ufo.html)

UFO believers would ask about Roswell, UFO sightings and alien abductions. The problemI havewith the whole Roswell/government conspiracy thing is that there is not one piece of physical evidence. The government has never been able to keep any kinds of secrets - much less over a period of 40 years**.** Regarding abductions, none of the people involved have been shown to have any signs of tampering, which would be readily apparent by MRI**.**

### Probability is virtually zero that aliens exist

Deem, Researcher/Specialist at Cedars-Sinai Medical Center. 6 (Rich, Aug 25, “UFO's and Extraterrestrial Aliens: Why Earth Has Never Been Visited”, http://www.godandscience.org/apologetics/ufo.html)

This paper has shown thatthe probability of aliens visiting the earth is virtually zero. Potential aliens in other galaxies are too far away to detect our presence **(**since radio signals will not reach them for millions of years) and the travel times make intergalactic travel impractical**.** Recent scientific studies demonstrate that the universe is much less hospitable to life than it would seem from our uniqueSolar System andplanet**.** A large proportion of our galaxy is uninhabitable. Parts of it would not even be expected to produce rocky planets. The highly unlikely collision that produced our large moon prevented the earth from being a waterworld.5 It also ejected the majority of our primordial atmosphere, which prevented the earth from going through a runaway greenhouse effect similar to what happened to Venus, our sister planet. Finally, our Solar System is unique in that it has large gas giants located only in the outer regions. Other systems discovered have gas giants located either near their star or in both inner and outer regions of their planetary system. The presence of gas giants near the star would eject any rocky planets from orbit. The presence of gas giants in the outer region of planetary systems is absolutely necessary for the survival of advanced life forms. Without Jupiter, the number of catastrophic collisions that the earth would experience would be at least 10,000 times greater. So instead of suffering massive species extinction events every 100 million years, the earth would experience these events every 10,000 years.6 Only bacteria and other simple life forms would be able to survive this kind of bombardment **-** no advanced life could ever form in the vast majority of planetary systems. These problems indicate that there would be no more than 150 advanced civilizations within our galaxy - and, more likely, we are completely alonein our galaxy**.** Interstellar space travel is much more difficult than indicated in movies and television series, such asStar Trekand Star Wars and the like. First**,** it is not possible to travel at speeds greater than the speed of light - the physics of the universe prevent it.Second**,** traveling near the speed of light is impractical for biological organisms. Collisions with particles even the size of a grain of sand would be catastrophic**.** An even worse problem is that the light from ordinary stars would be blue-shifted all the way to the gamma end of the spectrum when traveling near the speed of light. These gamma rays would destroy all biological life - even if it were in suspended animation (if that were possible)**.** Inessence**,** these problems would restrict the speed of travel to well below the speed of light. The most optimistic estimate for the presence of extraterrestrial civilizations would put them 2000 light years apart. With no intermediate habitable stopping points, space travel over this distance would be impractical. So, even if we are not alone in this galaxy, it would be highly unlikely that any extraterrestrial civilization could have visited us. What about all the "evidence" for extraterrestrials and UFOs? See the links below for more information.

## **A2 Area 51**

### Area 51 employees break silence – no aliens or UFOs

Lacitis, Seattle Times staff reporter, 10 (Erik, March 27, “Area 51 vets break silence: Sorry, but no space aliens or UFOs “< http://seattletimes.nwsource.com/html/localnews/2011461015\_area51vets28m.html)

The secrets, some of them, have been declassified. Noce, 72, and his fellow Area 51 veterans around the country now are free to talk about doing contract work for the CIA in the 1960s and '70s at the arid, isolated Southern Nevada government testing site. Their stories shed some light on a site shrouded in mystery; classified projects still are going on there. It's not a big leap from warding off the curious 40 or 50 years ago, to warding off the curious who now make the drive to Area 51. The veterans' stories provide a glimpse of real-life government covert operations, with their everyday routines and moments of excitement. Noce didn't seek out publicity. But when contacted, he was glad to tell what it was like. "I was sworn to secrecy for 47 years. I couldn't talk about it," he says. In the 1960s, Area 51 was the test site for the A-12 and its successor, the SR-71 Blackbird, a secret spy plane that broke records at documented speeds that still have been unmatched. The CIA says it reached Mach 3.29 (about 2,200 mph) at 90,000 feet. But after September 2007, when the CIA displayed an A-12 in front of its Langley, Va., headquarters as part of the agency's 60th birthday, much of the secrecy of those days at Area 51 fell away. Advance warning to UFOlogists: Sorry, although Noce and other Area 51 vets say they saw plenty of secret stuff, none make claims about aliens.

## **A2 Abductions**

### Alien Abductions are explained by sleep paralysis and waking hallucinations

Shermer, Adjunct Professor at Claremont Graduate University, ‘05

(Michael Shermer, February, “Abducted!”, Scientific American;, Vol. 292 Issue 2, p34, EBSCOhost 6-23-11 BLG)

The most likely explanation for alien abductions is sleep paralysis and hypnopompic (on awakening) hallucinations.Temporary paralysis is often accompanied by visual and auditory hallucinations and sexual fantasies, all of which are interpreted within the context of pop culture's fascination with UFOs and aliens.McNally found that abductees "were much more prone to exhibit false recall and false recognition in the lab than were control subjects," and they scored significantly higher than normal on a questionnaire measuring "absorption," a trait related to fantasy proneness that also predicts false recall. My abduction experience was triggered by sleep deprivation and physical exhaustion. I had just ridden a bicycle 83 straight hours and 1,259 miles in the opening days of the 3,100-mile nonstop transcontinental Race Across America. I was sleepily weaving down the road when my support motor home flashed its high beams and pulled alongside, and my crew entreated me to take a sleep break. At that moment a distant memory of the 1960s television series The Invaders was inculcated into my waking dream. In the series, alien beings were taking over the earth by replicating actual people but, inexplicably, retained a stiff little finger. Suddenly the members of my support team were transmogrified into aliens. I stared intensely at their fingers and grilled them on both technical and personal matters.

### “Alien Abduction” victims are lying- either for money or psychological reasons

Holden and French University of London, UK ‘02 (Katharine J, Christopher C. Cognitive Neuropsychiatry 2002, 7 (3) 163-178 “Alien Abduction Experiences: Some Clues from Neuropsychology and Neuropsychiatry” EBSCOhost 6-23-11 BLG)

Uninformed sceptics often assert that alleged alien abductees are simply lying about their experiences**.** The assumed motivations are financial, in that claimants may make money from books and film rights**.** They are also psychosocial, in that the abductee may become a celebrated case, appear at conferences and on talk shows, and generally have opportunities that would otherwise not be available to them. However, as Appelle (1996) points out, in the vast majority of cases abductees do not go public and although some cases may indeed be deliberate hoaxes, most informed sceptics generally accept that the majority of claimants are sincere in their beliefs. If abductees are not deliberately deceiving other people, is it possible that they really were abducted by aliens? This seems highly unlikely, as the evidence presented in support of alien visitation is far weaker than uncritical and sensationalist media coverage typically implies**.** Even such celebrated cases as the alleged crash of a flying saucer and recovery of alien bodies near Roswell, New Mexico, in 1947 are in fact based on incredibly weak evidence (see, e.g., Klass, 1997; Korff, 1997). Assuming that abductees are not deliberately deceiving others about their experiences and also assuming that they are almost certainly wrong in thinking that they really have had a close encounter with an alien, the question arises of how one is to account for their claims. A review of the literature reveals that a number of different approaches to answering this question have been adopted. One approach involves focusing on the personalities of abductee claimants and exploring factors such as levels of fantasy proneness (e.g., Bartholomew, Basterfield, & Howard, 1991; Bartholomew & Howard, 1998; Newman & Baumeister, 1996; Ring & Rosing, 1990; Rodeghier, Goodpaster, & Blatter- bauer, 1991; Spanos, Cross, Dickson, & DuBreuil, 1993), boundary-deficit personality (e.g., Parnell & Sprinkle, 1990; Ring & Rosing, 1990), escape-from- self and masochistic fantasies (e.g., Newman & Baumeister, 1996), and the psychically sensitive personality (e.g., Johnson, 1994). Others have viewed alien abduction experiences as the product of biased investigators (e.g., Klass, 1988; 166 HOLDEN AND FRENCH Matheson, 1998). Finally, some researchers have considered the claims of alien abductees in terms of possible clues from the fields of neuropsychology and neuropsychiatry. The focus of this paper is on the latter**.**

## **Won’t Visit**

### Aliens will not visit Earth-theories of evolution prove.

Kent 05 (Director of mathematics at Darwin College and reader in quantum physics “Too Damned quiet?” pg.4 Perimeter Institute)

Now, it could be that cosmically conspicuous life, or life capable of interstellar travel, or even just life, has evolved nowhere but on Earth. It could also be that, although cosmically conspicuous life has evolved independently at many locations in the cosmos, its evolution is relatively rare, and it generally survives for relatively short periods, so that creatures originating in different cosmic habitats should expect rarely, if ever, to encounter evidence of one another. This has often been suggested, on the grounds that lifeforms are unlikely to become cosmically conspicuous until they develop radio technology, and that our own example suggests that once intelligent lifeforms reach this level they are likely very soon to acquire massively destructive weapons and (it is argued) will proceed quickly to bring about their own extinction. Another possibility, often considered in science fiction, is that the cosmos is teeming with intelligent species, who roam far and wide, but are careful to ensure that we are unable to infer their existence, perhaps because they have decided not to interfere with our development.

## **Won’t Contact**

### **Aliens won’t contact us-they are afraid**

Steve French is a writer on many different research on aliens- Blogz.org [“Alien Contact, Why We Aren’t Ready” 6-24-08 http://blogz.org/Blog344238-Alien-Contact-Why-We-Are-Not-Ready.htm

Whether or not you believe in aliens, ufos or life on other planets, it does not matter. Just about every person has asked at some time or another in their life, if aliens are real then why haven't they contacted us? I've heard this question a dozen or more times, I've asked myself the same question in moments of doubt in regards to the possibility of intelligent life existing on other planets. It's not an unreasonable question. It's also one worth contemplating various theories for. My theory is, why would aliens want to contact us? It's kind of like this, if a new family moves into your neighborhood you might get the idea to go over to their house and introduce yourself. If however upon your arrival you should dåiscover there is evidence of domestic violence and / or drug abuse taking place in said home, you'll probably quickly turn around and walk away hoping no one saw you stopping by. We as a race in general do not like ourselves or each other. The proof is in the endless violence and killing, we hunt animals to extinction, we pollute our environment, we continuously find reasons to fight. After all our evolution and supposed advances in science and technology we fail to find a method for establishing peace, our leaders spend billions of dollars each year developing bigger, better newer and more creative methods of fighting wars. Is it possible we could perhaps instead spend all that money trying to find methods of creating peace and harmony? Nope. I know it's an dumb question. Aliens probably wouldn't like us, we probably wouldn't like them either. Until we can get along with ourselves and each other, Aliens most likely wont want to try and get along with us either. Maybe It's not that they haven't made contact, it's that they are simply just giving us the cold shoulder.

### Life does not exist in the same density as humans – that’s why we can’t communicate

Lord Ashtar, 2004 (August 19, 2004, “Our Fleets Are In Position, Ready Yourselves” Brother Veritus, <http://www.luisprada.com/Protected/ashtar_command_mission.htm>, accessed 6/27/11, SL)

That Earth scientists have not found physical life in the remaining worlds of our Solar system is due to Earth being the only planet where life unfolds in such dense levels. Other worlds do have life, but in finer and subtler bodies, which impedes the perception and visibility at the level of the apparatuses and technological systems with which you count on. Also,dimensions of a higher level to the ones of this planet cannot be contacted with the eyes of the flesh. Life there passes unnoticed to you and, when you try to know this with your scientific apparatuses, it is as if you want to photograph smoke. (The worlds you see in the Third Dimension are like the "shells" left by worlds already opened to levels of superior life.)

## **Aliens Dangerous**

### **Alien contact would be too risky and unlikely**

Ki Mae Heussner is a writer for the science and technology section in ABC News- ABC News [“Stephen Hawking: Alien Contact Would Be Too Risky” 5-26-10v http://abcnews.go.com/Technology/Space/stephen-hawking-alien-contact-risky/story?id=10478157

"Such advanced aliens would perhaps become nomads, looking to conquer and colonize whatever planets they can reach," Hawking said.Humans Only Recently 'Tapped Into Our Cosmic Neighborhood' But don't start worrying quite yet. It's unlikely that those traveling troublemakers will visit us anytime soon, said space watchers. Jill Tarter, director of the Center for SETI (Search for Extraterrestrial Life) Research at the SETI Institute, said that her center uses radio telescopes and optical telescopes to listen for signals of technology from extraterrestrial life. So far, after more than 40 years, there has not been a peep. She said SETI's technology is advanced enough that it can detect signals from up to 1,000 light-years away. There are about one million stars in that zone. A signal could have been sent 1,000 years ago, before that civilization had any knowledge of Earth.Scientists Search for Extraterrestrial Life But she said that as humans have leaked radio and television broadcasts into space over the past 100 years, it's possible that other planets could be monitoring Earth."It's quite reasonable that we might be on someone's transmission list," she said.She emphasized, however, that though it's an effort worth considering, SETI doesn't actively transmit messages to space. So far, it has only listened."The question of whether or not we should transmit is a question that deserves a global conversation, and we're trying to figure out how to have that," Tarter said. Ian O'Neill, space producer for Discovery News, an ABC News partner, said that humans didn't start leaking transmissions into space until the first radio broadcasts about 100 years ago. Given that our galaxy alone is 100,000 light years across, relatively speaking, he said, those signals haven't traveled too far. "We've only tapped into our cosmic neighborhood recently," he said."That time scale is huge." He also said that though scientists believe that life exists across the universe, there's no actual evidence of it yet. It could be hundreds, if not thousands, of years, he said, before human messages get an extraterrestrial response. And if aliens do visit Earth, who knows what they would be like, he said. "This is all complete specuation," he said. "[Hawking's] point is very much one-sided. There's an equal chance of meeting a friendly race, like our own."Tarter, asked about Hawking's vision of aggressive aliens, said there's a "huge range of possibilities and lots of speculation." "Stephen's is one and [though] he's a brilliant man, I'm not quite sure that his opinion has any more authority over mine or anyone else's," she said. "It's just a question. We don't know the answer."

## **A2 Alien Wipeout**

### It aliens exist and we can destroy them, the aliens have already destroyed us or themselves

New Scientist, 8-28-99, Robert Matthews, http://www.thebirdman.org/Index/Others/Others-Doc-Science&Forteana/+Doc-Science-Astronomy&Cosmology&EarthScience/CouldScientistsCreateABlackHole.htm

So until we can build atom smashers so powerful that they can exceed the energy of the punchiest cosmic rays, we needn't lose any sleep over them. Paranoiacs should look elsewhere, and a good place to start would be in the pages of journals like Physical Review Letters, which have carried schemes for extracting energy from the quantum vacuum. The worry here is that no-one knows how much energy might be unleashed: calculations give answers anywhere between zero and infinity. Arthur C. Clarke once raised the possibility that some of those vast explosions we see in the cosmos may be smart-alec alien scientists getting their comeuppance for tinkering with the quantum vacuum: "they might be industrial accidents" he said.

### Theres no impact to killing aliens: theyll try to exterminate us.

Baldwin, Retired Physicist and Nuclear Engineer, 1997 (George C., Researcher into Gamma Ray Lasers, Keeping the ETs Away, Sky and Telescope, v93 n2, Feb,

[newfirstsearch.oclc.org/WebZ/FTFETCH?sessionid=sp03sw03-52245-dngpfasu-utz6wy:entitypagenum=4:0:rule=990:fetchtype=fulltext:dbname=PerAbs\_FT:recno=1:resultset=1:ftformat=ASCII:format=T:isbillable=TRUE:numrecs=1:isdirectarticle=FALSE:entityemailfullrecno=1:entityemailfullresultset=1:entityemailftfrom=PerAbs\_FT](http://newfirstsearch.oclc.org/WebZ/FTFETCH?sessionid=sp03sw03-52245-dngpfasu-utz6wy:entitypagenum=4:0:rule=990:fetchtype=fulltext:dbname=PerAbs_FT:recno=1:resultset=1:ftformat=ASCII:format=T:isbillable=TRUE:numrecs=1:isdirectarticle=FALSE:entityemailfullrecno=1:entityemailfullresultset=1:entityemailftfrom=PerAbs_FT))

I am willing to accept that interstellar travel could someday be realized -and that's precisely why I maintain that any effort to communicate with extraterrestrial life is fraught with grave danger! H. G. Wells's War of the Worlds may yet be proved prophetic. We should be worried not just with asteroid impacts and supernova explosions, nor just with the chance arrival of some "Andromeda strain" or incompatible gene borne by a Martian meteorite. What should arouse our concern is the very nature of life itself. Let's reflect on the history of interactions among beings on Earth. Throughout terrestrial history, every contact of one civilization with another, human or otherwise, has ultimately resulted in the ascendancy of one and the subjugation, exploitation, and even extermination of the other. Even superficial differences among the human races - owing to skin color, religious beliefs, memories of long-ago conflicts - have triggered tragic clashes. Given the amazing variety of life forms here on Earth, we can be certain (despite Star Trek) that extraterrestrial beings will be utterly unlike us in form - but not in their innate contempt for other beings. Just as on Earth, each life form will regard every other as inferior and, therefore, legitimate prey. For example, consider our interaction with bees. They have a remarkable civilization - a model communistic society. Every individual in the highly organized hive knows its place and unselfishly does what it is capable of doing. Ages ago, while evolving the means for producing food, bees solved advanced problems in geometry, material science, engineering, and biochemistry. And what have we humans learned from contact between our two civilizations? With our "superior" technology, we steal the honey the bees work so hard to produce! Fortunately, at present no other life form on Earth is capable of subjugating us -though bacteria and viruses are trying hard and may yet succeed. "But," the idealists will argue, "being so much more advanced technologically, the ETs will have evolved into benign beings. Having mastered the struggle for existence, they will have no need of martial arts, nor will they need any of our resources. And with no history of past conflict with us, they will look upon us kindly and help us to solve our problems." I grant these dreamers one point: any alien race able to contact us now is probably more advanced. But I do not agree that technical superiority guarantees benevolence. (Germany was the most technologically and scientifically advanced nation in the world when it launched World War I.) Nor do I concede that predation and exploitation are exclusively human traits. They are characteristic of all life, indelible genetic imprints that ensure some species will survive. Ants wage war with other ants, they exploit aphids, and we try to exterminate both. We must also recognize the potential value to the ETs of Earth itself. It seems quite possible to me that a more highly advanced society, having exhausted its own sources of some rare element not yet depleted here, would want to commandeer our planet and lay claim to such resources. The fact that we are light-years away from the nearest stars may give a false sense of security. For centuries Britain was isolated from the Continent by the English Channel, and the United States by two oceans, but new technologies overcame those barriers. With admirable foresight, some leaders realized that through those breached barriers would come predators bent on destroying an indigenous way of life. Over the objections of idealists, they prepared defenses and ultimately resisted the threat - but at great cost in lives and resources. History and biology agree in telling us that if any good could come from confrontation with an extraterrestrial society, it would most likely be the uniting of discordant human societies to deal with a common threat. In the past we usually postponed preparation for conflict until confrontation was inevitable. It would be unwise to be unprepared for an extraterrestrial confrontation - but how would we divine the nature of our adversaries or their purposes and methods? It is time to ask: Will the vast distances between stars always guarantee our safety as we continue to confront the many problems and tensions that exist here on Earth? When and if physical contact with extraterrestrial life becomes possible, is there any guarantee that we, rather than the ETs, will be the dominant life form - or will a few of us be consigned to a cosmic zoo while the rest are destroyed? To me, these unanswered concerns challenge the "wisdom" of advertising our presence by beaming radio, television, and telemetry into space, and by attaching "find us here" road maps to our interplanetary spacecraft.

## A2 Hollow Earth/Scientology Aliens

### Inner Earth denizens will not let us in, at best they will enslave us

**Libra Rising 11** (Libra Rising, “Hollow Earth Archives”, June 2011, http://www.librarising.com/hollow/hollowarchives.html, accessed 6/21/11, CW)

Ever since the first nuclear detonations in 1945 over Nagasaki and Hiroshima, Inner Earth leaders, both good and bad, have stepped up the monitoring of our Outer Earth surface, regularly sending reconnaisance UFO ships as well as using [satelite](http://www.librarising.com/hollow/hollowarchives.html) surveillance and other means. The bridge between our technologies is closing and the time for a reunification of both worlds(inner and outer) is at hand. The problem is that there are two opposing forces with contradictory agendas for this unity. The negative inner earth denizens located mostly in Middle Earth(Earth's cavernous shell) want our enslavement, whereas the positive inner earth people located mostly on the planet's inner concave surface want our liberation and regeneration. Fortunately the negatives are dwindling in number as more and more of us here on outer earth are waking up and choosing the path to peace and harmony. Even the prophecies indicate that the vast majority of humankind will choose life over death and truth over lies. Eradicating what's left of the negative forces, however, will be no easy matter, but it will and must be done if the prophesied Millennium or new Golden Age is to become a reality.

### There is a way for us to get to hollow Earth, but the inner earth government is keeping it a secret

**Libra Rising 11** (Libra Rising, “Hollow Earth Archives”, June 2011, http://www.librarising.com/hollow/hollowarchives.html, accessed 6/21/11, CW)

There is a massive conspiracy to hide the true nature of our planet – that it is hollow, oblate, and inhabited within. Access to the hollow interior is principally through the north polar opening which is some 1200 to 1400 miles wide. There is also a south polar opening, but it is mostly covered with snow and ice. At about 77 degrees north lattitude the the planet starts flattening out an around 82 degrees north lattitude it starts curving inwards and one can catch glimpses of the earth’s inner central sun which lights and warms the interior and which is behind aurora borealis. There is a noticeable rise in temperature in these latitudes and salt water turns into fresh and wildlife is more abundant and the compass needle goes wild and then points south instead of north. Admiral E. Byrd flew over and into the north polar opening in a secret American expedition in 1947 and confirmed all of these facts but was sworn to silence over the matter. All of the major powers have bases stationed in the Arctic in a united but hushed attempt to probe the secrets of the hole at the pole and the interior world, but they are restricted entry by the more powerful inner earth governments or societies which they fear. Before every golden age the ice and snow around the polar openings melt and evaporate forming water or ice canopies around the planet and liberating access to the inner earth.

### No entrance at the North Pole disproves hollow earth theory

Krystek 97(Lee, the UnMuseum, 1997, teaches in Career & Community Studies at The College of New Jersey <http://www.unmuseum.org/hollow.htm>, accessed 6/21/22, CW)

As time has gone on the idea of a hollow-earth has become less a theory of fringe science and more a subject of science fiction and fantasy. Perhaps this has happened because new discoveries continue to show there is no validity to most of the hollow-earth ideas. United States Navy Admiral Richard Byrd flew across the North Pole in 1926 and the South Pole in 1929 without seeing any holes leading to inner-earth. Photographs taken by astronauts in space show no entrances either**.** Modern geology indicates the Earth is mostly a solid mass. One believer did seize on a NASA photograph showing a black hole at the North Pole and called it proof of an entrance to a hollow-earth. As it turned out the photo was actually a composite of several pictures taken over 24 hours so that all sections were seen in daylight and the black hole at the top was the portion of the arctic circle never illuminated during the day over winter months.

### Earth isn’t hollow

Lamb, Contributor Discovery News, 10 (Robert, “Is the Earth's core solid? “, April 26, <http://news.discovery.com/earth/is-the-earths-core-solid.html>)

Even if you breezed through a few geology classes in your day, it's easy to think of the Earth's interior like a Cadbury Egg: solid on the outside and[**molten in the center**](http://news.discovery.com/earth/earth-core-advantages-volcanoes.html)**.** Yet we've known for more than 60 years that the very center of the [Earth](http://science.howstuffworks.com/earth.htm) is actually solid. Danish seismologist Inge Lehmann made the [**discovery**](http://science.discovery.com/convergence/100discoveries/big100/earthscience.html)in 1936 when she noticed seismic waves bouncing off a boundary point deep within what was believed to be a liquid center. With her finding, the world learned that[**Earth's core**](http://news.discovery.com/earth/interview-earths-core-secrets.html)is solid at the center and liquid on the outside."The Earth has a radius of 6,371 kilometers (3,959 miles)," explains seismology professor [Xiaodong Song](http://www.geology.uiuc.edu/~xsong/) of the University of Illinois at Urbana-Champaign. "The radius of the outer core is 3,400 kilometers (2,113 miles), and that of the inner core is 1221 kilometers (763 miles). So the size of the inner core is just slightly smaller than the Earth's moon, but the outer core is more than half the radius of the Earth. The core is composed mostly of an iron-nickel alloy and, as Princeton geosciences professor

**Jeroen Tromp** explains, it didn't always possess a solid center. "The inner core is basically the result of the slow cooling of the outer core," Tromp says. "The temperature drops below the melting point at the inner core boundary so over time, slowly, the inner core has crystallized within the liquid outer core. That will [continue](http://news.discovery.com/earth/is-the-earths-core-solid.html) and eventually there won't be a liquid outer core anymore. It will be gone." The solidification of the outer core will take billions of years, but future inhabitants of Earth certainly will notice the difference. The liquid portion of the core is crucial to the processes that produce Earth's magnetic field. Without that magnetic field, the planet would be much more exposed to solar wind, a deadly stream of highly charged particles.

### Earthquakes send waves through the earth that would only be possible with a solid center

Britt, Editor in Chief, TechMediaNetwork, 5 (Robert Roy, Editor in Chief, TechMediaNetwork: The science, technology and business of life, Live Science, “Finally, a Solid Look at Earth’s Core”, 4/14/05, <http://www.livescience.com/6980-finally-solid-earth-core.html>, accessed 6/22/11, CW)

Scientists have long thought Earth's core is solid. Now they have some solid evidence.

The core is thought to be a two-part construction. The inner core is solid iron, and that's surrounding by a molten core, theory holds. Around the core is the mantle, and near the planet's surface is a[**thin crust**](http://www.livescience.com/6959-hole-drilled-bottom-earth-crust-breakthrough-mantle-looms.html) -- the part that breaks now and then and creates[**earthquakes**](http://www.livescience.com/148-earthquakes-map-location.html)**.** The core was discovered in 1936 by monitoring the internal rumbles of earthquakes, which send seismic waves rippling through the planet. The waves, which are much like sound waves, are bent when they pass through layers of differing densities, just as light is bent as it enters water. By noting a wave's [travel](http://www.livescience.com/6980-finally-solid-earth-core.html) time, much can be inferred about the Earth's insides. Yet for more than 60 years, the solidity of the core has remained in the realm of theory. A [study](http://www.livescience.com/6980-finally-solid-earth-core.html) announced today involved complex monitoring of seismic waves passing through the planet. The technique is not new, but this is the first time it's been employed so effectively to probe the heart of our world. First, some jargon: P is what scientists call the wave **K** stands for the outer core **J** is the inner core So a wave that rolls through it all is called PKJKP. An earthquake sends seismic waves in all directions. The surface waves are sometimes frighteningly obvious. Seismic waves passing through the mantle and traversing much of the planet's interior are routinely studied when they reach another continent. But no PKJKP wave has ever been reliably detected until now. Aimin Cao of the [University](http://www.livescience.com/6980-finally-solid-earth-core.html) of California-Berkeley and colleagues studied archived data from about 20 large earthquakes, all monitored by an array of German seismic detectors back in the 1980s and '90s. The trick to detecting a PKJKP wave is in noting the changes it goes through as it rattles from one side of the planet to the other. What starts out as a compression wave changes to what scientists call a shear wave (explanations and animations of these are [here](http://einstein.byu.edu/~masong/HTMstuff/C13A4.html)). "A PKJKP traverses the inner core as a shear wave, so this is the direct evidence that the inner core is solid," Cao told *LiveScience*, "because only in the solid material the shear wave can exist. In the liquid material, say water, only the compressional wave can travel through." The arrival time and slowness of the waves agree with theoretical predictions of PKJKP waves, which indicates a solid core. The results were published today online by the journal *Science*.

### **There is no stable proof of hollow earth – only folk tales and stories passed on through generations.**

Welsh 11 (Theresa, the Seeker Books, “Hollow Earth: A Mostly Nutty Idea”, 6/1/11, <http://www.theseekerbooks.com/articles/hollowearth.htm>, accessed 6/27/11, CW \*The “book” = The Hollow Earth by Raymond Bernard )

The so-called "proof" for this hardly holds up. The most interesting piece of evidence is the testimony of Admiral Richard Byrd who supposedly flew into the opening at the north pole and found a warm climate, green pastures and pre-historic animals in 1947 and into the Antarctic opening in 1955. However, the validity of Byrd's story is hard to evaluate from an author who makes sweeping generalizations that defy logic. For instance, he says that the northern lights, the brightly-colored auroras of the extreme north, are the lights of the internal sun shining through the opening and asks (as he frequently does in this book) "what else could they be?" I laughed when I read this because there are plenty of other things they could be! The November '01 issue of National Geographic has a nice story on the aurora borealis phenomena and attributes it to interaction between the solar wind and the earth's magnetosphere (although it adds, mysteriously, that the details of how this works are still unknown) The book claims the openings at each pole are 1400 miles wide! That is quite a large opening, and should be visible from space. Why don't airplanes routinely see this opening? The book claims airplanes never fly over the actual pole and that no one has ever been to either pole (except for Admiral Byrd and a few others who report seeing the green area with a warm temperature). The books says that the explorers who claim to have reached the poles did not actually get there, due to problems computing their real location. Compasses point straight down near the poles and there was no simple way to determine someone's position at the time of the early explorers. (what about GPS? This book was written before we had GPS technology, and of course, Admiral Byrd made his flights before any such technology existed) Although we have pictures from space, what if a fog or cloud constantly covers that part of the earth? What if the opening is actually smaller? Could it exist without us knowing? How much do we know about what's inside our planet? I can't answer these questions, but they would make a good start for future research.

### Science proves there’s nothing in the center of the Earth except rock and liquid metal

Cain, the publisher of Universe Today, 9(Fraser, Universe Today, “Earth’s Inner Core”, 3/9/9, <http://www.universetoday.com/26710/earths-inner-core/>, accessed 6/28/11, CW)

Deep beneath the Earth lies the core. This is a ball of solid metal surrounded by liquid metal. The solid part is the inner core of Earth, and the liquid part is known as the Earth’s outer core. Scientists have long suspected that the interior of the Earth is much denser than the rest of the planet. That’s because the average density of the planet is 5.5 g/cm3, while the surface is only 3 g/cm3. In other words, if the surface is less dense than the Earth, on average, then the core must be much denser. During the formation of the Earth, 4.6 billion years ago, the planet was a molten ball of rock and metal. Because it was a liquid, however, the heavier elements like iron and nickel were able to sink down into the center. In fact, the inner core of the Earth probably has vast amounts of the heaviest elements, like gold, platinum and uranium. But the fact that the Earth had two cores, inner and outer, was first discovered in 1936 by seismologist Inge Lehmann. He observed that seismic waves created by earthquakes on its surface would bounce off the two cores differently. This is similar to how light waves refract differently as they pass through liquids. By measuring these seismic waves, scientists have been able to map out the size of the inner core. The inner core of the Earth is thought to be about 2,440 km across; about 70% the size of the Moon. It’s very hot, probably 3,000 to 5,000 Kelvin. Scientists once believed that the inner core was possibly a single, solid object; maybe even a single crystal of iron. But recent evidence has found that it has detailed structures, and even has an inner, inner core.

# \*\* A2 Ashtar \*\*

## Ashtar Prophecy False

### The Ashtar prophecy is ridiculous

Susan J. Palmer 2004. From Aliens adored: Raël's UFO religion. She is a Canadian sociologist and author with a primary research interest new religious movements.

Heaven’s Gate insulated members from the outside world because of their “obsession with spirits… attachments to the human level that took the form of doubts, desires, memories,… and interfered with salvation” (Balch 1995, 139). The Two preached that evil aliens called “luciferians” walked among, assisting in the human entrenchment in ignorance and unconsciousness. Heaven’s Gate practitioners believed themselves to be the “righteous remnant” who would be carried away abroad a spaceship; they saw ordinary U.S. citizens as going about their daily middle-class existence mire in a soulless, “plantlike” pursuit of materialism an sensuality- unaware they were living in a garden about to be “spaded over.” Ashtar Command prophesied an imminent mass landing of starships in the mid-1990s that would usher in an age of purification involving an orderly evacuation of human beings worthy to enter the “light.” When that prophecy failed, a mythic narrative was revealed that explained the delay was caused by evil extraterrestrials: Decades ago, a group of cadet trainees defected from the Ashtar Command and set up an evil renegade extraterrestrial government who made alliances with rebellious entities “operations on the lowest planes closest to the earth” (Helland 2000, 38).

### No proof of the existence of Ashtar

Christopher Hugh Partridge, 2003. From UFO Religions. He is an author, editor, professor at Lancaster University, and founding Co-director of the Centre for the Study of Religion and Popular Culture.

This form of focused, topic-specific channeling, however, presents a twofold difficulty. First, as scientific knowledge of the solar system progressed, it became increasingly evident that there was no life, let alone complex and advanced civilisations, flourishing on Venus, Mars, or any of the other planets where life had been reported. Second, there was the continued problem of failed prophecy. It seemed clear that messages indicating the imminent arrival of the Ashtar Command forces had been, to say the least, exaggerated. Despite further messages detailing widespread mass landing scenarios, no spacecraft appeared to transport the faithful to higher worlds and higher realms.

### Ashtar is a demonic lie

Joyce, natural clairvoyant and natural healer, 94 (Elizabeth, “THE ASHTAR COMMAND”, http://lightworkers.org/forum/106870/ashtar-command-truth-about-angelic-scam-written-elizabeth-joyce-please-feel-free-draw-y

If we accept the assertion that the "real" Ashtar is merely an "entity" that changes with the times, then a quick look at Ashtar in one of His/Her's former guises as the demon " Ashtaroth" may prove interesting... According to "The Lemegeton of Solomon" (The Book Of The Spirits), which was considered to be the source for many occult works of the 17th and 18th Century, "Astaroth"(also called Ashtaroth) was a very interesting Demon indeed: Astaroth is another demon who appears in the form of an angel. Opinion is divided as to whether it is a good or bad angel, but an angel he is, that much is agreed. He is an important Duke, and is mounted upon a dragon, with a snake in his right hand. He will tell the sorcerer of the past, the present and the future. He will also teach every secret and science. (If you were going to "channel" a demon/spirit/angel/ whatever, what better entity to have in your midst than one who is conversant with science and is an all-seeing prophet?) In the "Grimorium Verum - The True Grimoire", another occult book dating back to the 17th century, there is a section about the three superior Spirits: Spirits do not always appear in the same shape. This is because they are not themselves of matter or form, and have to find a body to appear in, and one suitable to their (intended) manifestation and appearance. Lucifer appears in the form and figure of a fair boy. When angry, he becomes red. There is nothing monstrous about him. Beelzebuth appears sometimes in monstrous forms, sometimes like a giant cow, at times like a he-goat, with a long tail. When angry, he vomits fire. Astaroth (Ashtaroth or Ashtar) appears black, in human shape. Under the heading "Kinds of Spirits" in the aforementioned reference, we learn: Names of the superior spirits are Lucifer, Beelzebuth and Astaroth. The inferiors of Lucifer are in Europe and Asia and obey him. Beelzebuth lives in Africa, and Astaroth (or Ashtar) inhabits America. (Is Ashtar "channeled" anywhere outside of America? And why is it that animal mutilations seem to be a particularly American - Northern and Southern - phenomenon?) The book "The Grimoire of Honorius" gives a very detailed system of the conjuring of spirits according to the day of the week they are to be summoned. Each "spirit" has a day of the week allotted to it when it is at the peak of its abilities: Wednesday - between the tenth and eleventh hours of the night - is the day set apart for the conjugations addressed to Astaroth. (It is widely held in UFO folklore, that UFO encounters/sightings seem to be at their most prevalent on Wednesdays. John Keel quotes figures that suggest that over 20% of all sightings have occurred on a Wednesday.) None of this is conclusive evidence of anything, But if we accept the times this information was written in, and look at it through modern eyes. Then the contention that this phenomenon has been around in various guises for a very long time, may have some validity. Ashtar is not new. He is not a part of the "New Age" movement and he is an endangerment to many if they follow his instructions to sell everything and wait on a mountain top to be lifted off by space beings. From John Keel's book 'UFOs: Operation Trojan Horse', here's some quotes about Ashtar. (He/It certainly gets around!) ...I will try to demonstrate that the UFO entities are directly related to the entities and manifestations involved in religious miracles and spiritual seances. There are many thousands of published messages from both the UFO-nauts and the invisible, lower plane spirits, all of which employ the same techniques for burying information deep in simple-minded descriptions about life on other planets or other planes. One of the most important correlation is that many of these messages have discussed in depth the existence of another reality which is formed by energies operating on another frequency, or vibrational level. This is where people get confused, and tend to believe the entity. There is a definite 4th and 5th dimensional energy, and unknown energy beyond that, which our technology has not caught up with or been able to understand. We are evolving into that knowledge at the present time. However, it will not happen overnight. It is a gradual process of opening up to higher knowledge a generation at a time. There has also been a great deal of discussion about light and rays of light. New rays are coming in for transformational healing. These are very powerful and can be used for the good of all. The lore of "the seven rays" goes back to the most ancient of times. The Bible's Book of Revelations repeats the number seven in many ways, and the Seven Sisters, or the Pleiades (seven stars in the sky) form an important part of this lore. God and Christ are "The Light" in most of this literature ... On January 8, 1968, "Mr. Orlon" of the Ashtar Intergalactic Command, passed this message on to a contactee: "The saucers you speak of as such are in reality the space bodies of certain aggregates of consciousness. They exists duo-dimensionally; that is, they penetrate both the third and fourth dimensions simultaneously or can, if they wish, confine themselves to either one of these."... Thousands of mediums, psychics and UFO contactees have been receiving mountains of messages from "Ashtar" in recent years. This has escalated in the '90's. Mr. Ashtar represents himself as a leader in the great intergalactic councils which hold regular meetings on Jupiter, Venus, Saturn and many planets unknown to us. But Ashtar is not a new arrival. Variations of this name, such as Ashtaroth, Ashtar, Asharoth, etc., appear in demonological literature throughout history, both in the Orient and the Occident. Mr. Ashtar has been around a very long time posing as assorted gods and demons and now, in the modern New Age phase, as another glorious spacemen. Dr. Charles Laughead, an MD on the staff of Michigan State University in Lansing, Michigan, started communicating with various entities "from outer space" in 1954, largely through trance mediums who served as instrument for Ashtar and his cronies from that great intergalactic council in the sky. A number of minor prophecies were passed along, and as usual, they came true on the nose. Then Ashtar tossed in his bombshell. The world was going to end on December 21, 1954, he announced convincingly. North America was going to split in two, and the Atlantic coast would sink into the sea. France, England and Russia were also slated for a watery grave. However, all was not lost. A few chosen people would be rescued by spaceships. Naturally Dr. Laughead and his friends were among that select group. Dr. Laughhead made sober declarations to the press and on December 21, 1954 he and a group of his fellow believers clustered together in the garden to await rescue ... and waited. And waited. And waited! In California, a man named Allen Noonan claims to have experienced still another variation of this particular mind-warping phenomenon. Soon after his discharge from the Army following World War II, Noonan went to work for a company handling outdoor billboards. One day, he says, he was working on a billboard when suddenly he was taken in astral form to a strange place. He found himself in a huge white building filled with white light. A group of "elders" were situated around a glowing throne, and a great voice boomed from that throne and asked "Will you agree to be the Savior of the World?" Noonan quickly agreed to this role. Then he was told, "You may die in the hands of your fellowmen. Their sin shall remain with you until the Mother Comforter comes to deliver them." The next thing he knew, he was back in his body working on the signboard. In later experiences, he allegedly visited other planets such as Venus, and he frequently received telepathic messages and instructions from our old friend Ashtar. In this case, he knew it as "the Ashtar Command and the United Planets Organization". Allen Noonan is not the only Space Age messiah appointed by the Ashtar command... In Denmark a man named Knud Weinking began receiving telepathic flashes in May, 1967, including a number of impressive prophecies which came true ..He was then instructed to build a lead-lined bomb shelter and prepare for a holocaust on December 24, 1967 ... ...Mediums, telepaths, sensitives, and UFO contactees throughout the world were all reporting identical messages. There was definitely going to be an unprecedented event on December 24, 1967. Ashtar was talking through Ouija boards to people who had never before heard the name. Another busy entity named Orlon was spreading the word. The curious thing about these messages was that they were all phrased in the same manner, no matter what language was being used. They all carried the same warning. People were reporting strange dreams, dreams about symbols of Christmas ... There were also stories about dead telephones and glowing entities prowling through bedroom and homes. Many of these messages, dreams and prophecies were collected together by a British organization calling itself Universal Links. The stage was set for Doomsday. Thousands, perhaps even millions, of people had been warned The Danish cult locked themselves up in their bomb shelter ... After the imaginary crisis had passed, the American wire services finally carried stories about the cowering Danes, ridiculing them, of course. But Mr. Weinking came up with a message that explained it all: "I told you two thousand years ago that a time would be given and even so I would not come. If you had read your Bible a little more carefully, you would have borne in mind the story of the bridegroom who did not come at the time he was expected. Be careful so that you are not found without oil in your lamps. I have told you I will come with suddenness, and I shall be coming soon!" It was all a dry run, or was it? Actually, it was a rather impressive sequence of events , and it really proved something very important. Many predictions of the December twenty-fourth disaster had been well documented well in advance of that date. These messages came through in many different, countries, from people who had no knowledge of or communications with one another. The UFO contactees received the same identical messages as the trance mediums communing with spirits. A link had been established. It was now clear (to me anyway) that all of these people were tuned to a central source. (Possibly an earthly electronic device) My earlier speculations seemed true -- the UFO entities and the spirit entities were part of the same gigantic system. So more pieces of this tremendous puzzle were falling into place. A long series of events had apparently been staged to warn us of that tiger behind the door. Some of the entities were evil liars. They had ruined the lives of many by producing "proof" which led to false beliefs and irresponsible actions. Dr. Laughead and Knud Weinking had been victims in this enormous game. Many "New Agers" have become victims over the past several years. In the 90's people like Elizabeth Claire Prophet and David Koresh have played on people's ignorance. More will come to those who believe everything they hear and continue to give the power of their lives over to others. Use discernment is your search for truth. Never trust a "channel" more that your own inner guidance. Walk the path of light and love in this lifetime, on this wondrous earth, with your family and loved ones. Kindness, opening the heart and respect for others are the first steps for true ascension. The following is claimed by the false teachers and the unenlightened: Ashtar works very closely with Archangel Michael, in protecting the evolution of humanity through harmonizing the negative and evil influences that could overwhelm us. Ashtar is in command of a particular area of the cosmos which he and his many spiritual helpers ‘patrol', this area or zone includes planet earth; because of this he is often referred to as “Commander Ashtar.” Ashtar works through the Merkabah , the spiritual vehicle of Light that comes direct from the Godhead. At the moment Ashtar is Controller of the Merkabah, for our part of the Universe. He moves between heavens, dimensions, and realities with his powerful mind guiding and controlling the energies of the Merkabah so that we humans can participate in the evolutionary process of our zone. ALL OF THESE CLAIMS ARE LIES - AND A TRAP TO STEAL YOUR SOUL! PLEASE - FOR HEAVEN'S SAKE - PROTECT YOURSELF.

## **No Ascension**

### Planetary ascension is not the Ashtar Command Center zapping the entire human race into their spaceships to save us from disaster

Ariana, Pleiadian Walk In and Channel and Communicator, Healer and Artist, 2011 (Anakya, 5/2/2011, “Channelling, Human Ascension: Earth Changes and Evacuation of Earth” Ashtar Spiritual Forum, <http://www.ashtarcommandcrew.net/forum/topics/channelling-ascension-and#ixzz1QWWocZp2>, accessed: 6/27/11, SL)

Planetary ascension is a whole different ball game. That is about the whole reality that we are living in moving from 3-D and 4-D into a higher density. A lot of people don't realize we have already begun to move into 4-D (although it is intermittent at present). They seem to imagine it means all kind of fantastical things will be seen and felt.However, 4-D is only a slightly higher vibration than 3-D, so things still appear the same - on the outside at least. But what it does mean is that the energy of the new vibration causes more massive change. It causes people to examine then throw off old, out-moded belief systems and societies to experience collapse of systems and structures that will no longer work in the new energy field. If it could be said that there is a planetary lesson attached to experiencing 4-D, I would say it would be Responsibility. This experience is definitely about realizing and claiming responsibility - for creating our own reality and living with the consequences - for one thing. So many people spend so much time with their heads in the stars and looking to the future, that they forget to really look into, and appreciate where they are right now. With regard to spiritual development, many imagined 4-D to mean that people would suddenly become instantly spiritually awakened and aware - yet we are still seeing gradual awakening, and only at the pace that each individual is ready for. There are still many who probably won't awaken at all. That's because it is the way the process happens naturally and also because Free Will comes into play. Although, for those on Earth it is accelerated because we have the benefit of all this transforming energy and paradigms (powerful creative energy which is generating change). It is, however, up to each of us how we use this energy to our advantage.

## **A2 Project Uplift**

### Project Uplift was abandoned in the 80s – didn’t have unanimous support and too many negative consequences

Ariana, Pleiadian Walk In and Channel and Communicator, Healer and Artist, 2011 (Anakya, 5/2/2011, “Channelling, Human Ascension: Earth Changes and Evacuation of Earth” Ashtar Spiritual Forum, <http://www.ashtarcommandcrew.net/forum/topics/channelling-ascension-and#ixzz1QWWocZp2>, accessed: 6/27/11, SL)

There has been SO much channelled about this. First back in the '80's and '90's, and it has resurfaced now. I have already said quite a bit about this in terms of the fact that Project Uplift (i.e. uplifting people from Earth en masse during major Earth changes) was abandoned by the Council and Ashtar Command because the decision had to be unanimous (by consensus) and because of the perceived trauma such a thing would cause the people uplifted, problems adjusting to life on Motherships - not to mention the logistical nightmare - but here is another thing to think about. Many of the channellings say that the Ashtar Command is going to "save us" when things get tough on the planet. Save us from what? Our own Ascension process? Why is it anyone else's responsibility to help us survive and thrive in our own environment? With changes that we helped to create? The channellings say that the Ashtar Command will remove people "in the blink of an eye". I wonder if people realize that if there was an evacuation like that, people could be seperated from family, partner, friends - maybe even their children? That is because they could not take people who had not given their permission and had no awareness of their existence. It is against Universal Law. How would you feel if you left the planet, and your loved ones had to stay? What if you had them taken forcibly against their will? How would they respond and feel?. What would the suddenly changed energy and environment do to them?. You cannot expose people to things like that if they are not ready for it and open to the experience. They have to give their permission, otherwise it is just abduction! No one in the Ashtar Command fleet or associated fleets is willing to do that. If you remove people physically from their home world suddenly, they suffer from many spiritual, mental and emotional adjustment problems (even sickness) which can be fatal. You have altered gravitational fields to deal with - not to mention a massive vibration shift. Human bodies have to gradually adjust to increases in vibration, or they will overload and burn out. You are talking about bodies that have been 3-D for a long time suddenly becoming something else without going through the steps in between. Also, human bodies at this time are not equipped to travel in space craft which move much, much faster than the speed of light. Or ships which travel between dimensions. In order for members of the Ashtar Command to artificially alter human bodies so that they can cope with these things (as many of the channellings claim), it would violate another law. Well, a couple of them actually. One is the law of non-interference. They cannot do anything that extremely alters the course of another being or civilization's natural evolution. It has major repercussions! Look at what happened when the Atlanteans did that, for example. They experimented and tampered with natural laws and life forms to the point where their either destroyed it, or created creatures which could not possibly survive - let alone thrive.

### Project Uplift was thrown out in the 80s due to its high risks and negative scenarios from holographic testing

Ariana, Pleiadian Walk In and Channel and Communicator, Healer and Artist, 2011 (Anakya, 5/2/2011, “Channelling, Human Ascension: Earth Changes and Evacuation of Earth” Ashtar Spiritual Forum, <http://www.ashtarcommandcrew.net/forum/topics/channelling-ascension-and#ixzz1QWWocZp2>, accessed: 6/27/11, SL)

As I work on Earth as a communicator for the Ashtar Command and Interplanetary Council, I have found that at times I have been called upon to correct this information (as many of the channels were also requested to do). As I covered in my last article, “Project Uplift” was abandoned at the time by the Ashtar Command (in the late 1980’s). The decision was based on rigorous discussion and holographic test scenarios which proved that such an intervention would potentially be harmful to many of those the Command was attempting to help. It would involve separating people from friends and family (who were not ready and had not chosen such a destiny) and taking people away from their lessons on Earth – which could only be accomplished while there. The Ashtar Command must obey (as do all civilizations belonging to the Association of Worlds) a strict code of non-interference when observing or interacting with another civilization. Therefore there is a fine line between what would constitute interfering with the natural evolutionary path of a particular civilization – and working in harmony with their free will and spiritual growth. When the Interplanetary Council makes a decision such as this, it affects ALL personnel involved with that planet or civilization. The final decision must be by consensus, but, as the majority decided to abandon Project Uplift, the motion was carried – as they say on Earth.

### Too many issues with Project Uplift – the majority of the human race isn’t ready to accept the existence of ETs

Ariana, Pleiadian Walk In and Channel and Communicator, Healer and Artist, 2011 (Anakya, 5/2/2011, “Channelling, Human Ascension: Earth Changes and Evacuation of Earth” Ashtar Spiritual Forum, <http://www.ashtarcommandcrew.net/forum/topics/channelling-ascension-and#ixzz1QWWocZp2>, accessed: 6/27/11, SL)

What the Ashtar Command now focuses on (rather than Uplift) has been dubbed “Project Awaken Earth” in colloquial English – but that is really only one phase of the project. This project is exactly as it states – an opportunity to help souls on Earth awaken to their Divine heritage and spiritual capabilities. This is because it is understood that this part must be accomplished before any physical interaction can occur (via density shift). But Project Awaken is not being undertaken so that people on Earth can meet all within the Ashtar Command face-to-face (although it is accepted that will eventually happen). To many of these cultures, physicality is secondary to the energy and spirit. Such a project is undertaken because it is a way to help humanity move beyond limitation and fear – just as another enlightened group once helped some of us, and just as Earth humanity will one day be called upon to do also. Project Uplift raised a myriad of environmental, behavioural, societal and spiritual issues that came up. But this aspect has been very useful and valuable, because there is much that has been learned from it (but never at the expense of Earth inhabitants). Regardless of what some on Earth choose to believe, life on board the ships within the Ashtar Command and similar groups is NOT like living on Earth!. It is different on almost every level. You would literally be suddenly catapulted into a truly alien environment. Even if you are a Starseed, you will have become acclimatized to Earth and the density and structures there. It is now familiar to you and is part of your life that you have chosen (although awakened Starseeds would definitely find it easier, and would adjust faster). On the ships there is a strict order and harmony that must be maintained at all times amongst the personnel and their families. Such a vast organization and community cannot function efficiently without that harmony and order. For instance; you can’t hide anything from anyone – emotionally or otherwise, and you can’t have an emotional breakdown of any kind. There are healers on the ships and there is healing technology which can help when someone goes out of phase (as we call it), but the ‘patient’ must be at a stage in their growth where they can assimilate the energy and quickly balance themselves. If that doesn’t happen, then they are required to leave the ship for a time until they regain balance. And when encountering the many other cultures that live and work on the ships, there would be extensive cultural differences that could be a problem for those who were unaware or not accustomed. Unfortunately, among many people on Earth there is the idea that all ET beings are dangerous, or want to eat them or something. This is because of what the media has projected. There is also their inherent fear of the unknown. This is a major barrier to interaction with other planetary civilizations at this time. Unfortunately, Earth humans are not raised with the understanding that they have universal family, or that intelligent life exists in different densities – some of whom have been around longer and have evolved differently. I am just outlining here some of the obstacles to deeper and more physical interaction with universal family. There are a lot of radically different and new things and concepts that a person would have to be adjusted to. Therefore it would have to be a GRADUAL process, and not one that people where simply just thrown into at the deep end, so to speak.

## A2 2012

### 2012 will flip the magnetic poles of the Sun and Earth will change direction of rotation leading to massive earthquakes, tsunamis and volcanic activity

**Singh, 4/29/11** (Ravinder Singh, “Earth Changes Part 1: The Cosmic Events” Ashtar Command Center Spiritual Blog, http://www.ashtarcommandcrew.net/profiles/blogs/2012-postponed-to-the-middle#ixzz1QXNWc0Ns, accessed: 6/27/11, SL)

Some of them are: The Galactic Centre, Greater Central Sun and Central Sun will form an equliateral triangle in Space on 21st Dec 2012. This huge galactic alignment will facilitate many new energies and Higher Souls to take birth. This also initiates the process of many changes to occur in the Solar system. The pyramids get strengthened. All objects that are shaped in the form of pyramids will be able to absorb and radiate more of these new energies. Our Sun completes its revolution of 26000 years around the Central Sun. When this occurs, the magnetic poles of the Sun flips over, resulting in the interchanging of the magnetic / geographic poles of our Earth. Our Earth will change its direction of rotation periodically. The rotation slows down and stops for 3 days and then starts in the reverse direction. This may result in massive earthquakes, volcanic eruptions and extreme weather changes. Our Sun and the entire solar system will come in alignment with the Galactic equator. This alignment is expected to bring us in direct focus of a lot of energies. A huge amount of Solar activity is expected in 2012, where massive solar flares can disrupt the electromagnetic field surrounding our earth. This may result in the breakdown of our electrical and communication systems.

**2012 will bring the end to negativity and evil as well as collapse of society as we know it – only a strong spiritual connection to Ashtar will save the human race**

**Singh, 4/29/11** (Ravinder Singh, “Earth Changes Part 1: The Cosmic Events” Ashtar Command Center Spiritual Blog, http://www.ashtarcommandcrew.net/profiles/blogs/2012-postponed-to-the-middle#ixzz1QXNWc0Ns, accessed: 6/27/11, SL)

2012 – Shift from the dark age to Light Age We have just emerged from a 5000 year dark age and are in the transitory period before moving into the Light Age. An intense churning and transformation was supposed to occur upto the year 2036 to remove all negativities on this earth. However, the Rishis observed that many major events were going to occur in our Milky way galaxy in the year 2012. They decided to use these events and prepone the end of pralaya to 2012, in order to reduce the difficulties and suffering of Humanity. The Rishis chose 2012 to put an end to all the evil and negativity on this earth. They decided to make use of the expected earth changes to collapse the existing corrupt systems and replace them with new systems based on truth and love. The financial meltdown we witnessed in the middle of 2009 was the beginning of a series of collapses, which would culminate by the end of 2012. Scientists and Astronomers are predicting an intense solar activity in the next couple of years, which is expected to rupture the Earth’s electromagnetic field, resulting in the collapse of the electrical and communication systems, thus throwing our modern life completely out of gear. Many other dependent systems like transportation, supplies, medical facilities, employment, governance etc will also be severely affected and eventually will collapse. The other Earth changes like the reversal of the geographic poles and change in the direction of Earth’s rotation in 2012 will result in massive earthquakes, volcanic eruptions and extreme weather changes. It’s obvious that we cannot withstand such chaos, anarchy and massive changes by any physical means. Only by having a strong spiritual connection with the divine can one sail through these turbulent times. Those who choose to transform and accept the values of the New Age will receive help and guidance from the Rishis and their workers. As the existing systems breakdown, they will be replaced by more efficient and evolved systems, which are in tune with the higher values of the New Age. But those who decide to hold on to the old values from the dark ages, refusing to transform, will perish in these massive changes.

### 2012 has actually been postponed until 2015 because of the strength of negativity

**Singh, 4/29/11** (Ravinder Singh, “Earth Changes Part 1: The Cosmic Events” Ashtar Command Center Spiritual Blog, http://www.ashtarcommandcrew.net/profiles/blogs/2012-postponed-to-the-middle#ixzz1QXNWc0Ns, accessed: 6/27/11, SL)

Seven Earths have already been created, with varying degrees of purity levels to accomodate these people. These individuals will be shifted to these earths, depending on their purity levels, for transformation and learning. The Rishis will provide them many opportunities to qualify for the Light Age on this Earth. Why is 2012 Postponed? The expected changes The Rishis had estimated in 2007 that the evil and darkness on this earth would be reduced by nearly half by 21st Dec 2009. That was also the date on which our earth would enter the aura of the photon belt, an exact three years before the actual entry into the photon belt. Based on this, they planned to end the pralaya period on 21st december 2012, where all evil would be removed from the face of our earth. Reality! But the darkness on our earth has strengthened instead of reducing by half by this time. The negative forces which ruled our earth for the past 5000 years haven’t stepped back as expected by the Rishis. They’ve become united, determined and grown in strength as this is their last battle for survival on our Earth. Also, some Spiritual masters and world leaders from whom a lot was expected and who had raised a lot of initial hopes failed in their work and did not rise to the occasion. Hence many events and processes which had to start from 2010 could not be initiated because of the still existing stronghold of the dark forces. All these developments necessiated a change in the plans of the Rishis, as a result of which the pralaya period had to be extended by another two years. So, the churning period of pralaya which had to end on 21st december 2012 has been postponed to the middle of 2015! This also means that some of the drastic Earth changes that were expected to occur on that day have also been shifted to the middle of 2015! Next what?

# \*\* A2 Asteroids \*\*

## Asteroids Unlikely

### Civilization threatening asteroids come around once every 200,000 years

Sagan, 94 (Carl, David Duncan Professor of Astronomy and Space Sciences and Director of the Laboratory for Planetary Studies at Cornell University, 1994, Pale Blue Dot, p. 313)

Civilization-threatening impacts require bodies several hundred meters across, or more. (A meter is about a yard; 100 meters is roughly the length of a football field.) They arrive something like once every 200,000 years. Our civilization is only about 10,000 years old, so we should have no institutional memory of the last such impact. Nor do we.

## A2 Asteroid Mining

### Asteroid mining is highly unlikely- it will be very difficult and dangerous.

Ross 2001 (professor of dynamical systems at Virginia Tech in Engineering Science and Mechanics Department “Near-Earth Asteroid Mining” pg. 14 December 14, 2001 Caltech 107-81 Google Books)

In any operation, the mining machinery must first be anchored successfully to the asteroid surface or sub- surface, and the released material must then be efficiently contained and recovered. Containment will be important, because the escape velocity for small asteroids may be of the order of 20 cm/s. Mining on asteroids will, because of the low gravity, require positive anchoring of the digger, drill, pick, or cutting head, so as to generate adequate force against the regolith, rock, ice, or metal. Securing is easy with rigid, competent, strongly bonded matrices. One can set anchors, drive in pitons, glue or adhere to the surface, or clamp against opposing surfaces. But it is likely to be very difficult with low strength or unconsolidated material, such as loose asteroidal regolith or the hypothesized loose dusty covering of a dormant or extinct comet. The reaction forces created by such operations as drilling or scraping may in that case require the operation to be spread over a very wide footprint, if the regolith strength is low, and because of the milli-g gravity. This may need very wide area anchoring, over an extended footprint, including the approach of totally surrounding the target body, by wrapping it with a net or membrane.

### Mining asteroids is one of the most dangerous occupations known to man.

Darnell 2009 <http://www.colonyworlds.com/2007/07/asteroid-mining-the-most-dangerous-job-in-the-solar-system.html> (Darnell is an experienced writer in asteroid studies and Mars studies)

But while all of these things may come to pass (perhaps even a [space elevator](http://en.wikipedia.org/wiki/Space_elevator) or two) the future reality is that there are some solar occupations that may entail individuals to risk their lives in order to keep our interplanetary economy going**. One of these jobs just might be an asteroid miner**. Unlike some of the other potential occupations throughout our star system, **asteroid miners will face dangers unlike any other explorer**. Often located in sparse regions throughout our star system, metallic asteroids will probably not become major spots for tourism, making them lonely companions for asteroid mining outposts. With most of these invaluable asteroids tens of millions of miles away from the nearest colony world**, asteroid miners will find themselves heavily dependent upon supplies for food and water. Their isolation will also make them prime candidates for space pirates, not to mention feuding powers from Earth, Mars and the Jovian systems. Unless these outposts are protected by a space fleet, they may soon find their boring schedule filled with being invaded by unwelcome guests. Another danger** of asteroid miners **will be radiation**. Since most (if not all) asteroids lack a magnetic field, **asteroid outposts will be at the mercy of the** [**Sun’s wrath**](http://science.nasa.gov/headlines/y2000/ast14jul_2m.htm), not to mention [cosmic rays](http://imagine.gsfc.nasa.gov/docs/ask_astro/answers/980119b.html) from abroad. Although outposts will probably have [magnetic shields](http://www.colonyworlds.com/2007/04/portable-magnetic-shields-for-future.html) surrounding their bases, this does not guarantee that the rocks that they mine upon are free from being radioactive. Despite the fact that future asteroid miners will probably have machines deal directly with the floating space rocks, **their may be a possibility of these miners contracting cancer** (later on in life), which could threaten future retirement plans (as treating cancer can be [quite expensive](http://www.nytimes.com/2005/07/12/business/12cancer.html?ex=1278820800&en=1eb889752ca5eb49&ei=5088)). If radiation and security were not enough to worry about, **asteroid miners also face the dangers of** [**micrometeorites**](http://en.wikipedia.org/wiki/Micrometeorites) **piercing holes through their suits and stations,** or (even worse) encountering a meteor shower from an incoming comet. Future outposts will probably have to rely upon the eyes (and scientific “ears”) of astronomers to warn them of the dangers of nearby comets, although they may have to “take a gamble” when dealing with incoming space pebbles as armor may prove useless against these solar bullets. But despite the fact that these dangers surround future asteroid miners, there presence in our star system will be desperately needed. Asteroids have the potential of supplying invaluable resources, and the purity of metals could be worth up to [$500,000 a ton](http://www.space.com/adastra/060209_adastra_mining.html). Although **this future job may be** classified as **one of the most dangerous occupations humanity has ever known** (within our star system), space colonists may be willing to take on the risk in order to bring back the fruit of their labor towards major population centers living upon terrestrial worlds.

# \*\* A2 Dark Matter \*\*

## Dark Matter Doesn’t Exist

### No dark matter – recent experiments are unable to prove existence

Biever ’11[Celeste, deputy news editor, **“**Dark matter no-show at sensitive underground lab,” New Scientist, April, <http://www.newscientist.com/blogs/shortsharpscience/2011/04/dark-matter-no-show-at-sensiti.html>

It's just like a wimp to be a no-show when summoned for interrogation. That seems to be the result of an experiment to detect the weakly interacting massive particles, or WIMPs, thought to make up elusive dark matter that is thought to make up much of the mass of the universe. After 100 days of monitoring, a tub of cryogenically chilled liquid xenon deep in an Italian mountain has shown no trace of the particles it is designed to catch. The result doesn't rule out the existence of WIMPs, but it does seem these particles are slipperier than previously hoped.

### Dark matter doesn’t exist – flawed calculation methods for determining the composition of the universe

Blake, ’10 [Heidi, “Dark energy may not exist in space, scientists claim,” the Telegraph, June 15, <http://www.telegraph.co.uk/science/space/7827674/Dark-energy-may-not-exist-in-space-scientists-claim.html>]

British scientists have claimed that the method used to calculate the make-up of the universe may be wrong. The universe as we know it – formed of recognisable components such as planets, stars, asteroids and gas - accounts for just four per cent of the cosmos, according to the decades old Standard Model. The rest is thought to be made up of mysterious dark matter and dark energy. This permeates space and powers the expansion of the universe. But physicists at Durham University now claim the calculations on which the Standard Model is based could be fatally flawed. This raises the possibility that the “dark side” of the cosmos does not exist, which in turn could mean that the universe is expanding less quickly than previously thought. Dr Robert Massey of the Royal Astronomical Society, which published the findings, said: “This would challenge greatly our assumptions about the long term future of the universe, because the assumption at the moment is that the universe is expanding and if it isn’t that would be a huge shock. “It could even mean that the expansion of the universe is slowing down and could grind to a halt.” A new analysis of measurements taken by NASA of Big Bang heat radiation in 2001 showed that the heat waves may be far smaller than previously thought. When the measurements were first taken in 2001 the size of the ripples in the Cosmic Microwave Background radiation led scientists to conclude that the cosmos is made up of four percent "normal" matter, 22 percent "dark" or invisible matter and 74 percent "dark" energy. But scientists now claim that the waves of radiation which were previously measured at about twice the size of the full moon may in fact be less than half that size. Professor Tom Shanks, who led the research, said: “CMB observations are a powerful tool for cosmology and it is vital to check for systematic effects. If our results prove correct then it will become less likely that dark energy and exotic matter particles dominate the universe. So the evidence that the universe has a dark side will weaken.”

### Ripples disprove dark matter – study shows that past research is flawed

Moskowitz, ’10 [Clara, “Dark Energy and Dark Matter Might Not Exist, Scientists Allege,” June 13, http://www.space.com/8588-dark-energy-dark-matter-exist-scientists-allege.html]

Recently Shanks and his graduate student Utane Sawangwit went back to examine the WMAP data and used a different method to calibrate how much smoothing, or blurring, the telescope was causing to its images. This smoothing is an expected affect, akin to the way Earth's atmosphere blurs stars' light so they twinkle. Instead of using Jupiter as a calibration source, the way the WMAP team did, Shanks and Sawangwit used distant astronomical objects in the WMAP data itself that were emitting radio light. "When we checked radio sources in the WMAP background, we found more smoothing than the WMAP team expected," Shanks told SPACE.com. "That would have big implications for cosmology if we were proven right." If this smoothing error is larger than thought, it could indicate that fluctuations measured in the intensity of the CMB radiation are actually smaller than they originally appeared. The size of these fluctuations is a key parameter used to support the existence of dark matter and dark energy. With smaller ripples, there would be no need to invoke exotic concepts like dark matter and dark energy to explain the CMB observations, Shanks said. The researchers will report their findings in an upcoming issue of the journal Monthly Notices of the Royal Astronomical Society.

### No Dark matter it’s a conspiracy

J. A. Sellwood and A. Kosowsky 2000, (“Does dark matter exist” ASP conference series

Sellwood is a professor at the university of Rutgers, while Kosowsky is a associate professor at the university of Chicago) http://arxiv.org/PS\_cache/astro-ph/pdf/0009/0009074v1.pdf

The “disk-halo conspiracy” (Bahcall & Casertano 1986) describes the absence of a feature in galaxy rotation curves at which the dominant source of central attraction changes from luminous matter to dark. Many galaxies are now known in which the rotation curve does drop somewhat at the edge of the visible disk (e.g. Casertano & van Gorkom 1991; Verheijen 1997; Bosma 1999), but it is extremely rare for the drop to exceed about 10%. Blumenthal et al. (1986) showed that a featureless rotation curve is expected if DM dominates galaxies right to their centers, but it is much harder to understand why the circular orbital speed from the luminous matter, which dominates the inner region (see §2), should be so similar to that from the DM at larger radii. For any galaxy dominated by stars in its center, initial conditions for the dark and luminous matter must be finely tuned to produce a flat rotation curve.

### Dark matter is extremely rare if it exists at all

J. A. Sellwood and A. Kosowsky 2000, (“Does dark matter exist” ASP conference series

Sellwood is a professor at the university of Rutgers, while Kosowsky is a associate professor at the university of Chicago) http://arxiv.org/PS\_cache/astro-ph/pdf/0009/0009074v1.pdf

Extreme low-SB galaxies lie on the same Tully-Fisher relation (TFR) derived from high-SB galaxies, with somewhat greater scatter (Zwaan et al. 1995; Sprayberry et al. 1995; McGaugh et al. 2000). Thus we observe similar circular speeds in all galaxies of a given luminosity, no matter how widely the luminous material is spread. This amazing result requires that the overall M/L of the galaxy rises with decreasing SB in just the right way so as to preserve a tight relation between total luminosity and circular speed. Either the true M/L of the stellar population changes with surface brightness, which seems unlikely (de Blok & McGaugh 1997), or the DM fraction rises as the luminous surface density declines. The needed variations would be minor if DM dominated in all galaxies, but since stars dominate the mass in the inner parts of high-SB galaxies (§2), eliminating the SB dependence again requires careful tuning.

# \*\* A2 Disease Surveillance \*\*

## Disease Won’t Cause Extinction

### No disease can kill us all – it would have to be everything at once

Gladwell, 95 (Malcolm, The New Republic, 7/17/95 and 7/24/95, “The Plague Year”, Lexis)

What would a real Andromeda Strain look like? It would be highly infectious like the flu, spread through casual contact. But it would also have to be structured in such a way as to avoid the kind of selection bias that usually exists against virulent strains. For that reason, it would need to move stealthily through its host, infecting so silently that the victim would not know to take precautions, and so slowly that the victim would have years in which pass on the infection to someone else. The Andromeda Strain, in short, the virus that really could kill 80 or 90 percent of humanity, would be an airborne version of HIV. In fact, doomsday types have for years been conjuring up this possibility for the end of mankind. The problem, however, is that it is very difficult to imagine how such a super-virus could ever come about. For a start, it is not clear how HIV could become airborne and still be lethal. (This was the argument of Howard Temin, the late Nobel Prize-winning virologist.) What makes HIV so dangerous is that it seeks out and selectively kills the key blood cells of the human immune system. To be airborne, it would have to shift its preference to the cells of the respiratory system. (Ebola, which is not nearly so selective, probably doesn't need to change personality to become airborne.) How, then, could it still cause aids? Why wouldn't it be just another cold virus? Then there is the problem of mutation. To become airborne, HIV would have to evolve in such a way as to become more durable. Right now the virus is highly sensitive to changes in temperature and light. But it is hardly going to do any damage if it dies the moment it is coughed into the air and exposed to ultraviolet rays. HIV would have to get as tough as a cold virus, which can live for days on a countertop or a doorknob. At the same time HIV would have to get more flexible. Right now HIV mutates in only a limited manner. The virus essentially keeps changing its clothes, but its inner workings stay the same. It kills everyone by infecting the same key blood cells. To become airborne, it would have to undergo a truly fundamental transformation, switching to an entirely different class of cells. How can HIV make two contradictory changes at the same time, becoming both less and more flexible? This is what is wrong with the Andromeda Strain argument. Every infectious agent that has ever plagued humanity has had to adopt a specific strategy, but every strategy carries a corresponding cost, and this makes human counterattack possible. Malaria is vicious and deadly, but it relies on mosquitoes to spread from one human to the next, which means that draining swamps and putting up mosquito netting can all but halt endemic malaria. Smallpox is extraordinarily durable, remaining infectious in the environment for years, but its very durability, its essential rigidity, is what makes it one of the easiest microbes to create a vaccine against. aids is almost invariably lethal because its attacks the body at its point of great vulnerability, that is, the immune system, but the fact that it targets blood cells is what makes it so relatively uninfectious. I could go on, but the point is obvious. Any microbe capable of wiping us all out would have to be everything at once: as contagious as flu, as durable as the cold, as lethal as Ebola, as stealthy as HIV and so doggedly resistant to mutation that it would stay deadly over the course of a long epidemic. But viruses are not, well, superhuman. They cannot do everything at once. It is one of the ironies of the analysis of alarmists such as Preston that they are all too willing to point out the limitations of human beings, but they neglect to point out the **limitations** of microscopic life forms.

# \*\* A2 Helium-3 \*\*

## Structural Barriers

### Large portion of moon will have to be mined to even begin providing energy for Earth, which won’t happen until functional fusion power plants are built

Seife, 04 (Charles Seife, American science author, journalist, and professor at NYU University, “Moon’s ‘Abundant Resources’ Largely an Unknown Quantity” March 12, 2004, http://www.planetary.brown.edu/planetary/geo016/moon\_resources.pdf)

It’s 2014. Forty-five years after the Apollo 11 landing, humans return to the moon to set up the lunar base that President George W. Bush proposed a decade earlier. Which will they be: homesteaders or campers? Apollo astronauts, who roved the lunar surface for tens of hours, could easily bring with them enough food, water, and air for a short visit. Under NASA’s ambitious new plans for lunar exploration, however, astronauts will live on the moon for weeks or months at a time—and the longer they stay, the more difficult and expensive it becomes to supply them from Earth. Some space boosters, the president included, suggest that part of the solution lies in living off the land. “The moon is home to abundant resources,” Bush stated in his 14 January speech announcing NASA’s new vision. Scientists agree that potentially useful chemicals, such as water ice and various gases, are indeed locked up in lunar soil. But when it comes to estimating how abundant they are and how practical it would be to extract them, one resource still in short supply is information. Water. More valuable than gold to a lunar base, water can be used for drinking or it can be split to create oxygen to breathe—or oxygen and hydrogen for rocket fuel. A few tons of hydrogen-oxygen fuel could send a rocket off the surface of the moon and into space. That’s why moon buffs such as Paul Spudis, a planetary scientist at Johns Hopkins University’s Applied Physics Laboratory in Laurel, Maryland, think the most important lunar resource is likely to be water from ice. In theory, ice from crashed comets may linger in cold, dark niches at the lunar poles, from which it could relatively easily be extracted and distilled. But scientists disagree about how much of it is trapped there. In 1996, a Department of Defense satellite called Clementine bounced radar waves off the moon’s surface and back to radar telescopes on Earth. Spudis and colleagues noticed that reflections from shadowy nooks near the lunar south pole could be interpreted as signatures of multiple scattering within crystals of water—an indication that about 1.5% of the lunar soil in those regions is water ice. Similar results came when the Lunar Prospector satellite, launched in 1998, used a spectrometer to count neutrons bouncing off the moon in energy ranges known to interact with hydrogen—presumably in water ice. The answer: Patches of polar lunar soil were about 0.5% to 1% ice by weight— less water than Clementine found, but still enough to make a polar base attractive. On the other hand, Donald Campbell, a physicist at Cornell University, and colleagues twice bounced radio waves off the moon from the Arecibo telescope in Puerto Rico but saw no signs of water ice. “We don’t believe that the radar data supports” the large amounts of ice that the Clementine analysis would imply, Campbell says. And when the Lunar Prospector crashed into the moon’s south pole at the end of its mission, scientists didn’t see water in the resulting plume of debris. Spudis thinks a more energetic crash would have splashed up water vapor, but for now, lunar water remains an open question. Trapped gases. Even if there’s little water on the moon, astronauts might be able to make it and other useful chemicals from more-abundant raw materials: light elements such as nitrogen, oxygen, and carbon, manufactured by nuclear fusion inside the sun and blown to the lunar surface on the solar wind. These trace elements are present in the lunar soil, or regolith, at levels of parts per million, so it would take a huge amount of mining to get usable quantities. The good news is that they are extremely easy to extract: Just heat soil up (using the base’s solar or nuclear power source) and the gases escape, yielding nitrogen, carbon monoxide, carbon dioxide, methane, and hydrogen that can be converted into air or water. Water, in turn, can be used to strip oxygen from a common iron-titanium lunar mineral known as ilmenite. Helium. Even more valuable in the long run may be a much rarer legacy of the solar wind, **helium-3**. Only Earth-bound humans would benefit, however, and even its **enthusiasts acknowledge that it’s a long shot.** Helium-3 is attractive because it can fuel an advanced fusion reactor. A helium-3 atom combined with a hydrogen-2 (deuterium) atom or with another helium-3 releases a great deal of energy with relatively little radioactive waste. “If we replaced all the electrical power plants in the United States with [helium-3/ deuterium] reactors, you’d need only 40 metric tons to produce all the electricity needed in 2004,” says Gerald Kulcinski, a physicist at the University of Wisconsin, Madison. Only a few hundred kilograms of helium-3 are accessible on Earth, he says, but the lunar regolith harbors millions of tons of it. **Several factors make mining helium-3 a dicey proposition**. For one, **most** of the **solar wind strikes the lunar farside, which faces the sun** when the moon’s orbit takes it upwind of Earth’s magnetic shadow. **But ilmenite, the only lunar mineral that traps helium-3 effectively, is more common on the moon’s nearside.** Wherever it crops up, **even helium-3–rich lunar soil won’t contain much of the gas. “It’ll be** a little better than **10 parts per billion by weight,” says Timothy Swindle, a geochemist at the University of Arizona** in Tucson. **“To make a dent in the world’s energy needs, you’re going to have to mine a large fraction of the surface of the moon.” Physicists will also have to create a working helium-3 reactor**—no easy task, considering that **decades of research have yet to produce a fusion power plant of any sort. And, of course, someone will have to ship all the helium back to Earth.**

## Too Expensive

### Helium-3 mining much too expensive; governments not willing to pay for space exploration with limited budgets

Gass, 11 (Henry Gass, Contributing Editor at Theecologist.com, “Plans to strip mine the moon may soon be more than just science-fiction” July 4, 2011, http://www.theecologist.org/News/news\_analysis/962678/plans\_to\_strip\_mine\_the\_moon\_may\_soon\_be\_more\_than\_just\_sciencefiction.html)

It may not be long before we start mining the moon for its resources, particularly the rare Helium-3 for its use in nuclear fusion. Billions of tonnes of resources, ranging from water to gases to metals, have been detected on the Moon and further out into space, and both governments and private companies are navigating the ambiguous legal parlance to determine how to reach, extract and distribute it all. Vast quantities of the isotope Helium-3 are known to exist on the Moon, as well as in the atmospheres of planets like Jupiter, and could come into high demand as the essential fuel for the so-called 'golden dream' of nuclear fusion power. While existing nuclear fission plants break apart atoms and harvest the excess energy, nuclear fusion combines atoms of hydrogen to create helium, a process that releases vast amounts of energy. According to Matthew Genge, lecturer in the Faculty of Engineering at Imperial College London, the Moon’s lack of atmosphere means it has been bombarded by high-energy particles for billions of years, some of which have embedded on its surface. Many of these particles, including Helium-3, can be extracted through heating Moon rock and collecting the gas. ‘Millions to hundreds of millions of tonnes, I should think, is readily accessible,’ says Genge. ‘You can strip mine the Moon and you can cook out the Helium-3.’ What's more, he says, nuclear fusion using Helium-3 would be cleaner, as it doesn't produce any spare neutrons. ‘It should produce vastly more energy than fission reactions without the problem of excessive amounts of radioactive waste.’ Scientists have so far only been able to sustain a fusion reaction for a few seconds, but with nothing near the scale or energy yield necessary to be replicated for commercial use. With billions invested into its potential, many scientists believe it will eventually be perfected - at which point demand for Helium-3 is likely to 'explode'. **Helium-3 is available in such low quantities on earth that even though nuclear fusion doesn’t even work properly yet, it is still worth US$16 million per kilo.** ‘We’re going to have to go somewhere else to get it,’ continues Genge, ‘and the easiest place to go is the Moon.’ Cost of strip-mining the moon. According to Genge **it costs US$25,000 per kilo to lift things into space on a shuttle. Thus, whatever is mined in space in the future, it will have to be in high-enough demand to subsidise the cost of launching it. This is especially true for prospecting missions beyond the Moon. A mission to retrieve Helium-3 from Jupiter’s atmosphere**, for example, **would take ten years, and businesses will** likely **be reluctant to wait a decade for a return on such a pricy investment**, says Genge. Private investors interested in the moon Shackleton plans to set up several refuelling service stations in LEO that would free exploratory, commercial and tourist shuttles from lifting all their fuel from Earth. Shackleton believes the stations would also enable an entirely new category of space vehicle shuttles that operate only at or beyond LEO. Tietz says Shackleton is currently in phase one of a four-phase operation to mine water on the Moon. Phase one involves gathering teams for the mission and investors to fund it, as well as detailed mission planning. Phase two would involve launching two unmanned rover vehicles to prospect areas of the Moon for water deposits. The Shackleton crater at the south pole on the dark side of the Moon, among many others, is believed to retain a significant portion of the Moon’s water. Tietz says ‘there’s a great deal of interest out there’ from potential investors. ‘This will not be funded by any government or any federal agency like NASA. This is all going to be – if it ever happens – it will all be private investment,’ continues Tietz. **In a** June **2009 article in the I**nstitute **of** **E**lectrical and **E**lectronics **E**ngineers **magazine Spectrum**, Shackleton founder **Bill Stone wrote that lunar prospecting could cost as much as $20 billion over a decade. ‘At the moment, no country seems eager to foot the bill,’ writes Stone.** ‘Where governments fail to act on a vitally important opportunity, the private sector can and should step in.’ Stone outlined that**, to save $1 billion during the initial staging of the lunar mining base, the first human team would only take enough fuel to land and establish the base—not enough for a return trip to Earth.** ‘This may sound radical, but the human crew who will undertake this mission will do so knowing that their success and survival depend on in situ fuel generation for the return. Should they fail, theirs will be a one-way trip; the risk is theirs to take,’ writes Stone. ‘For government-sponsored space agencies, such a concept is unthinkable; they cannot tolerate the political risk of failure. Yet it is the only viable business choice. Centuries of explorers made the same hard choice in pushing the limits on land, sea, and air. It’s time to carry it forward into space.’ According to Tietz, **governments are at present neither politically inclined nor financially able to carry out prospecting missions in space.** Tietz says **governments have different priorities – most research-oriented – they have to fund with limited budgets.**

## H3 Fails

### Even if mined, using Helium-3 for energy through fusion is dangerous

Williams, 07 (Andrew Williams, Contributing Editor at Techonolgyreview.com, “Mining the Moon” August 23, 2007, http://www.technologyreview.com/energy/19296/)

At the 21st century's start, few would have predicted that by 2007, a second race for the moon would be under way. Yet the signs are that this is now the case. Furthermore, in today's moon race, unlike the one that took place between the United States and the U.S.S.R. in the 1960s, a full roster of 21st-century global powers, including China and India, are competing. Even more surprising is that one reason for much of the interest appears to be plans to mine helium-3--purportedly an ideal fuel for fusion reactors but almost unavailable on Earth--from the moon's surface. NASA's Vision for Space Exploration has U.S. astronauts scheduled to be back on the moon in 2020 and permanently staffing a base there by 2024. While the U.S. space agency has neither announced nor denied any desire to mine helium-3, it has nevertheless placed advocates of mining He3 in influential positions. For its part, Russia claims that the aim of any lunar program of its own--for what it's worth, the rocket corporation [Energia](http://www.energia.ru/english/) recently started blustering, Soviet-style, that it will build a [permanent moon base](http://www.space.com/news/ap_060126_russia_moon.html) by 2015-2020--will be extracting He3. The Chinese, too, apparently believe that helium-3 from the moon can enable fusion plants on Earth. This fall, the People's Republic expects to orbit a satellite around the moon and then land an unmanned vehicle there in 2011. Nor does India intend to be left out. (See "[India's Space Ambitions Soar](http://www.technologyreview.com/Infotech/19115/).") This past spring, its president, A.P.J. Kalam, and its prime minister, Manmohan Singh, made major speeches asserting that, besides constructing giant solar collectors in orbit and on the moon, the world's largest democracy likewise intends to mine He3 from the lunar surface. India's probe, [Chandrayaan-1](http://www.isro.org/chandrayaan/htmls/home.htm), will take off next year, and ISRO, the Indian Space Research Organization, is talking about sending [Chandrayaan-2](http://www.hindu.com/2007/01/04/stories/2007010401342200.htm), a surface rover, in 2010 or 2011. Simultaneously, Japan and Germany are also making noises about launching their own moon missions at around that time, and talking up the possibility of mining He3 and bringing it back to fuel fusion-based nuclear reactors on Earth.  Could He3 from the moon truly be a feasible solution to our power needs on Earth? Practical nuclear fusion is nowadays projected to be five decades off--the same prediction that was made at the 1958 Atoms for Peace conference in Brussels. **If fusion power's arrival date has remained constantly 50 years away since 1958, why would helium-3** suddenly **make fusion power more feasible?** Advocates of He3-based fusion point to the fact that **current efforts to develop fusion-based power generation**, like the [ITER](http://www.iter.org/index.htm) megaproject, **use the deuterium-tritium fuel cycle, which is problematical.** (See "[International Fusion Research](http://www.technologyreview.com/Energy/14618/).") Deuterium and tritium are both hydrogen isotopes, and when they're fused in a superheated plasma, two nuclei come together to create a helium nucleus--consisting of two protons and two neutrons--and a high-energy neutron. **A deuterium-tritium fusion reaction releases** 80 percent of **its energy in** a stream of **high-energy neutrons, which are highly destructive for** anything they hit, including **a reactor's containment vessel.** Since tritium is highly radioactive, that makes containment a big problem as structures weaken and need to be replaced. Thus, whatever **materials** are **used in a deuterium-tritium** fusion power **plant will have to endure serious punishment**. And **if that's achievable, when that** fusion **reactor is** eventually **decommissioned, there will still be a lot of radioactive waste.**

## Disease Alt Caus

### Multiple alternate causalities to disease

Brower, 03 (Jennifer, science/technology policy analyst, and Peter Chalk, political scientist, Summer 2003, Rand Review, Vol. 27, No. 2, “Vectors Without Borders,” http://www.rand.org/publications/randreview/issues/summer2003/vectors.html)

This year's outbreak of severe acute respiratory syndrome (SARS) in Beijing, Hong Kong, Taipei, and Toronto is only one of the more recent examples of the challenge posed by infectious diseases. Highly resilient varieties of age-old ailments— as well as virulent emerging pathogens—are now prevalent throughout the world. These illnesses include cholera, pneumonia, malaria, and dysentery in the former case and Legionnaires' disease, acquired immune deficiency syndrome (AIDS), Ebola, and SARS in the latter. In the United States, West Nile virus entered New York in 2000 and then spread to 44 states by 2002, and monkey pox struck the Midwest this June. In the latter half of the 20th century, almost 30 new human diseases were identified. The spread of several of them has been expedited by the growth of antibiotic and drug resistance. Globalization, modern medical practices, urbanization, climate change, sexual promiscuity, intravenous drug use, and acts of bioterrorism further increase the likelihood that people will come into contact with potentially fatal diseases.

# \*\* A2 Mars Colonization \*\*

## Mars Won’t Support Life

### Humans couldn’t survive on Mars

Klerkx 2004 (Greg, senior manager of the SETI Institute. Lost in Space: The Fall of NASA and the Dream of a New Space Age, p. 283-284)

If you were to be lifted straight from the comfort of your living room and dropped onto the surface of Mars, the only upside is that you probably wouldn’t remain conscious long enough to fully register your fatal predicament. Unless you were sitting in your living room wearing Antarctic survival gear, you would most likely go into thermal shock almost immediately: the average temperature on Mars is about minus 82 degrees Fahrenheit. Even if you could stay warm enough, you wouldn’t be able to breathe. Unlike Earth’s atmosphere (a comfy mix of about 78 percent nitrogen, 20 percent oxygen and a smattering of other gases) the Martian mix is pure poison for humans: about 95 percent carbon dioxide with a bit of nitrogen and trace elements thrown in. There’s also the problem of atmospheric pressure, Mars doesn’t have any, at least not compared to Earth’s, which means that being on the surface of Mars without a pressurized space suit or spacecraft is only marginally better than being naked in the vacuum of space. Humans have been built to order for Earth’s atmospheric pressure: too much pressure, and our body’s all-important cavities and passageways (which allow us to respire and circulate blood and other fluids) get compacted. Too little pressure and everything expands, which is why creatures adapted to life in the crushing pressure of the deep ocean literally explode when brought to the surface. An unprotected human body on Mars would face a situation somewhat less dramatic than that of a relocated deep-sea creature, but you might find yourself wishing for such a quick and explosive demise, since the end result would be similar—it would just take a little longer. So here’s the summary: dropped unprepared onto the surface of Mars, you’d go into thermal shock, inhale lungfuls of poison, begin to feel extreme unpleasantness in your insides (that would be your blood beginning to boil in the super-low atmospheric pressure) and die within a few minutes. And have no illusion that you would be found in a well-preserved state sometime in the future by better-prepared Martian explorers. Adding insult to injury, the ultraviolent radiation hitting the surface of Mars (unimpeded by any ozone layer, as it is on Earth) would quickly char your corpse black. Soon afterward, your body would mummify as its liquid was sucked away by the near-vacuum Martian atmosphere.

### No chance of Mars atmosphere – Solar wind proves

Darnell Clayton, Writer for Colony Worlds, Is Terraforming Mars Impossible?, Christian Science Monitor, May 10, 2010, Date Accessed: 7/11/11, http://www.csmonitor.com/Science/Cool-Astronomy/2010/0510/Is-terraforming-Mars-impossible

It looks like humanities hope of turning Mars into a second Earth may never translate into reality thanks in part to the red planet’s lack of a magnetic field. Scientists have discovered that our Sun’s solar radiation may thwart all attempts at increasing the atmospheric pressure of the crimson world, which means we may never get the chance of witnessing a green Mars, let alone a blue one. (Discovery News) Scientists have identified a sort of double-whammy solar super wave that is responsible for blowing away air from Mars and keeping its atmosphere thin, frigid and downright inhospitable for any possible future travelers. The waves happen when one stream of solar wind is overrun and amped up by another, faster gale of solar particles. That creates a flying traffic jam of particles that slam into Mars as one large pulse. [...] When Edberg and his colleagues compared these events at Mars to the flow of heavier atoms blowing past Mars Express, they discovered that fully a third of Martian air loss happens during the 15 percent of the time when doubled-up solar wind pulses hit the planet. Although this means that Mars may never become a second eden (unless we can create a global magnetic field), it does not mean that humanity will never settle the planet en mass.

### Chemicals Make Mars Uninhabitable

University of Michigan Paper (Written by Atreya, and Delory, co authors of both papers, Farrell and Nilton Renno and Ah-San Wong, (University of Michigan), Steven Cummer (Duke University, Durham, N.C.), Davis Sentman (University of Alaska), John Marshall (SETI Inst., Mountain View, Calif.), Scot Rafkin (Southwest Research Institute, San Antonio, Texas) and David Catling (University of Washington). The research was funded by NASA's Mars Fundamental Research Program and NASA Goddard internal institutional funds, Mars surface probably can't support life, July 31, 2006, Date Accessed: 7/14/11, http://www.astrobiology.com/news/viewpr.html?pid=20516

The first Astrobiology paper calculated the excess carbon monoxide, hydroxyl and eventually hydrogen atoms produced when electric fields generated by dust devils and storms cause carbon dioxide and water molecules to split. Hydrogen and hydroxyl have been known to play a key role in the production of hydrogen peroxide in the Martian atmosphere. UCLA-Berkeley's Gregory Delory, senior fellow at the Space Sciences Laboratory, is first author, with co-authors Atreya and William Farrell of NASA's Goddard Space Flight Center, in Greenbelt, Maryland. That paper is called "Oxidant Enhancement in Martian Dust Devils and Storms: Storm Electric Fields and Electron Dissociative Attachment." Atreya's team then calculated that the amounts of hydrogen peroxide produced during these reactions would be large enough to result in its condensation---essentially hydrogen peroxide would snow from the sky and contaminate the planet when it fell. Atreya's paper suggests that the hydrogen peroxide would scavenge organic material from Mars, and it could also accelerate the loss of methane on Mars, requiring a larger source to explain the recent detection of this gas on Mars. "Methane is a metabolic byproduct of life as we know it, but presence of methane does not by itself imply existence of life on a planet", said Atreya.

### Life on Mars isn’t possible – New research proves

University of Michigan Paper (Written by Atreya, and Delory, co authors of both papers, Farrell and Nilton Renno and Ah-San Wong, (University of Michigan), Steven Cummer (Duke University, Durham, N.C.), Davis Sentman (University of Alaska), John Marshall (SETI Inst., Mountain View, Calif.), Scot Rafkin (Southwest Research Institute, San Antonio, Texas) and David Catling (University of Washington). The research was funded by NASA's Mars Fundamental Research Program and NASA Goddard internal institutional funds, Mars surface probably can't support life, July 31, 2006, Date Accessed: 7/14/11, http://www.astrobiology.com/news/viewpr.html?pid=20516

The question of whether the planet Mars can support life has entranced lay people and scientists for years. New research suggests that dust devils and storms on Mars produce oxidants that would render the planet's surface uninhabitable for life as we know it. "As a consequence, any nascent life (microorganisms, for example) or even prebiotic molecules would find if hard to get a foothold on the surface of Mars, as the organic material would be scavenged efficiently by the surface oxidants," said Sushil Atreya, University of Michigan professor in the Department of Atmospheric Oceanic and Space Sciences. Atreya is lead author on one of two papers published last month in the journal Astrobiology that discuss the findings. Atreya's paper: "Oxidant Enhancement in Martian Dust Devils and Storms: Implications for Life and Habitability." The research for both papers was conducted by the U-M Department of Atmospheric Oceanic and Space Sciences, NASA Goddard Space Flight Center and the University of California, Berkley, with several other universities and institutes participating. The results also explain inconsistencies in earlier space experiments that sought to determine if Mars had or did support life. Mars is thought to have formed with the same ingredients that on Earth led to the formation of molecules associated with life. Yet, organic molecules have never been detected on Mars' surface, Atreya said.

## **Mars Terraform Fails**

### It will take centuries before we can terraform Mars to support human colonization

Comins 2007 (Neil, astronomer. The Hazards of Space Travel: A Tourist’s Guide, p. 12-13)

Because Mars is likely to be a major tourist destination and since it could, in principle, hold down both oxygen and nitrogen gases, both scientists and science fiction writers have suggested the conversion of its air into a breathable atmosphere. Transforming Mars into an environment that can support human life, called terraforming, has been extensively explored in both science and science fiction literature. The good news is that we could generate a breathable atmosphere there. The bad news is that it will take centuries (at least) to create and would cost a large fortune; moreover, since Mars cannot hold water either on its surface or in the air, it would be bone dry. Any water that entered the air would be moving fast enough to drift into space, and most of the liquid water that did exist on its surface billions of years ago has since evaporated and drifted away. The rest of that water became ice. You will have to be content with wearing a space suite when you are outside on Mars or any other place in space.

## **Mars Too Far**

### **Mars leads to Cancer and Death**

NASA NEWS, National Aeronautics and Space Administration, Can People Go to Mars?, April 6, 2011, Accessed: 7/11/11, http://science.nasa.gov/science-news/science-at-nasa/2004/17feb\_radiation/

"It's a question of radiation," says Frank Cucinotta of NASA's Space Radiation Health Project at the Johnson Space Center. "We know how much radiation is out there, waiting for us between Earth and Mars, but we're not sure how the human body is going to react to it." NASA astronauts have been in space, off and on, for 45 years. Except for a few quick trips to the moon, though, they've never spent much time far from Earth. Deep space is filled with protons from solar flares, gamma rays from newborn black holes, and cosmic rays from exploding stars. A long voyage to Mars, with no big planet nearby to block or deflect that radiation, is going to be a new adventure. NASA weighs radiation danger in units of cancer risk. A healthy 40-year-old non-smoking American male stands a (whopping) 20% chance of eventually dying from cancer. That's if he stays on Earth. If he travels to Mars, the risk goes up. The question is, how much? "We're not sure," says Cucinotta. According to a 2001 study of people exposed to large doses of radiation--e.g., Hiroshima atomic bomb survivors and, ironically, cancer patients who have undergone radiation therapy--the added risk of a 1000-day Mars mission lies somewhere between 1% and 19%. "The most likely answer is 3.4%," says Cucinotta, "but the error bars are wide." The odds are even worse for women, he adds. "Because of breasts and ovaries, the risk to female astronauts is nearly double the risk to males." Researchers who did the study assumed the Mars-ship would be built "mostly of aluminum, like an old Apollo command module," says Cucinotta. The spaceship's skin would absorb about half the radiation hitting it. "If the extra risk is only a few percentâŚ we're OK. We could build a spaceship using aluminum and head for Mars." (Aluminum is a favorite material for spaceship construction, because it's lightweight, strong, and familiar to engineers from long decades of use in the aerospace industry.) "But if it's 19%âŚ our 40something astronaut would face a 20% + 19% = 39% chance of developing life-ending cancer after he returns to Earth. That's not acceptable."

## No Mars Mission (Money)

### Mars Mission would require an extra 3 Billion

Daily Mail, NASA proposes Mars trip as Moon mission deemed too expensive to fly, 9th September 2009, Date Accessed: 7/12/11, http://www.dailymail.co.uk/sciencetech/article-1212186/Nasa-proposes-Mars-trip-Moon-mission-deemed-expensive.html

The space shuttles are due to be retired late next year or early 2011 after six more missions to complete construction of the station, a £60billion project involving 16 nations. The 'Generation Mars' Nasa proposal makes no mention of cost. The space programme review panel estimates that its similar option would need another $3 billion a year. Sticking with the present program would give the United States its heavy-lift Ares 5 by about 2028, but there would be no money to develop a lunar lander or even a rocket motor to leave Earth's orbit.

## **No Mars Mission (Barriers)**

### **NASA far from planning Mission to Mars**

Buckley D., Mars by 2019 Not Possible, September 27, 2003, Date Accessed:7/15/11, http://www.lexisnexis.com.proxy1.cl.msu.edu/hottopics/lnacademic/

Mars by 2019 not possible FLORIDA: The new chief of America's civil space program said yesterday that it would be ""decades" before NASA is able to send astronauts to Mars. NASA's new administrator Dan Goldin said President George Bush's goal of an astronaut flight to Mars by 2019 is unrealistic. He gave no timetable but said: ""I certainly think it will take some decades before humans venture back to the moon and on out to the planet next door." ""Before we go to spend very large quantities of resources, we have to know where we stand relative to cost risk, schedule risk and human risk." Goldin was at the Kennedy Space Centre to watch shuttle Atlantis land yesterday after a nine-day mission of atmospheric research. In 1989, on the 20th anniversary of the 1969 Apollo flight that put Neil Armstrong on the moon, Bush challenged NASA to plant a US flag on Mars by 2019. The $500 billion program NASA envisions would meet the challenge as early as 2014.

# **\*\* A2 Moon Conspiracy \*\***

## Moon Landing Real

### Moon Landing Conspiracy theories live on because of the internet

**Caron, ‘09,** Managing Editor, ABC News On Campus, (Christina, July 19 2009, , Managing Editor, ABC News On Campus , ABC News “Refuting the Most Popular Appollo Moon Landing Hoax Theories” http://abcnews.go.com/Technology/Apollo11MoonLanding/story?id=8104410 6/27/11 BLG)

For the majority of people in the U.S., there's no doubt that the moon landing happened. Just six percent of Americans think the government staged the Apollo moon landings according to a 1999 Gallup poll, the most recent data available. A similar poll by Time/CNN, conducted in 1995, also revealed that six percent believe the moon landings were faked. Moonwalk conspiracy theories still live on, in large part thanks to the Internet. As the 40th anniversary of the moon landing approaches, the phrase "apollo moon landing hoax" is one of the top 10 hottest searches on Google, perhaps aided by NASA's recent announcement that they accidentally erased the original moon landing footage. NASA's mistake also caught the attention of Nashville filmmaker Bart Sibrel, one of today's most vocal skeptics decrying government-sponsored moon fakery. He claims the tapes weren't accidentally erased because "they long ago disassembled the machine that could play or record them" and is currently working on a book based on his 2002 documentary, "A Funny Thing Happened on the Way to the Moon." Sibrel is perhaps best known for a 2002 incident where Buzz Aldrin punched him on camera after Sibrel called Aldrin a thief and a liar during an interview for Sibrel's film. At the time Sibrel had asked Aldrin to swear on a Bible that he had walked on the moon. Several years ago NASA responded to the public's conspiracy fascination by asking Jim Oberg, a former space engineer and the author of 10 books about space flight, to write a book for teachers, challenging the "evidence" presented by moonwalk skeptics who claim NASA faked all six manned lunar landings. But the project was cancelled in 2002 due to political pressure. Opponents suggested the money spent to hire Oberg would be a waste, and the project would end up acknowledging, and therefore lending some degree of credibility, to a small group of conspiracy theorists.

### We haven’t gone back because it’s expensive- not because we never went

**Caron, Managing Editor, ABC News On Campus, ’09** (Christina, July 19 2009, , Managing Editor, ABC News On Campus , ABC News “Refuting the Most Popular Appollo Moon Landing Hoax Theories” http://abcnews.go.com/Technology/Apollo11MoonLanding/story?id=8104410 6/27/11 BLG)

The Claim: If We Had Really Visited the Moon, We Would Be Able to Return. Why Haven't We Gone Back? Going to the moon is expensive. Between 1961 and 1972, the Apollo program cost $25 billion, according to the NASA Web site. The benefits of landing on the moon are still being questioned to this day, and it's been suggested that another trip to the moon simply isn't necessary. Germann says "There's no reason to go back." In 1970, "they canceled three [missions scheduled to fly to the moon] because of budget problems. Quite frankly the moon is giant parking lot, there's just not much there. Space is dangerous place. There's a lot of radiation. And humans become ill in low gravity. It's not comfortable -- it's not someplace you want to live," he added.

### The shadows are a result of the moon’s surface, not Hollywood lights.

**Caron, ‘09** Managing Editor, ABC News On Campus, (Christina, July 19 2009, Managing Editor, ABC News On Campus , ABC News “Refuting the Most Popular Appollo Moon Landing Hoax Theories” http://abcnews.go.com/Technology/Apollo11MoonLanding/story?id=8104410 6/27/11 BLG)

The Claim: On the Tape, the Shadows Look Translucent -- That Wouldn't Happen on the Moon. Was This Taped in a Studio with a Floodlight? The shadows you see in NASA's film footage do seem odd, but Germann says there are several reasons why: the surface of the moon is uneven, and there's "lots of light kicking back from surface of moon." "If they were faking the thing they would arrange it so that the shadows would look right," he said. "If it was a floodlight the shadows are wrong. The astronaut closer to the [supposed] floodlight would have a longer shadow."

### The flag rippled because it was touched and a landing wouldn’t cause a crater- the moon landing was real.

**Caron, ’09,** Managing Editor, ABC News On Campus, (Christina, July 19 2009, Managing Editor, ABC News On Campus , ABC News “Refuting the Most Popular Appollo Moon Landing Hoax Theories” http://abcnews.go.com/Technology/Apollo11MoonLanding/story?id=8104410 6/27/11 BLG)

The Claim: There Isn't Any Wind on the Moon. The Flag Shouldn't be Rippling Yes, it is true that there is no air or wind on the moon. Germann explained that the flag moved because the astronauts touched it, creating ripples in the fabric. The flag is attached to a metal pole. If someone were to touch the metal it would vibrate, and so would the flag. According to the moon hoax rebuttal on the NASA Web site, "Unfurling a piece of rolled-up cloth with stored angular momentum will naturally result in waves and ripples -- no breeze required!" The Claim: If the Apollo Landed on the Moon, Why Wasn't There a Giant Blast Crater? Germann explained that the moon is a rock that has been compacted for millions of years. On the top it is "powdery and fluffy" but a half an inch down it's hard. "The lower layer isn't going to blow," he said. In addition, the moon's low gravity would have eased the impact of the shuttle.

### The Hubble Telescope is too far away to take a picture- hoax theories are an insult to the astronauts.

**Caron, ‘09** Managing Editor, ABC News on Campus, (Christina, July 19 2009, Managing Editor, ABC News On Campus , ABC News “Refuting the Most Popular Appollo Moon Landing Hoax Theories” http://abcnews.go.com/Technology/Apollo11MoonLanding/story?id=8104410 6/27/11 BLG)

The Claim: If the Hubble Telescope Is Up There, Why Doesn't It Take a Picture? The moon is about 240,000 miles away from the earth, whereas the Hubble Telescope orbits approximately 380 miles above the earth. "This I don't fault people for, it's a technical question," Germann said. "Because of the way the Hubble is operated it can't resolve an object that small. "In one sense I guess it's good that people are interested enough to doubt [the moon landing]. It's an iconic event, it stands for a whole era. And for that reason it's important to people," Germann said. But he has little patience for the skeptics. "To say it's a fake is an insult to the many people who worked on this and risked their lives to make it happen. That's what gives it an edge for me."

### Moon Landing Real- Flag waving legitimized.

**McGuire ’09** (Cheston McGuire, July 19, 2009 Missourian “MU professor debunks hoax theory of moon landing” http://www.columbiamissourian.com/stories/2009/07/19/debunking-moon-myth/ 6/27/11 BLG)

MU history professor Jeff Pasley, who teaches "Conspiracy Theories and Conspiracies in U.S. History and Culture," calls the moon landing hoax theory "the most ridiculous and insignificant of all the popular conspiracy theories that don't involve the supernatural." Pasley said the moon landing hoax theory is the third most popular conspiracy theory behind the John F. Kennedy assassination and 9/11. The moon hoax is so popular because "it doesn't really matter, so it's OK to believe it," he said. People believe the hoax because they can protest the government without any real political convictions. "Belief in the moon landing isn't a cause," Pasley said. "It's a belief." While many people might be interested in the theory, Pasley questioned how many people actually believe it. One Web site that does believe the theory is The Apollo Hoax, which states in its opening words that the site "was written to prove, once and for all, that we are not being told the truth about the NASA film footage of the Apollo missions." The site is filled with pictures, videos and diagrams poking holes in the moon landing. One of the most common arguments against the reality of the lunar landing is that the U.S. flag planted there was waving even though there's no wind on the moon. An August 2008 episode of the TV show MythBusters recreated the scenario by planting a flag in the ground within a vacuum. The momentum alone caused the flag to wave, no air required.

### A moon landing failure would be as popular as other NASA failures

**McGuire ’09** (Cheston McGuire, July 19, 2009 Missourian “MU professor debunks hoax theory of moon landing” http://www.columbiamissourian.com/stories/2009/07/19/debunking-moon-myth/ 6/27/11 BLG)

Another supposed piece of evidence that the moon landing couldn't have happened is that astronauts couldn't have survived the radiation of space. That kind of argument is what Pasley calls "negative subjunctive reasoning." When people believe one facet of an event is impossible — like someone surviving the radiation of space — it allows them to believe an entire event is a conspiracy, Pasley said. "Given what we know about NASA, it doesn't seem they could have faked (the moon landing)," Pasley said. Given all of the other well-publicized NASA failures, including exploding shuttles and failed launches, Pasley asked why the moon landing would be any different. In 1961, President John F. Kennedy gave a speech. He said that the U.S. should work quickly and meet a goal. The goal was to send people to the Moon and back.

### NASA confirms- Moon landing real

**NASA ’04** (NASA.gov, 7/8/04 Student Features “Apollo 11 – first Footprint on the Moon” http://www.nasa.gov/audience/forstudents/k-4/home/F\_Apollo\_11.html 6/27/11 BLG)

The U.S. did meet the goal. And it only took eight years. One day in July, Apollo 11 launched towards the Moon. It had three astronauts on it. They were Neil Armstrong, Edwin (Buzz) Aldrin and Michael Collins. Image above: Buzz stands in front of the Lunar Module named Eagle. Credit: NASA A few days later, Apollo 11 began to orbit around the Moon. Then Armstrong and Aldrin took the Lunar Module to the Moon. They left Collins in orbit. What did they say when they landed on the moon? "The Eagle has landed." Eagle was the name of the Lunar Module. On July 20, 1969, Neil Armstrong put his left foot on the rocky Moon. It was the first human footprint on the Moon. They had taken TV cameras with them. So, people all over the world watched when it happened. More people watched this Moon landing than any other show on TV. Image above: The first footprints on the Moon will be there for a million years. There is no wind to blow them away. The two astronauts walked on the Moon. They picked up rocks and dirt to bring back to Earth. The astronauts had much work to do. Then, the Eagle went back to meet astronaut Collins. He was in the Command Module working. Apollo 11 splashed down in the Pacific Ocean on July 24, 1969. The astronauts were safe at home.

## Reject Conspiracy Theories

### Conspiracy theories should be discounted

Hawkins, professional blogger who runs Right Wing News, 3 (John, May 30, “The Questions Conspiracy Theorists Need To Ask Themselves”, http://www.rightwingnews.com/john/conspire.php)

Now if these ridiculous beliefs were relegated to the fringes of society I probably wouldn't bother with writing an editorial to shoot down the thinking behind these theories. However, this sort ofbizarre paranoia has crept into "mainstream thinking"**.** Things like the "Jewish Conservatives manipulating the President", "The Republicans rigged the 2002 elections", & "Bush knew (about 9/11)" have been tossed around by people many see as more credible than the average fruit loop writing for these conspiracy websites. That's why I thoughtit would be worth tossing out a few questions that anyone who starts to buy into these sorts of theories should consider**.** To begin with…How many people know about this conspiracy?: It's very difficult to keep any sort of newsworthy conspiracy that hundreds or thousands of people are supposedly involved in out of the mainstream press**.** Keep in mind that we live in a world where the President can't even get a BJ from an intern without it becoming public knowledge. Even things as sensitive as battle plans for upcoming invasions get into the papers. That's whyyou should certainly be skeptical of any sort of vast conspiracy that requires people keeping quiet about it indefinitely**.** How reliable is your source**?:** As the ongoing saga with the New York Times has illustrated, the mainstream media is not always completely reliable. However, they're infinitely more trustworthy than people who post anonymously on the net. I'm often surprised to see that people who don't trust one thing that Fox News or the New York Times says will blindly lap up whatever some conspiracy website or moonbat radio talk show host like Art Bell has to say. Yet, even though these sources burn them again and again, their readers still buy into what they have to say. It makes no sense. Do you have ready answers for the obvious questions?: Let's look at a conspiracy that was floating around after 9/11 -- that the Pentagon was hit by a truck bomb, not a plane. Well in that case, what happened to the plane that was hijacked? How could it be that various people WATCHED the plane flying towards the Pentagon? Is it possible that the hundreds of firefighters and military personnel who must have known the truth were somehow silenced? Why would anyone go through such an elaborate charade? If you can't convincingly answer the most basic questions about a conspiracy, then it's tough for the theory you're supporting to hold any water. Are you acting as if commonly held beliefs are unique?: This is one question that a lot of the more "mainstream" conspiracy theorists should ask themselves more often. For example, over the last year and a half we've constantly heard people asserting that beliefs held by a large majority of Republicans are really unique to a handful of Conservative Jews who somehow manipulated Bush into going to war to help Israel. Who the conspiracy theories pick out of the bunch and try to assign sinister motives to in situations like that usually says more about the conspiracy theorist than the person or group they target.Are you relying too much on a handful of contrary facts?: Rarely do you ever see a story where every fact, "falls into place"**.** By that I mean people's memories are faulty, perceptions differ, politicians spin issues, press biases creep in, things are taken out of context, & typos and factual errors come into play as well. When these things inevitably happen, conspiracy theorists tend to seize a handful of inconsistencies and try to prove that there's a cover-up or conspiracy happening. But, this is just how life works. If you don't believe me, leave a couple of kids alone in a room full of breakables with a football, come back a few minutes after you hear something break, and then separate the kids and ask what happened.Are you being too cynical about the government?: There's only one thing worse than believing that your government always tells the truth and that's believing that they always lie**.** If you're willing to buy into any sort of claptrap because you won't put anything past your government, then you're apt to be proven wrong over and over again.Shouldn't you be a little more skeptical about those conspiracy theories?: I've heard some variation of the following from conspiracy theorists, "How can you just dismiss this conspiracy theory out of hand? There have been conspiracies that have turned to be truebefore so this one could be true as well!"Yes, there have been conspiracy theories that panned out, but very, very, few of them. In fact, if you simply blew off every conspiracy theory that came down the pike you'd rarely ever be wrong.Because of that,conspiracy theories merit a lot of skepticism. Before you buy into a conspiracy theory, ask yourself these questions and generally -- actually, in almost every case -- you'll find that it doesn't hold water.

## A2 Conspiracy Theories Good

### **Any understanding created is episodic not systematic**

Barkun, professor emeritus of political science at the Maxwell School of Citizenship and Public Affairs and FBI consultant, 03 (Michael, A Culture of Conspiracy: Apocalyptic Visions in Contemporary America, pg. 7, SL)

These fringe beliefs, and the resulting pariah status of the believers, have stimulated the growth of an alternative communications system by which stigmatized ideas can be spread. This alternative system is necessary even though mainstreaming has opened popular culture to some traditionally stigmatized beliefs. Although this access has promoted both recruitment and enhanced legitimacy, it has significant limits. First, it almost always occurs within the context of fictional representations of the world, such as films and television programs. It does not purport to offer an accurate picture of reality, even though the fact-fiction reversals discussed earlier lead believers to regard it as truthful. Second, it is fragmentary and episodic rather than systematic. That is, the stigmatized material usually takes the form of an individual motif incorporated into the story, as in the reference to the power of FEMA in the film The X-Files. It does not take the form of a comprehensive and logically developed presentation of an alternative view of reality.

### **Conspiracy theory discourse makes political discourse impossible**

Barkun, professor emeritus of political science at the Maxwell School of Citizenship and Public Affairs and FBI consultant, 03 (Michael, A Culture of Conspiracy: Apocalyptic Visions in Contemporary America, pg. 7, SL)

As New World Order ideas and attendant elements of the improvisational milieu break out of their traditional confinement, a new and disconcerting array of possibilities opens up, because those who espouse such ideas represent dissent of a particularly radical sort, rooted in divergent ideas about reality and knowing. While The X-Files motto, “Trust no one, ” may appear innocuous in an escapist drama, its literal application implies a culture war far more extreme than anything seen previously. If no one can be trusted (except, presumably, others in the truthseeking cadre), a society becomes divided between believers in received ideas about what counts as knowledge and a no-longer-hidden minority of challengers. The likely outcome of such a polarization is not pleasant to contemplate, for the challengers do not believe their opponents are merely misguided. Rather, the supporters of the status quo are thought to be at best the conspirators' dupes and at worst their accomplices. Hence the alternative reality sees itself as a fighting faith that must obliterate its adversaries. This is, to be sure, a worst-case scenario, and most worst-case scenarios melt away with time. One hopes that will be the case here. But the fact that the beliefs described in the preceding chapters are bizarre ought not to imply that they are necessarily innocuous or unworthy of careful scrutiny. Bizarre beliefs have broken into the open before. Indeed, new orthodoxies can emerge out of just such ideological undergrowth, sometimes with devastating effects.

# \*\* A2 Overview Effect \*\*

## Overview Effect False

### The overview effect disproven—time, psychology, and apathy prove

Okushi and Dudley-Flores 2007 -Jun Okushi, NASA-trained space architect, 2 decades of experience in space development, former NASA grant research student, co developer of the International Space Station. Marilyn Dudley-Flores, policy analyst and space policy expert http://www.astrosociology.com/Library/PDF/Contributions/Space%202007%20Articles/Space%20and%20Perceptions.pdf

The average human being has not experienced the view from space on a personal basis, although these pictures from space have been around for upwards to 40 years. Subsequent years have brought more space missions, both human and robotic, with fabulous imagery. Robotically, we have stood on the ground on Mars, we have seen up close mighty impacts on Jupiter, the rings of Saturn, and towering dune fields on Titan. We have even seen the great columns of hydrogen clouds spanning light years that are the incubation places of stars and looked back in time toward the very birth of the Cosmos. Why haven’t the peoples of the Earth been subsumed by this overwhelming experience of viewing things in space and the world from the space? Why haven’t they beaten their swords into plow shares, held hands and sang Kum Bah Yah, and turned their attention to turning the tide against global warming, a fairly immediate threat as time is kept over generations that can kill more people than all of the wars of the Earth put together? A. Searching for Answers A clue to this enigma lies in a prediction that failed to come true that was made by Sir Arthur C. Clarke in his novel 2061: Odyssey 3 (1987, p. 4). 6 In the story, the Earth had become relatively peaceful once everyone had access to free long-distance telephone calling service. With the Internet and the quality of communications technology today, we can make free long-distance telephone calls. At least those of us who can access, can operate, and can afford the technology can make those calls. One can be in London and make a phone call to someone in Peshawar and the other party sounds like he is speaking from the next room. But, there are still wars, India and Pakistan might yet fight a limited nuclear exchange, and the large part of Earth’s population hasn’t yet caught on to the impending devastation of global warming. What is the problem? The answer to that has to do with the inadequacy of the delivery systems of these images from space and to the fact that studies of how humans comprehend spatial and other types of relationships on the ground, in space, and across cultures are still in the infancy of synthesis and application. Lack of political will is another problem. In An Inconvenient Truth, both the documentary and the book, 7 Albert Gore also spoke of the “backburner” attitude that his American congressional colleagues demonstrated when he gave them slide shows about global warming. The problems on the radarscreens of congressional constituents were more immediate so their representatives did not move to act to hammer out legislation to help offset the more overwhelming planetary issue. Sitting in the gravity well of the Earth, with some people being able to see pretty pictures from space, and with some people being able to talk to other people cheaply at a distance still hasn’t communicated the gravity of our situation. The planetary situation awareness of the average person is poor. It isn’t very real to most people that Earth is a planet in space, that it is in danger from global warming, and that seeing it from space helps us assess the condition of the planet and provides us with direction how to keep it livable

### The Overview Effect is not supported by scientific evidence.

Bainbridge 2006- Co-Director of Human-Centered Computing at the National Science Foundation has served as at Professor in the Department of Sociology at the University of Washington, Illinois State University, and Towson University <http://mysite.verizon.net/wsbainbridge/system/goals.pdf>

Several of the Idealistic goals assert that space travel gives a new perspective to the astronauts who look back at Earth from afar and to those Earth-bound enthusiasts who participate vicariously in voyages beyond our world. From the viewpoint of space, we see ourselves, our nations, and our planet in a new light. In a recent book, Frank White (1987) reports that astronauts commonly experience **“**the overview effect,” a radical shift in consciousness achieved by seeing the Earth as a unity and from outside the traditional limits of human experience. He documents this thesis with material from a number of interviews, but unfortunately his data collection and theoretical analysis were not conducted in a manner that social scientists would consider systematic. Furthermore, although White considers “consciousness” to be the essential ingredient of any culture, he does not draw upon any of the standard literature on this conceptually slippery topic. Yet, his hypothesis that from the new world-view offered by space

### The Overview Effect is just an attempt of pro space activists to pursue control of the planet

Dickens and Ormrod 07’-Peter Affiliated Lecturer in the Department of Sociology at the University of Cambridge, Visiting Professor of Sociology at the University of Essex, James S. Teaching Fellow in Sociology at the University of Essex, holds a Ph.D. in Sociology from the University of Essex (“Outer Space and Internal Nature: Towards a Sociology of the Universe,” Sociology, Volume 41, Number 4, August

There are strong indications that these pro-space activists are amongst those most affected by late modern narcissism. Early on in life, these activists come to project infantile unconscious fantasies (those relating to omnipotence and fusion with the infant’s ‘universe’) into conscious fantasies about exploring and developing space, which increasingly seem a possibility and which now achieve legitimacy largely through the ideology of the libertarian right. Those who have grown up in the ‘post-Sputnik’ era and were exposed at an early date to science fiction are particularly likely to engage in fantasies or daydreams about travelling in space, owning it, occupying it, consuming it and bringing it under personal control. Advocates talk about fantasies of bouncing up and down on the moon or playing golf on it, of mining asteroids or setting up their own colonies. These fantasies serve to protect the unconscious fantasy that they are still in the stage of infantile narcissism. Of course not all of those people growing up in late modern societies come to fantasize about space at such an early age like this, and are less single minded in their attempts to control and consume the universe, but we argue that this is nonetheless the way in which some dominant sectors of Western society relate to the universe. It is not only pro-space activists, but many well-to-do businesspeople and celebrities who are lining up to take advantage of new commercial opportunities to explore space as tourists. The promise of power over the whole universe is therefore the latest stage in the escalation of the narcissistic personality. A new kind of ‘universal man’ is in the making. Space travel and possible occupation of other planets further inflates people’s sense of omnipotence. [end page 615] Fromm (1976) discusses how in Western societies people experience the world (or indeed the universe) through the ‘having’ mode, whereby individuals cannot simply appreciate the things around them, but must own and consume them. For the narcissistic pro-space activist, this sentiment means that they feel a desperate need to bring the distant objects of outer space under their control: Some people will look up at the full moon and they’ll think about the beauty of it and the romance and history and whatever. I’ll think of some of those too but the primary thing on my mind is gee I wonder what it looks like up there in that particular area, gee I’d love to see that myself. I don’t want to look at it up there, I want to walk on it. (25-year-old engineering graduate interviewed at ProSpace March Storm 2004) Omnipotent daydreaming of this kind is also closely linked to the idea of regaining a sense of wholeness and integration once experienced with the mother (or ‘monad’) in the stage of primary narcissism, counterposed to a society that is fragmenting and alienating. Experiencing weightlessness and seeing the Earth from space are other common fantasies. Both represent power, the ability to ‘break the bonds of gravity’, consuming the image of the Earth (Ingold, 1993; Szersynski and Urry, 2006) or ‘possessing’ it through gazing at it (Berger, 1972). They also represent a return to unity. Weightlessness represents the freedom from restraint experienced in pre-oedipal childhood, and perhaps even a return to the womb (Bainbridge, 1976: 255). Seeing the Earth from space is an experience in which the observer witnesses a world without borders. This experience has been dubbed ‘the overview effect’ based on the reported life-changing experiences of astronauts (see White, 1987). Humans’ sense of power in the universe means our experience of the cosmos and our selves is fundamentally changing: It really presents a different perspective on your life when you can think that you can actually throw yourself into another activity and transform it, and when we have a day when we look out in the sky and we see lights on the moon, something like that or you think that I know a friend who’s on the other side of the Sun right now. You know, it just changes the nature of looking at the sky too. (46-year-old space scientist interviewed at ProSpace March Storm 2004) In the future, this form of subjectivity may well characterize more and more of Western society. A widespread cosmic narcissism of this kind might appear to have an almost spiritual nature, but the cosmic spirituality we are witnessing here is not about becoming immortal in the purity of the heavens. Rather, it is spirituality taking the form of self-worship; further aggrandizing the atomized, self-seeking, 21st-century individual (see Heelas, 1996). Indeed, the pro-space activists we interviewed are usually opposed to those who would keep outer space uncontaminated, a couple suggesting we need to confront the pre-Copernican idea of a corrupt Earth and ideal ‘Heaven’. [end page 616] For these cosmic narcissists, the universe is very much experienced as an object; something to be conquered, controlled and consumed as a reflection of the powers of the self. This vision is no different to the Baconian assumptions about the relationship between man and nature on Earth. This kind of thinking has its roots in Anaxagoras’ theory of a material and infinite universe, and was extended by theorists from Copernicus, through Kepler and Galileo to Newton. The idea that the universe orients around the self was quashed by Copernicus as he showed the Earth was not at the centre of the universe and that therefore neither were we (Freud, 1973: 326). However, science has offered us the promise that we can still understand and control it. Robert Zubrin, founder of the Mars Society, trumpets Kepler’s role in developing the omniscient fantasy of science (it was Kepler who first calculated the elliptical orbits of the planets around the Sun): Kepler did not describe a model of the universe that was merely appealing – he was investigating a universe whose causal relationships could be understood in terms of a nature knowable to man. In so doing, Kepler catapulted the status of humanity in the universe. Though no longer residing at the centre of the cosmos, humanity, Kepler showed, could comprehend it. Therefore […] not only was the universe within man’s intellectual reach, it was, in principle, within physical reach as well. (Zubrin with Wagner, 1996: 24) Thus Zubrin begins to lay out his plan to colonize Mars.

## Overview Effect False (A2 Mitchell)

### The overview effect won’t apply to everyone, Mitchell’s case was rare

Graylien 2007 – “Instant Epiphany: The Overview Effect and Cosmic Consciousness”, http://www.wunderkabinett.co.uk/damndata/index.php?/archives/1072-Instant-Epiphany-The-Overview-Effect-and-Cosmic-Consciousness.html)

On the other hand, it may be that the Overview Effect will only ever be experienced by a minority of space travellers. Certainly, few astronauts seem to have experienced it with the same intensity as did Edgar Mitchell. Space tourist Mark Shuttleworth, for example, spoke of a "sense of the magnificence of the Earth", while Dennis Tito said his journey gave him "a little bit of an experience of being in heaven". However, neither man seems to have experienced the profound ontological shock that transformed Mitchell. Entrepreneur Charles Simonyi when asked whether his space trip had been a "spiritual experience" seemed to misunderstand the question, replying: "I don't think so. If anything, I've gotten more optimistic. When I look at the Earth, it's so vast and majestic and calm those were the adjectives I chose it makes me optimistic." It may be that the Overview Effect is only experienced in its full glory by space voyagers who are already of a mystical disposition - those who, to use Blake's turn of phrase, can already see "a world in a grain of sand, and a heaven in a wild flower". It was Blake who asked himself, "When the Sun rises, do you not see a round disk of fire somewhat like a Guinea?" and answered, "O no, no, I see an innumerable company of the Heavenly host crying 'Holy, Holy, Holy is the Lord God Almighty'". We can only imagine the pictures Blake might have painted of the Earth had he been able to see it from space. But then Blake hardly needed to leave Terra Firma to experience ecstatic union with the transcendent Universe. What of the rest of us? Would a quick hop into space really be enough to transform our vision to match Blake's? Or might we instead journey to infinity and beyond yet still remain incapable of seeing beyond our own petty egos?

## Overview Effect False (A2 White)

### White is Incorrect, the Overview Effect is without supporting evidence.

Morem 2009- writer and activist, President of Humanists of Minnesota, 2009 (Review of The Overview Effect by Frank White, Helium, May 19th, http://www.helium.com/items/1454378-book-review-the-overview-effect-by-frank-white

Up to this point, White succeeds in making clear to the reader how the astronauts and cosmonauts responded to spaceflight and communicated their experiences to the rest of us. But, he fails to make a strong case for his philosophy of space based on these experiences**.** He reminds us again and again how amazed the astronauts were when they saw no boundary lines on the surface as they viewed Earth from orbit. Surely, every one of those men realized that Earth would not look like a Rand McNally school globe from space. Obviously, the excitement of the moment overwhelmed their critical facilities. It isn't necessary to orbit Earth to make this discovery. All a Minnesotan has to do is drive south from the Twin Cities to Iowa on I-35. Look ma, no boundaries! Yet, White accepts the astronauts' reactions wholly and uncritically, and uses them to project future human civilizations by showing humans somehow rising above provincial nationalism. An Earth without boundaries is presumed to be without political division - a very debatable proposition. White asserts that a civilization he calls Terra must be developed on this planet before humans can build space civilizations. Unfortunately, this would take a very long time considering the political and technological differences that exist in the world today**.** According to White, when Terra is complete, our descendants will build Solaria, a Solar System civilization. And their descendants and extraterrestrials will one day build Galaxia throughout the Milky Way. Actually, it's more likely that humans will be living all over the Solar System before humans on Earth would consider themselves citizens of a one-world society. We would probably achieve world government long after we no longer needed it. The interior development of these civilizations and the development of an Overview attitude toward the universe as a whole comprise the true purpose of human existence. This is White's philosophy of space. It is important to keep these things in perspective. Terra, Solaria, and Galaxia are merely human abstractions of projected future human (and alien) communities**.** As such, they can't give us a solid foundation for a philosophy of space. We would merely be projecting a wish onto the universe based on other wishes**.** Nor is clear thinking aided in such a difficult subject by White's use of language, which edges dangerously close to what might be called "California Trendy." "Rising state of consciousness." "Expanding consciousness." "Changing your consciousness." Enough. I can smell the incense already**.**

## Alternatives to Overview Solve

### An Alternative to the Overview Effect can be obtained through the media

Speed 10 Schools of Architecture and Landscape Architecture, Edinburgh College of Art (April 2010, “Developing a Sense of Place with Locative Media: An “Underview Effect””, http://www.mitpressjournals.org/doi/abs/10.1162/leon.2010.43.2.169)

Frank White's Overview Effect, and the stories from astronauts who have orbited the Earth, remain as a point of singularity in which the elements of Casey's recipe for a geographical, social and physiological sense of place come together to provide a life-changing experience. While the rest of us can hope to experience such an epiphany on a future domestic flight into space, locative media may hold some potential in providing us with a heightened sense of place that connects us to people and the environment around us. At the right pitch of people and geography, our connection to this network may offer us an awareness of place that is big enough to evoke a sense of being on a planet. In interpreting and communicating Rusty Schweickart's space flight experiences, White writes: I saw humanity as an organism and grasped the reality of his [Schweickart's] experience as the "eye" of humanity. I felt that, in writing it down, I was like a "neuron" firing, sending the message down the line to others [20].

### The Overview Effect can be obtained virtually

Ryan Wyatt 2010 The Director of Morrison Planetarium and Science Visualization at the California Academy of Sciences in San Francisco, California, U.S.A. He writes a sadly irregular blog, “Visualizing Science,” available online at http:// visualizingscience.ryanwyatt.net/.

For many, frankly, a certain amount of frustration. After taking people on a “tour of the Universe,” I often get asked what things look like “right now”: People grasp the idea that light travel time reveals objects as they existed in the past, but they find it difficult to divorce the three dimensions of the virtual model from the three dimensions of ordinary space. (Whereas the virtual model actually combines spatial and temporal dimensions, and of course, the finite speed of light allows us to reconstruct the history of the Universe, effectively embedded in the three-dimensional representation). Overall, one can leave such an experience feeling very small... But perhaps we can use the “big picture” to evoke other responses. Perhaps placing Earth in its spatial-temporal context can redefine how people think about their home planet. One could think of this as an extension of the “overview effect” reported by astronauts, in which the experience of seeing Earth from space invoked feelings of connectedness and euphoria. Can such a response be elicited virtually?

### Air travel empirically denies the overview effect

White, 87 (Frank, author, 1987, The Overview Effect, p. 166)

There is also increasing pressure from people and organizations around the planet to consciously use space for experiments in peaceful interaction. Congressman Bill Nelson's advocacy of a summit conference in space, Carl Sagan's support of a joint U. S. -Soviet mission to Mars, and the activities of the Association of Space Explorers are just a few examples of people and organizations lobbying for the use of space as a laboratory for peace. The universe is so enormous and awesome that it becomes a unifying force in itself as more people become experientially aware of it. In addition, it provides opportunities for humans to interact in wholly new and different ways. The space environment will cause certain behavior patterns to mutate because they will become increasingly less viable. Special factors in the environment may promote a form of thinking that will take humanity far beyond the current understandings of unity and disunity, war and peace, competition and cooperation. In the short term, however, some trends of fragmentation are likely to maintain themselves, at least during the initial stages of the exploratory era. For example, there is the military view of space as the next high ground from which to dominate others militarily. The Overview Effect can be experienced from airplanes as well as from spaceships, and the first flyers must have had some of the same feelings as today's astronauts. Nevertheless, the air was turned to military as well as civilian purposes and the airplane was used as a weapon of war only eleven years after the Wright brothers' flight. The projection of military values into space threatens the peaceful evolution of a planetary and solar civilization. Nation-states will seek to extend their dominance wherever possible, including outer space. It is possible that the countries of Earth initially will carry their rivalries into space as they did in earlier explorations of their planet. But they are unlikely to be maintained for long, because far more significant matters, for instance, a potential split between Terra and Solarius over political control, economics, and philosophies of life, will have to be confronted.

# \*\* A2 Ozone \*\*

## Ozone Emp Denied

### The ozone hole has peaked and will decline

AGBM, 07 (Sept. 26, Australian Government Bureau of Meteorology, http://www.bom.gov.au/announcements /media\_releases/ho/20070926.shtml)

The Antarctic ozone hole is back and although it’s almost as big as previous years, the long term outlook for a return to better ozone levels remains good. Over the past ten years the destruction of ozone has resulted in large ozone holes appearing over the Antarctic each spring with almost all growing to an area of more than 25 million square kilometres (about three times the size of Australia). This year, the Bureau of Meteorology reports that the hole has already reached that size but has not grown as large as the record 28 million square kilometre holes that developed during 2000, 2003 and 2006. Ozone holes develop during spring because sunlight returning to the polar regions trigger chemical reactions that have remained dormant during the darkness of winter. The size and depth of the hole is determined by factors including the concentrations of ozone-depleting chemicals such as Chlorofluorocarbons (CFCs), as well as the temperature of the lower stratosphere. It is also influenced by broad scale atmospheric circulation patterns which vary significantly from year to year. Though recent Antarctic ozone holes have been very large, measurements show that the concentrations of ozone-depleting substances in the lower atmosphere, such as CFCs, have peaked and are now slowly declining. In its most recent assessment of ozone depletion, compiled last year, the World Meteorological Organization stated that ozone levels are expected to return to pre-ozone-hole conditions between 2060 and 2075.

## Ozone Impact Denied

### No impact – radiation increase is trivial

Singer, 95 (S. Fred, Ph.D., president science and environment policy project, November 1, Washington Times, http://209.85.141.104/search?q=cache:YItL5uwXgYQJ:www.sepp.org/key%2520issues/ozone/oznobel.html+Time+and+again,+journalists+have+run+with+a+story+that+amounts+to+little+more+than+%22science+by+press+release.%22&hl=en&ct=clnk&cd=1&gl=us)

Time and again, journalists have run with a story that amounts to little more than "science by press release." They have succumbed to tales of blind sheep and rabbits, plankton death, and the disappearance of frogs--all blamed on ozone depletion. Yet a little common sense could help to stem the tide of scare stories, punitive regulations, and politically motivated Nobel prizes. From the very outset it has been clear that the feared global ozone depletion would lead to a trivial increase of ultraviolet radiation at the Earth's surface, equivalent to moving just 60 miles closer to the equator, the distance from Washington to Richmond. This equivalence has been openly acknowledged by ozone scientists in press conferences and Congressional hearings. It puts the lie to fears of cataract epidemics, immune system failures, and various ecological disasters. The problem now is that the action of the Swedish Academy is being viewed as a scientific endorsement, not only of ozone depletion but of all of the horror stories put out by activist groups. Awarding the Nobel prize with the science still unsettled only says that facts are irrelevant, that data don't matter. What does seem to matter, at least to the Academy, is "salvation."

## Ozone Alt Caus

### Ozone depletion isn’t caused by people

Singer, 97 (S. Fred, Ph.D., president science and environment policy project, December, http://www.sepp.org/research/scirsrch/ozon-agu.html)

The evidence from ground stations and satellites is not yet compelling to identify a long-term trend of anthropogenic ozone depletion. UN reports [1] do not squarely address problems of data contamination and instrument calibration [2]. A separate issue, inadequately discussed, is the shortness of the global record, making the removal of the natural variations a daunting task [2]. Another fact is the absence of any credible evidence for a corresponding long-term upward trend of solar UV radiation at the earth's surface. The widely publicized claim for such a trend [3] is acknowledged to be spurious and based on a faulty statistical analysis [4]. Yet, ozone depletion is entirely plausible and to be expected. But chlorine (from CFCs) may not be a major destroyer of ozone molecules in the lower stratosphere where most of the ozone resides. Important clues are provided by the existence of the Antarctic ozone hole and the pronounced ozone depletion caused by the Pinatubo eruption; they indicate that the presence of particles is essential [5]--something not anticipated nor predicted by the CFC-ozone theory of Rowland-Molina, which applies more appropriately to the upper stratosphere. Another clue comes from the absence of ozone destruction in the middle stratosphere [6]; it suggests that global depletion of ozone is related to the increasing levels of lower-stratospheric sulfate aerosols [7]. In addition, there is evidence, both from theory [8] and from observations [9], that radicals derived from water vapor are the most effective ozone destroyers in the lower stratosphere; their concentration may be rate-limiting. But stratospheric WV is known to be rising [10], likely because of the increasing production of methane by human activities [11].

### CO2 and CFC aren’t the main causes to Ozone depletion- Scientists prove

Hazelwood 10, Christina Hazelwood, Writer for Fox Valley Labor News, November 19, 2010 (http://foxvalleylabornews.com/news/?p=946)

After decades of study, scientists discovered that the thinning of the ozone layer and the ozone hole was caused by chlorine and bromine, which break down the ozone molecules, causing them to fall apart. Newly created ozone molecules were not keeping pace with the rate of those being destroyed. The ozone-damaging chlorine was coming from newly manmade chemicals like chlorofluorocarbons (CFCs) invented and patented under the name Freon by DuPont for use as a refrigerant. Soon Freon was being used in refrigerators around the globe, as well as air conditioning systems in buildings, homes and cars. CFCs were also used as an aerosol spray propellant, in plastics manufacturing, as a cleanser and in foam packaging. By the 1970s, millions of tons of CFCs were being released into the atmosphere where they remain in the troposphere over the course of their 50- to 100-year lifespan or rise into the stratosphere and devour ozone.

### **Even if the aff solves for CO2 CFC will still destroy the Ozone layer**

USEPA 10, Unite States Enviromental Protection Agency, August 10, 2010, (http://www.epa.gov/ozone/science/sc\_fact.html)

The CFCs (chlorofluorocarbons) are so stable that only exposure to strong UV radiation breaks them down. When that happens, the CFC molecule releases atomic chlorine. One chlorine atom can destroy over 100,000 ozone molecules. The net effect is to destroy ozone faster than it is naturally created. To return to the analogy comparing ozone levels to a stream's depth, CFCs act as a siphon, removing water faster than normal and reducing the depth of the stream.

## Biodiversity Answers

Other species fill the void - species extinction speeds up the evolutionary process.

Maunder 04, Neil J. Maunder. (Evolutionary Biology Specialist) "I am God" 2004. http://www.freewebs.com/ironmaster/iamgod.htm)

The mindlessness and totally unholy people who flew those planes into the building on that day say a lot about the state of human existence at this time. Like evolution, if one linage ‘grows’ for long enough it may eventually collapse, resulting in an extinction. Yet we know that when this happens, it will inevitably lead to the rise of another to fill the void left by the crumbled existence of the other. Instead of slowing down the rate of evolution, extinction results in a rush of evolutionary selection as new species fill the void.

### Biodiversity is scientifically disproven – no impact

Dodds 2000, Donald J Dodds, M.S. P.E., President of North Pacific Research, 2000, “The Myth of Biodiversity” (google, terms – “biodiversity myth – download first hit date accessed 7/ 20/ 09)

Biodiversity is a corner stone of the environmental movement. But there is no proof that biodiversity is important to the environment. Something without basis in scientific fact is called a Myth. Lets examine biodiversity through out the history of the earth. The earth has been around for about 4 billion years. Life did not develop until about 500 million years later. Thus for the first 500 million years bio diversity was zero. The planet somehow survived this lack of biodiversity. For the next 3 billion years, the only life on the planet was microbial and not diverse. Thus, the first unexplainable fact is that the earth existed for 3.5 billion years, 87.5% of its existence, without biodiversity. Somewhere around 500 million years ago life began to diversify and multiple celled species appeared. Because these species were partially composed of sold material they left better geologic records, and the number of species and genera could be cataloged and counted. The number of genera on the planet is a indication of the biodiversity of the planet. Figure 1 is a plot of the number of genera on the planet over the last 550 million years. The little black line outside of the left edge of the graph is 10 million years. Notice the left end of this graph. Biodiversity has never been higher than it is today.

# \*\* A2 Science Diplomacy / Leadership \*\*

## Sqo Solves Sci Leader

### Basic scientific nature and self-preservation make global scientific cooperation inevitable

Potocnik, 06 (Janez, European Commissioner for Science and Research, 1AC Article, 3/7/2006. “Between cooperation and Competition - Science and Research as a Transatlantic Bridge Builder”, http://www.iterfan.org/index.php?option=com\_content&task=view&id=139&Itemid=2)

Cooperation shortens the path leading from science to innovation and from knowledge to solutions in areas such as nanotech, biotech, environment, climate and cybersecurity. In all these areas, and in many more, we share information, knowledge, practices and results. In nanotechnology, for example, the Commission works together with the National Science Foundation to exchange information and organise seminars and workshops. Coordinated calls for joint EU-US research proposals have been launched since 1999, to draw on the best expertise on both side of the Atlantic. We work together because we realise that it is in the interest of both Europe and the US to do so. And often, of course, it is also in the interest of many other countries around the globe, whether they are directly involved in the cooperation, or not. But – of course – we also cooperate simply because that is what scientists do. Naturally, spontaneously and, often, effectively. Scientists are, by the mere nature of their work, mobile and outward looking. Research does not know of any national frontiers and scientists simply work where and with those that offer the best opportunities. But perhaps even more important for our transatlantic links is the dynamism and creativity that competition brings. Competition is part of our natural disposition as social individuals, and also an imperative of the societies we live in. Whether it’s the market share of our companies that we have at heart, or the wellbeing of our people, or the next breakthrough in science and technology, or - indeed, all of the above - competition is the name of the game. We compete because we know that today’s discoveries will most probably underpin tomorrow’s economic achievements. And we compete because – in the US as much as in Europe – we draw healthy stimuli and encouragement from comparing our respective figures. Numbers of science and engineering graduates, researchers as percentage of the workforce, figures for R&D investment, numbers of publications and patents and so on... This mix of cooperation and competition is a key engine of progress. That’s how we discover and advance. How we set and reach objectives, improve performances and achieve results. By finding the right mix or the right balance between cooperation and competition. Be it between individuals, organisations, economies or societies. And isn’t this also what scientists spontaneously do? They compete for excellence, for recognition, for results and for funds. They strive to be the first to publish or to patent. But they also learn from one another. They compare and exchange and they join forces aiming for common achievements. The same is true for companies and other organisations, for which a balanced mix of cooperation and competition is often the key to performance and achievement.

# \*\* A2 Solar Flares \*\*

## Can’t Predict Flares

### Solar flares are impossible to predict

Clark and Mason 1997 (Benton and Larry, Martin Marietta Astronautics Group Planetary Sciences Laboratory. “The Radiation Show-Stopper to Mars Missions: A Solution,” in The Case for Mars IV: Considerations for Sending Humans, ed. Thomas Meyer, p. 102)

Much particulate radiation is emitted from the Sun. The two predominant modes are: (1) a constant outstreaming of particles that make up the solar wind, and (2) transient flares that produce Solar Particle Events (SPE). The solar wind is low energy and not of real significance. The predominant concern is solar flares. SPE activity is stochastic; it is not possible to predict onset or severity of an individual event. Constant solar surveillance will be necessary on- board to warn of increasing solar activity and radiation fluxes. This will allow time to prepare a safe haven or enter a radiation storm shelter. Earth-based observation alone is not sufficient, as flares can erupt from a side of the Sun that affects the spacecraft without Earth being aware a flare even exists. Most flare SPEs are short in duration, however, rising to a peak within hours and lasting a few hours to at most a few days.

## ****No Impact to Flares****

### ****No solar flare impact- Earth’s magnetic sphere protects us from any solar flare damage****

Holdman 1 **(Astrophysicist- Heliophysics Science Division- NASA/Goddard Space Flight Center, “**Space Weather: What impact do solar flares have on human activities?” <http://hesperia.gsfc.nasa.gov/sftheory/spaceweather.htm>)

Solar flares produce high energy particles and radiation that are dangerous to living organisms. However,at the surface of the Earth we are well protected from the effects of solar flares and other solar activity by the Earth's magnetic field and atmosphere. The most dangerous emissions from flares are energetic charged particles (primarily high-energy protons) and electromagnetic radiation(primarily x-rays). The x-rays fromflares are stopped by our atmosphere well above the Earth's surface. They do disturb the Earth's ionosphere, however, which in turn disturbs some radio communications. Along with energetic ultraviolet radiation, they heat the Earth’s outer atmosphere, causing it to expand. This increases the drag on Earth-orbiting satellites, reducing their lifetime in orbit. Also, both intense radio emission from flares and these changes in the atmosphere can degrade the precision of Global Positioning System (GPS) **measurements.**The energetic particles produced at the Sun in flares seldom reach the Earth. When they do, the Earth's magnetic field prevents almost all of them from reaching the Earth's surface. The small number of very high energy particles that does reach the surface does not significantly increase the level of radiation that we experience every day. The most serious effects on human activity occur during major geomagnetic storms. It is now understood that the major geomagnetic storms are induced by coronal mass ejections (CMEs). Coronal mass ejections are usually associated with flares, but sometimes no flare is observed when they occur. Like flares, CMEs are more frequent during the active phase of the Sun's approximately 11 year cycle. The last maximum in solar activity was in the year 2000. The next maximum is expected to occur in late 2011 or in 2012.Coronal mass ejections are more likely to have a significant effect on our activities than flares because they carry more material into a larger volume of interplanetary space, increasing the likelihood that they will interact with the Earth. While a flare alone produces high-energy particles near the Sun, some of which escape into interplanetary space, a CME drives a shock wave which can continuously produce energetic particles as it propagates through interplanetary space. When a CME reaches the Earth, its impact disturbs the Earth's magnetosphere, setting off a geomagnetic storm. A CME typically takes 3 to 5 days to reach the Earth after it leaves the Sun. Observing the ejection of CMEs from the Sun provides an early warning of geomagnetic storms. Only recently, with SOHO, has it been possible to continuously observe the emission of CMEs from the Sun and determine if they are aimed at the Earth. One serious problem that can occur during a geomagnetic storm is damage to Earth-orbiting satellites, especially those in high, geosynchronous orbits. Communications satellites are generally in these high orbits. Either the satellite becomes highly charged during the storm and a component is damaged by the high current that discharges into the satellite, or a component is damaged by high-energy particles that penetrate the satellite. We are not able to predict when and where a satellite in a high orbit may be damaged during a geomagnetic storm. Astronauts on the Space Station are not in immediate danger because of the relatively low orbit of this manned mission. They do have to be concerned about cumulative exposure during space walks. The energetic particles from a flare or CME would be dangerous to an astronaut on a mission to the Moon or Mars, however. Another major problem that has occurred during geomagnetic storms has been the temporary loss of electrical power over a large region. The best known case of this occurred in 1989 in Quebec. High currents in the magnetosphere induce high currents in power lines, blowing out electric transformers and power stations. This is most likely to happen at high latitudes, where the induced currents are greatest, and in regions having long power lines and where the ground is poorly conducting. These are the most serious problems that have occurred as a result of short-term solar activity and the resulting geomagnetic storms. A positive aspect of geomagnetic storms, from an aesthetic point of view, is that the Earth's auroras are enhanced. The damage to satellites and power grids can be very expensive and disruptive. Fortunately, this kind of damage is not frequent. Geomagnetic storms are more disruptive now than in the past because of our greater dependence on technical systems that can be affected by electric currents and energetic particles high in the Earth's magnetosphere. Could a solarflare or CMEbe large enough to cause a nation-wide or planet-wide cataclysm?It is, of course, impossible to give a definitive answer to this question, butno such event is known to have occurred in the past and there is no evidence that the Sun could initiate such an event.

### No permanent damage- claims about “apocalyptic result” are wrong Morrison 9 (NAI Senior Scientist, “Ask an Astrobiologist”, Astrobiology: Life in the Universe, <http://astrobiology.nasa.gov/ask-an-astrobiologist/question/?id=5121>)

But solar flares pose no danger to us on Earth. The worst that can happen is some damage to electronics in satellites; for this reason some satellites are temporarily shut down for a few hours following a large flare. In very rare instances there can also be an effect on power grids on the Earth. However, most of the wild claims on the Internet about the danger of solar flares or other solar activity are just simply untrue. Concerning the solar system, no, the spacing of the planets does not change.

### Status Quo includes sufficient technology to predict solar flares, averting global catastrophe

Atkison 10 (Nancy, Science journalist, Senior Editor and writer- UniverseToday, Production team of Astronomy Cast, NASA/JPL Solar System Ambassador, “Solar Flares can Now be Predicted More Accurately”, UniverseToday, <http://www.universetoday.com/51585/solar-flares-can-now-be-predicted-more-accurately/>)

We all like to know in advance what the weather is going to be like, and space weather is no different. However, predicting solar storms from the sun — which can disrupt satellites and even ground-based technologies — has been difficult. But now scientists say magnetic loops breaking inside the sun provide two to three-day warnings of solar flares. “For the first time, we can tell two to three days in advance when and where a solar flare will occur and how large it will be,” said Alysha Reinard, from the NOAA Space Weather Prediction Center. Reinard and her team found that sound waves recorded from more than 1,000 sunspot regions reveal disruptions in the sun’s interior magnetic loops that predict a solar flare. They found the same pattern in region after region: magnetic twisting that tightened to the breaking point, burst into a large flare, and vanished. They established that the pattern could be used as a reliable tool for predicting a solar flare.“These recurring motions of the magnetic field, playing out unseen beneath the solar surface, are the clue we’ve needed to know that a large flare is coming—and when,” said Reinard.The new technique is already twice as accurate as current methods, according to the authors, and that number is expected to improve as they refine their work over the next few years. With this technique, reliable watches and warnings should be possible before the next solar sunspot maximum, predicted to occur in 2013.“Two or three days lead time can make the difference between safeguarding the advanced technologies we depend on every day for our livelihood and security, and the catastrophic loss of these capabilities and trillions of dollars in disrupted commerce,” said Thomas Bogdan, director of NOAA’s Space Weather Prediction Center.

### Even a large solar flare wouldn’t cause extinction- detection methods and history ensure

**O’Neill** **8** (Space Producer for Discovery News, “2012: No Killer Solar Flare”, UniverseToday, <http://www.universetoday.com/14645/2012-no-killer-solar-flare/>)

The short answer to this is “no”. The longer answer is a little more involved. Whilst a solar flare from our Sun, aimed directly at us, could cause secondary problems such as satellite damage and injury to unprotected astronauts and blackouts, the flare itself is not powerful enough to destroy Earth, certainly not in 2012. I dare say, in the far future when the Sun begins to run out of fuel and swell into a red giant, it might be a bad era for life on Earth, but we have a few billion years to wait for that to happen. There could even be the possibility of several X-class flares being launched and by pure bad luck we may get hit by a series of CMEs and X-ray bursts, but none will be powerful to overcome our magnetosphere, ionosphere and thick atmosphere below. “Killer” solar flares have been observed on other stars. In 2006, NASA’s Swift observatory saw the [largest stellar flare ever observed](http://www.universetoday.com/910/killer-solar-flare-on-another-star/) 135 light-years away. Estimated to have unleashed an energy of 50 million trillion atomic bombs, the II Pegasi flare will have wiped out most life on Earth if our Sun fired X-rays from a flare of that energy at us. However, our Sun is not II Pegasi. II Pegasi is a violent red giant star with a binary partner in a very close orbit. It is believed the gravitational interaction with its binary partner and the fact II Pegasi is a red giant is the root cause behind this energetic flare event. Doomsayers point to the Sun as a possible Earth-killer source, but the fact remains that our Sun is a very stable star. It does not have a binary partner (like II Pegasi), it has a predictable cycle (of approximately 11 years). and there is no evidence that our Sun contributed to any mass extinction event in the past via a huge Earth-directed flare Very large solar flares have been observed (such as the [1859 Carrington white light flare](http://science.nasa.gov/headlines/y2008/06may_carringtonflare.htm?list1001820))… but we are still here. In an [added twist](http://www.universetoday.com/15006/where-are-the-sunspots-are-we-in-for-a-quiet-solar-cycle/), solar physicists are surprised by the lack of solar activity at the start of this 24th solar cycle, leading to some scientists to speculate we might be on the verge of another Maunder minimum and “Little Ice Age”. This is in stark contrast to [NASA solar physicist’s 2006 prediction](http://www.universetoday.com/8039/next-solar-max-will-be-a-big-one/) that this cycle will be a “doozy”. This leads me to conclude that we still have a long way to go when predicting solar flare events. Although space weather prediction is improving, it will be a few years yet until we can read the Sun accurately enough to say with any certainty just how active a solar cycle is going to be. So, regardless of prophecy, prediction or myth, there is no physical way to say that the Earth will be hit by any flare, let alone a big one in 2012. Even if a big flare did hit us, it will not be an extinction event. Yes, satellites may be damaged, causing secondary problems such as a GPS loss (which might disrupt [air](http://www.universetoday.com/74366/air-mass/) traffic control for example) or national power grids may be overwhelmed by auroral electrojets, but nothing more extreme than that

## Sqo Solves Flares

### Flare detection methods are improving

Borda, et al 1 (Roberto, Pablo Mininni, Cristina Mandrini, Solar Physicists, Univeristy of Buenos Aires- Department of Physics, “Automatic Solar Flare Detection Using Neural Network Techniques”, Solar Physics, August 31, [**http://www.springerlink.com/content/h4clptnt8yycvgh4/**](http://www.springerlink.com/content/h4clptnt8yycvgh4/))

We present a new method for automatic detection of flare events from images in the optical range. The method uses neural networks for pattern recognition and is conceived to be applied to full-disk H images. Images are analyzed in real time, which allows for the design of automatic patrol processes able to detect and record flare events with the best time resolution available without human assistance. We use a neural network consisting of two layers, a hidden layer of nonlinear neurodes and an output layer of one linear neurode. The network was trained using a back-propagation algorithm and a set of full-disk solar images obtained by HASTA (H olar Telescope for Argentina), which is located at the Estación de Altura Ulrico Cesco of OAFA (Observatorio Astronómico Félix Aguilar), El Leoncito, San Juan, Argentina. This method is appropriate for the detection of solar flares in the complete optical classification, being portable to any H instrument and providing unique criteria for flare detection independent of the observer.

# \*\* A2 Solar Power \*\*

## **SP Too Expensive**

### **High** **costs and long gestation period**

Gaurav Bansal Eco Friendly; The Good, Bad, and the Ugly: Space Based Solar Energy. May 23 '11

Development cost for solar panels of that magnitude would be very large and will also take long time to manufacture as even the first space-based solar project passed California State also has gestation period of 7 long years. Similarly, costs to operationalize even a single large panel is very high, which makes it even more difficult for poor nations to do so. Such pilot project by Japan also even runs into more than 20 billions of dollars even before operationalization.

### **Current technology is costly, unproven, and inefficient**

Jeremy Hsu; December 02 2009; Controversy Flares Over Space-Based Solar Power Plans

Hoffert is wary of Solaren's latest step forward and the company's promise of delivering 200 megawatts to PG&E utility customers in California by 2016.Hoffert estimates that Solaren could manage to get about 50 percent transmission efficiency in a best-case scenario, meaning that half of the energy collected by space solar panels would be lost in the transfer down to Earth. Solaren would then need to launch a solar panel array capable of generating 400 megawatts. The total launch weight of all the equipment would be the equivalent of about 400 metric tons, or 20 shuttle-sized launches, according to Hoffert .But Solaren says that it would just require four or five heavy-lift rocket launches capable of carrying 25 metric tons, or about one fourth of Hoffert's weight estimate. The company is relying on developing more efficient photovoltaic technology for the solar panels, as well as mirrors that help focus sunlight."Solaren?s patented SSP [space solar power] system dramatically reduces the SSP space segment mass compared to previous concepts," Boerman told SPACE.com. Solaren has not provided details on just how its technology works, citing intellectual property concerns. But it expects that its space solar power can convert to RF energy with greater than 80 percent efficiency, and expects similar conversion efficiency for converting the RF energy back to DC electricity on the ground in California. The company also anticipates minimal transmission losses from the space to the ground. Hoffert remains unconvinced without knowing the details of Solaren's technology. He frets that "premature optimism" over unproven and perhaps scientifically implausible concepts could end up ruining the reputation of space solar power, even as advocates desperately want to see their vision come true."Too many space power guys have been silent, perhaps to not give comfort to opponents," Hoffert noted in a recent e-mail to colleagues. "But scientists should not do this."

# \*\* A2 Space Colonization \*\*

## Space Col NBD

### Any risk of extinction outweighs because it makes space colonization impossible

Bostrom, 03 (Nick, professor of philosophy at Oxford University, director of the Future of Humanity Institute, Ph.D. from the London School of Economics. “Astronomical Waste: The Opportunity Cost of Delayed Technological Development” http://www.nickbostrom.com/astronomical/waste.pdf)

In light of the above discussion, it may seem as if a utilitarian ought to focus her efforts on accelerating technological development. The payoff from even a very slight success in this endeavor is so enormous that it dwarfs that of almost any other activity. We appear to have a utilitarian argument for the greatest possible urgency of technological development. However, the true lesson is a different one. If what we are concerned with is (something like) maximizing the expected number of worthwhile lives that we will create, then in addition to the opportunity cost of delayed colonization, we have to take into account the risk of failure to colonize at all. We might fall victim to an existential risk, one where an adverse outcome would either annihilate Earth-originating intelligent life or permanently and drastically curtail its potential.8 Because the lifespan of galaxies is measured in billions of years, whereas the time-scale of any delays that we could realistically affect would rather be measured in years or decades, the consideration of risk trumps the consideration of opportunity cost. For example, a single percentage point of reduction of existential risks would be worth (from a utilitarian expected utility point-of-view) a delay of over 10 million years. Therefore, if our actions have even the slightest effect on the probability of eventual colonization, this will outweigh their effect on when colonization takes place. For standard utilitarians, priority number one, two, three and four should consequently be to reduce existential risk. The utilitarian imperative “Maximize expected aggregate utility!” can be simplified to the maxim “Minimize existential risk!”.

## Space Col Fails

### Space Habitats would be too dangerous

Valdez 7-11 Michael E. Valdez is an assistant professor at Senton Hall University [“Space Colonization” http://home.mchsi.com/~mikevald/Colonization.html]

The first concept we need to analyze is the idea of space colonization. When this subject is discussed on the Internet or any other group, space colonization is understood to be when a group of colonists embark in a ship and travel to the Moon, Mars or any other place and establish a colony there. It is hard to understand why this idea is so entrenched. Consider the following points: All the bodies of the Solar System, the Earth included, are hostile places. If some group of persons comes to Earth from space, they would be subject to the harassment of the authorities, they would be charged taxes, they would be subject to medical examinations and who knows what else. Consider only what happens when a group of persons passes from one country to another. Landing on the Moon, Mars or any other body of the Solar System requires space suits, supply of air, water, food, energy sources, and many other conveniences. The next point to consider is that a group of colonists traveling to the Moon, Mars or anywhere else in the Solar System would require the design and construction of a ship to transport them there. Such a ship needs to have all the necessary life support systems. It needs air, water, food, heat as well as all other conveniences. Further more, even a trip to the Moon takes some time. A trip to Mars takes a substantial time. The colonists need something to do while they are in the ship. They also need to exercise to prevent lose of bone and muscle strength. Their ship needs to have gravity for the same reasons. Now consider that the colonists travel in a ship that has all they need and all additional conveniences. When they get to their destination, they must abandon these conveniences to land on whatever destination they have. They would need to start again by building a new habitat and create a way to satisfy their needs and develop their conveniences. Another point to consider is that the design and construction of the ship was done on Earth, where there is air to breath and all conveniences. The construction of the new habitat must be done under very hostile conditions, wearing space suits, having to carry air, water, food, power sources and who knows what else. For example on the Moon, they would need lighting equipment to work during the two weeks of lunar night. For all these reasons, unless the colonists are stupid, they would not abandon the conveniences of their ship for the uncertainties of a hostile environment. They would convert the ship into their home and remain there. Consequently, space colonization should not consider building ships to send colonists into space but it should consider building the habitats where the colonists would live in space. Another idea that is mentioned very often when considering habitats in space, as opposed to colonies on the Moon, Mars or wherever, is that the habitat must be placed in orbit around Earth. It is very hard to understand why anybody would want to do this except when considering a space station for scientific, political or military purposes, a hotel for very rich tourists or similar applications. A habitat in orbit around Earth would have many disadvantages. The most important of these disadvantages is that some government from Earth would claim authority over the habitat and its inhabitants. That government would create taxes, police, laws, regulations and all the bad things that all governments of the world have in common. Further more, a habitat in an orbit around Earth would need to expend more energy compensating for the variations on its orbit due to the presence of Earth and the Moon. This is a minor problem when considering communication satellites. A human habitat would have a considerable mass and suffer proportionally larger attractions and displacements. There is also the problem of the shadow of Earth and the Moon, reducing the source of energy. Another problem is that since the habitat is close to Earth, it would receive more meteoric impacts than in open space. This is because the mass of the Earth and the Moon attract meteorites. There are other considerations. A space habitat parked in open space in orbit around the Sun would have a constant source of energy, without shadows or eclipses, without day or night. Having a constant source of energy is a big step towards solving the other needs like air, water, etc. If there is abundant, clean, cheap, renewable energy, recycling the air and water is a minor problem. This can be achieved without any problem by parking a habitat in orbit around the Sun.

### Traveling to Colonialize Space would be harmful

Page 4-8-11 Lewis Page is a writer for the A Register- The A Register [“Deep=space travel bad for astronauts tickers, say boffins” http://www.theregister.co.uk/2011/04/08/deep\_space\_ticker\_risk/]

Deep-space travel could be bad for the heart, report boffins. This has been established by blasting mice with an ion beam from a powerful atom-smasher, causing the luckless murines to develop artery damage of the sort that might result from exposure to powerful cosmic space radiation. "Cosmic radiation is very different from X-rays and other radiation found on Earth," says Dr Dennis Kucik, pathology prof. "The radiation risks of deep-space travel are difficult to predict, largely because so few people have been exposed." In fact the only people who have ever travelled beyond the Earth's protective magnetic fields are the 24 US astronauts who landed on or orbited the Moon during the Apollo missions of the 1960s and 70s. It's pretty difficult to draw any conclusions from what happens among such a a small group: but Kucik and his colleagues nonetheless suspected for other reasons that one particular type of cosmic radiation - to wit, the hail of high-energy iron ions which permeates space beyond Earth orbit - could have noticeable health effects once more people go into deep space for longer periods. The scientists thought that iron ions might cause thickening of artery walls, aka atherosclerosis. In order to test this hypothesis they needed ideally to send some test mice into deep space, but this would naturally be expensive and time-consuming. However, it is possible to generate iron-ion radiation of the sort found out in the big black here on Earth, by using a powerful particle accelerator. Accordingly Kucik and his colleagues placed a group of mice in a beam of high-velocity iron ions blasted out of a suitable atom-smasher at the Brookhaven lab in New York\*. They found that the ion bombardment did indeed cause negative health effects of the sort expected. "At 13 weeks it was surprising and quite remarkable that we already could see permanent damage — an irreversible thickening of the artery wall where it had been exposed to radiation," says Kucik's fellow boffin Janusz Kabarowski. The scientists say that high-velocity iron ions are a particular headache for spacecraft and space-suit designers. Other kinds of space radiation can be blocked using shielding: for instance quite thin lead sheets will stop X-rays. But when iron ions hit metallic shields, they can generate secondary radiation on the other side which may be just as bad. When and if deep-space exploration begins - at the moment US aspirations appear to have slipped back into the 2020s for this - studies like Kucik and Kabarowski's will feed into the design of the ships and the preventive health measures used to protect the astronauts.

### Space colonies will be reliant on Earth

Globus, 02 (Dr. Ruth Globus, NASA Ames Research Center. “Space Settlements: A Design Study” Chapter 3 - Human Needs In Space. http://www.nas.nasa.gov/About/Education/SpaceSettlement/75SummerStudy/Chapt3.html)

For communities of 10,000 people there is little hope of achieving self-sufficiency as measured by lack or absence of trade. There have been studies of sociology, economics, and geography which indicate the degree to which various specialities can be sustained. Colin Clark, one of the world's distinguished students of economic organizations, reports (ref. 45) that cities need populations of 100,000 to 200,000 in order to provide "an adequate range of commercial services....". Moreover, populations of 200,000 to 500,000 are required to support broadly-based manufacturing activity. A small settlement in space, of less than 100,000 people, would necessarily require continuing support from Earth. There is little possibility that such a settlement can be sustained without a steady and sizable movement of materials and information between Earth and the colony. Because of high demands on material productivity, ordinary business services such as banking, insurance, bookkeeping, inventory control, and purchasing would very likely remain on Earth. Management of the transportation system, and sales and delivery of products would be Earth based. The highly technological and specialized services of medicine, higher education and even of those branches of science and engineering not used in the day-to-day life of the colony would come from Earth. A community of 10,000 cannot conceivably support a large research university or a large medical center. Communities of this size on Earth do not encompass much social and cultural variety, and their major productive activities are usually limited in kind and number. To point up the lack of diversity that may reasonably be expected, consider how many and what variety of religious organizations and sects might be expected in a space colony of size 10,000. Economies of scale for communities suggest an optimal size well above that of the early settlement in space.

## Space Col Expensive

### Space Colonization is too expensive

Globus 4-29-11 Al Globus is on the National Space Society Board of Directors- Astrobiology [“Space Settlement Basics” http://settlement.arc.nasa.gov/Basics/wwwwh.html]

Space colonization is extraordinarily expensive because launch vehicles are difficult to manufacture and operate. For example, the current (2004) cost to put an individual into orbit for a short time is about $20 million. To enable large scale space tourism by the middle class, this cost must be reduced to about $1,000-$10,000, a factor of 3 to 4 orders of magnitude. Space tourism has launch requirements similar to space settlement suggesting that a radical improvement in manufacturing technology may be necessary to enable space colonization. Note that current launch costs vary from $2,000-$14,000 per pound for operational vehicles. One candidate for a major improvement in manufacturing technology is molecular nanotechnology. An important branch of nanotechnology is concerned with developing diamonoid mechanosynthesis. This means building things out of diamond-like materials, placing each atom at a precise location (ignoring thermal motion). Diamond is 69 times stronger than titanium for the same weight and is much stiffer. If spacecraft were made of diamonoid materials rather than aluminum, they could be much lighter allowing more payload. For an excellent analysis applying nanotechnology to space development, see McKendree 1995 Diamond mechanosythesis may enable a radical transportation system that could allow millions of people to go to orbit each year -- an orbital tower. An orbital tower is a structure extending from the Earth's surface into orbit. To build an orbital tower, start construction at geosynchronous orbit. Extend the tower down towards Earth and upwards at the same rate. this keeps the center-of-mass at geosynchronous orbit so the tower stays over one point on the Earth's surface. Extend the tower all the way to the surface and attach it. then an elevator on the tower can move people and materials to and fromorbit at very low cost. There are many practical problems with orbital towers, but they may be feasible. An orbital tower is in tension so it won't collapse, but it must be very strong or it will break. The point of greatest strain is at geosynchronous orbit, so an orbital tower must be thickest at that point. The ratio of the diameter of the tower between geosynchronous orbit and the ground is called the taper factor. For steel, the taper factor is greater than 10,000 making a steel orbital tower completely impractical. However, for diamonoid materials the taper factor is 21.9 with a safety factor to McKendree 1995 . thus a diamonoid orbital tower 1 meter thick at the ground would be only 22 meters thick at geosynchronous orbit. Fullerene nanotechnology, using carbon nanotubes, may be even better than diamonoid allowing a smaller taper factor. Calculations suggest that the materials necessary for construction of such an orbital tower would require one asteroid with a radius between one and two kilometers. These calculations assume the tower is built from diamonoid material with a density of 4 g/cm^3 and the asteroid has a density of 1.8 g/cm^3 and is 3% carbon.

## A2 “Jump the Rock”

### Hawking is wrong- Space Colonization is not needed

Kazan 10-1-09 Casey Kazan is an editor on the Daily Galaxy- Outskirts Press [“Space Colonization: Future or Fansty?” http://www.dailygalaxy.com/my\_weblog/2009/10/space-colonization-human-species-future-or-fanatsy.html]

Humans have always been fascinated by the idea of space travel. Some even believe that colonizing new planets or moons our best hope for the future. The popular idea is that we’ll eventually need some fresh, unexploited new worlds to inhabit. In a recent Galaxy post we wrote that Stephen Hawking, world-celebrated expert on the cosmological theories of gravity and black holes who holds Issac Newton's Lucasian Chair at Cambridge University, believes that traveling into space is the only way humans will be able to survive in the long-term. "Life on Earth," Hawking has said, "is at the ever-increasing risk of being wiped out by a disaster such as sudden global warming, nuclear war, a genetically engineered virus or other dangers ... I think the human race has no future if it doesn't go into space." Another of his famous quotes reiterates his position that we need to get off the planet relatively soon. "I don't think the human race will survive the next 1,000 years unless we spread into space." The problems with Hawking’s solution is that while it may save a “seed” of human life- a few lucky specimens- it won’t save Earth’s inhabitants. The majority of Earthlings would surely be left behind on a planet increasingly unfit for life. In a futuristic mode similar to Hawking, both Steven Dick, chief NASA historian and Carnegie-Mellon robotics pundit, Hans Moravec, believe that human biological evolution is but a passing phase: the future of mankind will be as vastly evolved sentient machines capable of self-replicating and exploring the farthest reaches of the Universe programmed with instructions on how to recreate earth life and humans to target stars. Dick believes that if there is a flaw in the logic of the Fermi Paradox, and extraterrestrials are a natural outcome of cosmic evolution, then cultural evolution may have resulted in a post-biological universe in which machines are the predominant intelligence. Renowned science-fiction writer, Charlie Stross, argued last week in his High Frontier Redux blog that space colonization is not in our future, not because it's impossible, but because to do so effectively you need either outrageous amounts of cheap energy, highly efficient robot probes, or "a magic wand." "I'm going to take it as read that the idea of space colonization isn't unfamiliar," Stross opens his post, "domed cities on Mars, orbiting cylindrical space habitats a la J. D. Bernal or Gerard K. O'Neill, that sort of thing. Generation ships that take hundreds of years to ferry colonists out to other star systems where — as we are now discovering — there are profusions of planets to explore." "The obstacles facing us are immense distance and time -the scale factor involved in space travel is strongly counter-intuitive." Stross adds that "Planets that are already habitable insofar as they orbit inside the habitable zone of their star, possess free oxygen in their atmosphere, and have a mass, surface gravity and escape velocity that are not too forbidding, are likely to be somewhat rarer. (And if there is free oxygen in the atmosphere on a planet, that implies something else — the presence of pre-existing photosynthetic life, a carbon cycle, and a bunch of other stuff that could well unleash a big can of whoop-ass on an unprimed human immune system."

## Nowhere to Go

### Space Colonization impossible- nowhere could support us

Skiles 9-3-09 Marcus Skiles is a writer of many articles in Helium- Helium [“Should Humans Colonize Space?” http://www.helium.com/items/1568809-should-humans-colonize-space]

Hawking presented his argument that this goal would be possible if the human race were to set aside one quarter of a percent of global GDP (Gross Domestic Product). The United States alone would have a share of 35 billion dollars a year, which is more than twice the current budget of the National Aeronautics and Space Administration (NASA). He also argues that a new manned space-flight program would increase public enthusiasm about space and science in general. However, many in the scientific community are opposed to spending large sums of money on space, when scientific advancements could be more useful here on Earth. In addition, those against the idea of space colonization believe that it is not even possible, as all the planets in our solar system have problems that make it impossible to live on them currently. For example, the moon has no atmosphere, Venus is too hot, and Mars is too cool and has too thin of an atmosphere. Hawking disregards these claims, declaring that an immediate launch of a colonization program could have a moon base established in a few decades, and have humans on Mars by mid-century. He does admit, however, that it would be impossible to reach this goal with current technology, so he encourages the youth of the world to take an interest in science through his lectures and books. A few experts believe that Mars would be the best place to colonize first, seeing as how it contains the one element essential to life-water. However, there are no firm plans to colonize anytime soon, as NASA officials say that not enough is known about the long-term effects of space flight or radiation in space. In addition, a single human mission to Mars or anywhere else in the solar system is estimated to cost $10-$50 billion dollars or more.

## Planet X Fake

### Planet X is just another example of the publics inability to see things anyway but their own

Morrison, senior scientist at the NASA Astrobiology Institute, NASA Ames Research Center, 8(David, a space scientist at NASA Ames Research Center and interim director of NASA's new Lunar Science Institute, yousaytoo, “Another Hoax: Planet X Nibiru?”, 11/7/8, <http://www.yousaytoo.com/rdy/another-hoax-planet-x-nibiru/13831>, accessed 6/28/11, CW)

The scoop: Conspiracy theorists are convinced a rogue planet will destroy the Earth in 2012, and movie makers are already trying to cash in on the hysteria. An astrobiologist calls for a reality check Unbeknownst to most of us, a small but vocal group of conspiracy theorists is convinced that a rogue planet is about to enter the inner solar system and doom the Earth They say that this threatening planet on a 3600-year orbit was discovered by the ancient Mesopotamians, who named it Nibiru, and it was known also to the Mayans, who associated it with the end of their calendar "long count" in December 2012. In Web sites, blogs, and radio talk shows, they insist that NASA is tracking Nibiru -- but that this information is being kept from the public as part of a worldwide conspiracy. They say the official silence can't be maintained for much longer, however, because by 2009 Nibiru will be visible to the naked eye from the southern hemisphere. They also say Earth's axis is already tilting and the length of the day is changing under its influence. As one believer recently wrote to me, "Why are you lying. It's coming, and everyone knows it**.** I began to receive questions about this bizarre story in December 2007 through NASA's "Ask an Astrobiologist" site. Normally I receive up to a dozen questions per week from the public, dealing mostly with life in the universe -- but in the past 6 months the Nibiru traffic alone has grown to 20-25 messages a week, ranging from the anguished "I can't sleep," "I am really scared" or "I don't want to die" to the abusive "you are putting my family at risk" and "if NASA denies it then it must be true. As a scientist, I'm both fascinated and astonished by the deluge of questions from people who are genuinely frightened and, apparently, unable to distinguish astronomical fact from fiction. They're watching YouTube videos and visiting slick Web sites with nothing in their skeptical toolkit, or to quote Carl Sagan no "baloney detector." Now a blockbuster disaster film called "2012" is set for release in the summer of 2009, and the commercial enterprise is clearly trying to cash in on people's concern (perhaps contributing to their fear as well) My guess is that only a tiny fraction of people truly believes that Armageddon is coming in December 2012. But their uncritical acceptance of this story worries me as a warning of the dangers of our current scientific illiteracy We're facing monumental problems with global warming and loss of habitat, yet a substantial minority of Americans thinks the world was formed less than 10,000 years ago and deny that evolution is possible. Many Americans seem to prefer coal-fired generators to nuclear power plants without realizing the toll in public health that coal imposes. Billions are spent, including tax-payer dollars, for so-called alternative medicine with no scientific evidence for its efficacy. And legislators often resist efforts to collect the data that could actually demonstrate which government programs are effective and which ones don't work as intended.In spite of my frustrations, I can always hope that Nibiru will turn into a teaching moment. Its proponents are convinced that it will be visible to the unaided eye this coming spring, and its effects on the rotation and orbit of the Earth will be obvious by summer(just in time for the release of the film "2012"). When none of this happens, I hope they'll realize that they need better tools to distinguish fact from fiction But maybe they won't One of funniest things about this Nibiru story is that it is a rerun -- there was a big Internet concern that Nibiru would destroy the Earth in May of 2003. Something tells me this didn't happen, yet now the same myth is resurrected. Are we condemned to suffer a Nibiru scare every decade in this century, or will people come to their senses?

### It’s physically impossible for Planet X to exist

NoPlanetX 8 (2012 predictions, “ A helping of TRUTH (Why Planet X can not and does not exist)”, 10/25/11, <http://2012predictions.org/helping-truth-why-planet-can-not-and-does-not-exist-t201.html>, accessed 6/28/11, CW)

That link leads to a website full of doomsday scenarios. There is a page about Planet X, look for it. You can read it if you want, but you don't have to, since I'm basically going to summarize scientific reasons why Planet X is impossible. (I know it refers to the 2003 prediction, but the proof would otherwise be scientifically and historically sound) 1. The laws of physics prevent an object with the supposed mass of Planet X to orbit around the sun in the same way as a comet. Even if it could, it would eventually become apart of the same kind of orbit Earth and all the other planets follow. 2. Nibiru doesn't mean what Planet X doomsayers believe they are. It means ferry boat in Sumerian. And as for the Babylonians? They sometimes used the word to describe the movement of Jupiter, or Marduck as it was also referred to. So Nibiru is nothing more than another way to say Jupiter. 3. One man (Zecharia Sitchin) managed to mix up the word of ancient civilizations and accidentally came up with a doomsday prophecy when, in fact, such a thing was never predicted. In fact, both the Sumerian's and the Babylonians thought the Earth was a disk, and there for astronomically ignorant. If they couldn't figure out the Earth was round, how could they ever predict the end of the world via a large celestial body? 4. Mathematically, Planet X cannot exist. If Planet X is coming in 2012 like people think it will, and if Planet X comes around ever 3600 years like I've heard it does, then we wouldn't be alive right now. 3600 years before the year 2012, humans were already on the face of the Earth. In the Year 1588 B.C., the year when Planet X would have passed us by, there were plenty of civilizations running around before and after this year. During the entire 16th century B.C., there was the Fifteenth through eighteenth dynasties of Egypt, the Shang Dynasty of China, the First dynasty of Babylon, the Vedic civilization of India, the Mayas, the Greek, the Mycenaean, as well as many others. And they all lived through the year 1588 B.C. Furthermore, none of them have left any known mention of any strange events, so it is obvious that even if Planet X does exist, it has a much wider time frame than 3600 years. (I only checked one source for the year, so that's my fault). 5. To WhatsUpWithThis. If Planet X DID pass us by when Pompeii was destroyed, then why didn't Planet X affect the entire world? Why didn't fire and brimstone wipe out entire civilizations? Why didn't giant meteors of death kill thousands? Why didn't anyone notice anything in the sky? Because Planet X did not pass us by. And as for the so-called discovery in 1983? It's true that two astronomers found a strange body in the sky, but it was just a distant galaxy. Go ahead if you have any other pro-X theories you want to challenge me with. And what does the Solar Plain have to do with anything? 6. The following website disproves Planet X quickly. http://www.planet-x.150m.com/index.html (Still on 2003, but the facts are good otherwise) 7. The Earth wouldn't just "stop" if Planet X came along. A planet can't just "stop" rotating. 8. Zetatalk. 9. Planet X was predicted to come in 2003... Nope, we're still here. 10. To Pandora. For one, 2003 UB313, or Eris as it is now known as, is only 23% larger than Pluto. Largest body discovered since Neptune? I don't think so. Eris would be dwarfed many times over if compared to Neptune, as would Pluto and our Earth, with is larger than both Pluto and Eris. It is also classified as a dwarf planet now, so it is no longer the tenth planet, as Pluto is no longer the ninth. Finally, when I say Planet X, I am referring to "Nibiru", "Marduck", and just about any other name for a giant f\*\*king planet speeding towards Earth in a very elliptical orbit, and not a hypothetical planet (Not dwarf planet, mind you) that is beyond Neptune, but still resides in our Solar System. I am not completely rejecting the latter, but I'm leaning towards that it doesn't exist. The former doesn't exist period.

## A2 Planet X Dangerous

### Planet X won’t destroy us – it will open up new realities

Singh, 4/29/11 (Ravinder Singh, “Earth Changes Part 1: The Cosmic Events” Ashtar Command Center Spiritual Blog, <http://www.ashtarcommandcrew.net/profiles/blogs/earth-changes-part-1-the#ixzz1QXLlbuGP>, accessed: 6/27/11, SL)

d) Second Sun Our Sun has a twin, another star, which is called as the Second Sun. This is also referred to many as Nibiru and Planet X. This star exists at a subtle level and although it usually isn’t visible to the naked eye, it sometimes becomes visible to those who are spiritually evolved and has been photographed. Since the Second Sun exists at a higher level, it supports life of a higher order, that is, the life in the New Age. As we go into the New age, we’ll use more of the energies from the Second Sun. These Energies are expected to become more prominent post 2012, because of our entry into the Photon belt and the Galactic alignment. They help us in our spiritual evolution and in opening up to newer realities.

# \*\* A2 Space Junk \*\*

## Status Quo Solves Junk

### Debris clearing technologies already in development

JamesMason, Jan Stupl, William Marshall, Creon Levit 2011 (A team of scientists led by NASA space scientist James Mason),Cornell University Library, “Orbital Debris-Debris Collision Avoidance”, 9 Mar 20**11**, http://arxiv.org/abs/1103.1690

We investigate the feasibility of using a medium-powered(5kW) ground-based laser combined with a ground-based telescope to prevent collisionsbetween debris objects in low-Earth orbit (LEO), for which there is no current, effective mitigation strategy. The scheme utilizes photon pressure alone as a means to perturb the orbit of a debris object. Applied over multiple engagements, this alters the debris orbit sufficiently to reduce the risk of an upcoming conjunction. We employ standard assumptions for atmospheric conditions and the resulting beam propagation. Using case studies designed to represent the properties (e.g. area and mass) of the current debris population, we show that one could significantly reduce the risk of more than half of all debris-debris collisions using only one such laser/telescope facility. We speculate on whether this could mitigate the debris fragmentation rate such that it falls below the natural debris re-entry rate due to atmospheric drag, and thus whether continuous long-term operation could entirely mitigate the Kessler syndrome in LEO, without need for relatively expensive active debris removal.

### New technology is already developed – no chance of impacts

Gwyneth Dickey Zakaib 2011 (Science Writer Intern at Nature Publishing Group), NatureNews, “Telescope will track space junk: US military unveils instrument to catalogue debris and protect satellites from collisions.”, April 22, 2011, http://www.nature.com/news/2011/110422/full/news.2011.254.html

A ground-based telescope that can scan the skies faster than any other of its size could help to protect satellites from collisions with space debris and each other. The Space Surveillance Telescope (SST), developed by theUS Defense Advanced Research Projects Agency (DARPA), is to be used to protect US and international assets and commercial and international satellites in orbit around Earth. "We've got a lot of high-value missions up there, and if you're trying to do those missions with a blindfold on, you just don't know what's going to run into you at any time," says Chuck Laing, deputy division chief of the Architecture and Integration branch of Air Force Space Command at Peterson Air Force Base in Colorado. "It's important to know where everything is, how fast it's moving, and in what direction." Researchers are currently tracking an estimated 22,000 artificial objects that are orbiting Earth,from small bits of debris to large satellites.That number is expected to triple in the next 20 years, says Laing. Even a centimetre-sized piece of debris can cause considerable damage to crucial weather, communication or missile-warning systems. The US Air Force keeps a catalogue of all known orbiting objectsthrough its Space Surveillance Network, an integrated system of ground- and space-based telescopes and radar. The network tracks debris to anticipate possible impacts, but better surveillance is needed to cope with the increasing number of objects, says Laing. The SST would focus mostly on the region in which objects in geosynchronous orbit reside, about 35,000 kilometres from Earth.

### Space Junk is under control and is not a danger to the ISS – NASA testifies

Chloe Albanesius 2011 (Albanesius has been with PCMag.com since April 2007, most recently as East Coast News Editor. She graduated with a bachelor's degree in journalism from American University in Washington, D.C.), PCmag.com, “'Space Junk' Not a Threat to International Space Station, NASA Says”, April 5, 2011, http://www.pcmag.com/article2/0,2817,2383131,00.asp

A "space junk" crisis was averted this afternoon after NASA ruled that a piece of orbital debris making its way through the universe will not get close enough to the International Space Station to warrant concern.The debris, from the Chinese FENGYUN 1C satellite, could have affected the Expedition 27 spacecraft, which launched from Earth last night. "Tracking data now indicates that a piece of orbital debris being monitored by Mission Control Houston will not pass close enough to the International Space Station to warrant the Expedition 27 crew members taking safe haven within their Soyuz TMA-20 spacecraft," NASA said this afternoon. The space agency was monitoring the debris since early this morning, and notified ISS Commander Dmitry Kondratyev at 7am this morning that his crew might have to take cover if the debris remained on track. By 2:41pm, however, Mission Control gave the all-clear, as the space station orbited 220 miles above eastern Asia. NASA said more than 500,000 pieces of debris, or "space junk," is tracked as its orbits the Earth, 20,000 pieces of which are larger than a softball. These pieces are not just meandering by, however; they can travel at speeds up to 17,500 miles per hour. Even something as small as a paint fleck can damage a satellite or spacecraft, NASA said. Despite such large amounts of debris, there have only been a few collisions. In 1996, a French satellite was hit by debris from a French rocket that had exploded 10 years earlier. In 2009, a defunct Russian satellite collided with and destroyed a U.S. commercial satellite, adding 2,000 more pieces of trackable debris to the galaxy. In 2007, meanwhile, a Chinese anti-satellite test, which used a missile to destroy an old weather satellite, added more than 3,000 pieces to the debris problem, NASA said.

### Atlantis mission was unhindered by space debris – no threat posed for further missions

Denise Chow 2011 (SPACE.com Staff Writer), MSNBC, “Soviet debris deemed no threat to space station”, 7/11/2011, http://www.msnbc.msn.com/id/43713326/ns/technology\_and\_science-space/

A piece of space junk from an old Soviet satellite will pose no danger to the International Space Station and the attached shuttle Atlantis, thanks in large part to the weekend docking of the two spacecraft, NASA officials said Monday. "Mission Control has verified that the track of a piece of orbital debris will not be a threat to the International Space Station and space shuttle Atlantis," agency officials said in a statement. "No adjustments to the docked spacecraft’s orbit will be necessary to avoid the debris." The U.S. military's Space Surveillance Network notified NASA of the wandering piece of space trash yesterday, and the agency began tracking the object's orbit to determine if it would fly uncomfortablyclose to the station and require some kind of maneuver avoid a collision.

## Alt Caus to Junk

### Asteroids pose a greater danger to satellites than space debris.

Glenn E. Peterson 99 (Author and PhD in astronomy and space objects), AIAA, “Dynamics of meteor outbursts and satellite mitigation strategies”, 1999, Google Books

Meteoroids are small particles produced by comets as they orbit about the Earth. When a comet approaches the Sun, it will heat up; small sandgrain-sized parti­cles will then extrude off the surface leaving a cloud of debris in space. As time passes, the debris will spread into a ring around the Sun that roughly follows the comet's orbit If the Earth goes through such a ring, a meteor shower is pro­duced. Usually, the comets that create meteor showers as seen from the Earth have evaporated, leaving only the particle residue. The Leonid showers are unusual in that the comet that produces the particles, Tempel-Tuttle, is still active. It orbits the Sun once every 33 years, producing intense periods of activ­ity with the same period, give or take a year. Because Tempel-Tuttle crossed the orbit of the Earth in the spring of 1998, the Leonid activity is potentially several orders of magnitude greater than usual in 1998-2000. The 1997 shower pro­duced one order of magnitude greater intensity than usual; as this book was being written, the 1998 Leonids produced intensities of about 20 times greater than normal. These meteoroid particles have been a threat to spacecraft in the past. In 1991, the Japanese ISAS spacecraft Solar A experienced a loss of its optical telescope as a result of an impact from the Perseid shower. In 1993, the same shower caused the European Space Agency's Olympus I telecommunications satellite to spin out of control. While the vehicle was not destroyed directly, so much fuel was used in regaining attitude control that the mission was effectively ended. As a consequence, meteoroid particles have been a historical source of severe satel­lite mishaps, and with the greater intensities expected for the Leonids in the next few years, they will continue to be a danger.

### Spaceships are affected more by other environmental phenomena

Daniel Hastings, Henry Garett 04 (AA(Massachusetts Institute of Technology)), Cambridge University Press, “Spacecraft-Environment Interactions”, August 2004, http://adsabs.harvard.edu/abs/2004sei..book.....H

Spacecraft interact with the space environment in ways that may affect the operation of the spacecraft as well as any scientific experiments that are carried out from the spacecraft platform. In turn the study of these interactions provides information on the space environment. The adverse environmental effects, such as the effect of the radiation belts on electronics, and spacecraft charging from the magnetospheric plasma, means that designers need to understand interactive phenomena to be able to effectively design spacecraft. This has led to the new discipline of spacecraft-environment interactions. The emphasis in this book is on the fundamental physics of the interactions. Spacecraft-Environment Interactions is a valuable introduction to the subject for all students and researchers interested in the application of fluid, gas, plasma and particle dynamics to spacecraft and for spacecraft system engineers.

## Junk Solvency Impossible

### Space Junk has reached a “Point of no Return” – the plan will not solve either way

LeonardDavid 2011 (Research associate with the Secure World Foundation, winner of the National Space Club Press Award), Space.com, “Ugly Truth of Space Junk: Orbital Debris Problem to Triple by 2030”, May 9, 2011, http://www.space.com/11607-space-junk-rising-orbital-debris-levels-2030.html

The concern over orbital debris has been building for several reasons, said Marshall Kaplan, an orbital debris expert within the Space Department at the Johns Hopkins University Applied Physics Laboratory in Laurel, Md. In Kaplan's view, spacefaring nations have passed the point of "no return," with the accumulation of debris objects in low-Earth orbits steadily building over the past 50 years. Add to the clutter, the leftovers of China’s anti-satellite (ASAT) test in 2007. "The fact that this single event increased the number of debris objects by roughly 25 percent was not as important as the location of the intercept. The event took place at an altitude of 865 kilometers, right in the middle of the most congested region of low-orbiting satellites," Kaplan pointed out. Toss into the brew the collision of an Iridium satellite with an expired Russian Cosmos spacecraft in February 2009 -- at an altitude similar to that of China’s ASAT test. As a result of 50 years of launching satellites and these two events, the altitude band from about 435 miles (700 km) to a little over 800 miles (1,300 km) has accumulated possibly millions of debris objects ranging from a few millimeters to a few meters, Kaplan said.

### Most debris is uncleanable. Russia’s space junk is protected from US cleanup by international law

Jerome Pearson 2010 (President of STAR Inc.; developer of aircraft and spacecraft for DoD and NASA; degrees in engineering and geology; member of the International Academy of Astronautics), Tau Beta Pi, “The ElectroDynamic Debris Eliminator (EDDE): Removing Debris in Space”, Spring 2010, http://www.tbp.org/pages/publications/Bent/Features/SP10Pearson.pdf

One problem is legal. The Outer Space Treaty of 1967, signed by all space-faring nations, says that the launching nation owns its satellites, even if they are defunct and abandoned. Unlike the maritime law, space law does not allow for salvage rights or treasure hunters. To remove debris objects, we need permission from each original owner. Since most of the mass of defunct satellites in orbit was launched by the Soviet Union, we need permission from the successor states of Russia and Ukraine to remove these objects. This leads to the legal problem of liability for damages. If we deliberately cause a space object to enter the atmosphere, we are responsible for any damage or injury it causes. This is why the U.S. and Russia tried to de-orbit the Skylab and Mir space stations over remote areas of the Pacific. Total potential liability could be enormous as a result of the removal of the most dangerous debris objects in LEO that weigh more than 2 kg. Another problem is political. Space is like the commons of the Middle Ages, land that everyone used, no one owned, and no one was responsible for its upkeep. It deteriorated from overuse. Norman R. Augustine, New Jersey Delta ’57, chair of the 2009 NASA spaceflight review panel, calls space our global commons. It is open to everyone for satellite launches, but there is no requirement for launch organizations to capture debris or remove their dead satellites from orbit. No one nation or group is responsible for cleaning space, and there is no international authority empowered to collect taxes or fees to pay the costs of cleaning space. Space is rapidly becoming more dangerous.

### We lack the technology and funds to remove debris – others will not cooperate

LeonardDavid 2011 (Research associate with the Secure World Foundation, winner of the National Space Club Press Award), Space.com, “Ugly Truth of Space Junk: Orbital Debris Problem to Triple by 2030”, May 9, 2011, http://www.space.com/11607-space-junk-rising-orbital-debris-levels-2030.html

"The buildup of debris is not a naturally reversible process. If we are to clean up space, it will certainly be complex and very expensive. If we continue, as we have, to use these very popular orbits in near-Earth space, the density of debris and collision events will surely increase," Kaplan told SPACE.com. The good news is that no immediate action is necessary in terms of removing debris objects,Kaplan advised, as experts estimate that the situation will not go unstable anytime soon."But, when it does, operational satellites will be destroyed at an alarming rate, and they cannot be replaced. We must prepare for this seemingly inevitable event," Kaplan said. While there are many options for debris removal that have been proposed, he feels that none are sensible. "Barring the discovery of a disruptive technology within the next decade or so, there will be no practical removal solution," Kaplan added. "We simply lack the technology to economically clean up space." For Kaplan, the issue of dealing with orbital debris will become dire. "The proliferation is irreversible. Any cleanup would be too expensive**.** Given this insight, it is unlikely spacefaring nations are going to do anything significant about cleaning up space," Kaplan said. "The fact is that we really can't do anything. We can't afford it. We don't have the technology. We don't have the cooperation. Nobody wants to pay for it. Space debris cleanup is a 'growth industry,' but there are no customers. In addition, it is politically untenable."

### **Space Debris can’t be cleared. Too much heritage value**

Alice C. Gorman 2005 (Lecturer from Flinders University in Adelaide, Australia, Co-organizer of the session [*Critical Technologies: the Making of the Modern World*](http://www.spacearchaeology.org/wiki/index.php?title=Critical_Technologies:_the_Making_of_the_Modern_World)*)*, Academia.edu, “The Archaeology of Orbital Space”, http://flinders.academia.edu/AliceGorman/Papers/77163/The\_archaeology\_of\_orbital\_space

If space objects are considered as isolated artifacts, then their cultural heritage value inheres in their physical characteristics. This value may be considered to be intact if the object is intact, even though removed from its original location. However, the question alters significantly if we include the relationship of the artifact to other artifacts and to its physical location. In this case, its significance is assessed as part of a cultural landscape. This question hinges on the importance of place. Rather than regarding spacecraft and orbital debris as unrelated objects in an empty substrate, they can also be regarded as related by location, history and function. They are not separate from the space they inhabit, but part of it. They form a new kind of cultural landscape.

## Space Col Alt Caus

### Political will is the main barrier to space colonization

BBC News, 07 (“Will we ever send humans to Mars?” 10-5-07. http://news.bbc.co.uk/2/hi/science/nature/7021303.stm)

A manned mission to Mars would probably use a so-called split-mission architecture, for which cargo is sent first and astronauts are sent later on a faster spacecraft. This would reduce fuel costs and the journey time. Onboard systems that recycle air and water could cut down on "storables" that would need to be taken on the journey. Scientists are also looking at whether a Mars crew could grow some of their own food. Spacecraft with nuclear propulsion. Image: Nasa. Nasa has carried out studies on nuclear propulsion systems CO2 could even be collected from the Martian atmosphere and broken down to make methane (CH4) - a potential rocket propellant for the return journey. But much more work needs to be done before the dream of humans setting foot on another planet can be realised. And, perhaps, the strong incentive required for governments to commit resources is still lacking. "I've been inspired by the Apollo missions since I was a child. So for me, the very idea of a person going to Mars - the exploration part of this - is enough," says Scott Hovland. "But then, I'm not the person paying for it."

### Other technical barriers

Globus, 02 (Dr. Ruth Globus, NASA Ames Research Center. “Space Settlements: A Design Study” Chapter 3 - Human Needs In Space. http://www.nas.nasa.gov/About/Education/SpaceSettlement/75SummerStudy/Chapt3.html)

An outstanding feature of space is the absence of the sensation of weight. In vessels moving freely in orbit objects exhibit weightlessness; they are said to be in "free fall," or subject to "zero gravity" or "zero g." Weightlessness is a major potential resource of space, for it means humans can perform tasks impossible on Earth. Large masses do not require support, and their movement is restricted only by inertia. Structures can be designed without provision for support against the forces of gravity; in free space there is no such thing as a static load. Although these opportunities are only beginning to be explored, it seems likely that weightlessness will permit novel industrial processes (refs. 1, 2). Moreover, in free space, levels of pseudogravity can be produced and controlled over a wide range of values. This capability should foster the development of manufacturing processes not possible on Earth. Despite these potentially important commercial advantages of life in free fall, possible physiological consequences are of concern. On Earth, gravity subjects everyone continuously and uniformly to the sensation of weight. Evolution occurred in its presence and all physiology is attuned to it. What happens to human physiology in the absence of gravity is not well understood, but experience with zero g is not reassuring. In all space flights decalcification occurred at a rate of 1 to 2 percent per month (ref. 3), resulting in decreased bone mass and density (ref. 4). There is no evidence to suggest that the rate of calcium resorption diminishes even in the longest Skylab mission of 89 days (ref. 5). Longer exposures could lead to osteoporosis and greatly reduced resistance to fracture of bones on minor impact. Moreover, because the body presumably draws calcium from the bones to correct electrolyte imbalances (ref. 4), it is clear that in zero g over many weeks and months a new equilibrium in the cellular fluid and electrolyte balance is not achieved. Furthermore, hormone imbalances also persist. In the later stages of some missions suppression of steroid and other hormone excretions were noted, together with reduction of norepinephrine output (ref. 3), unstable protein and carbohydrate states (ref. 5), indications of hypoglycemia, and unusual increases in secondary hormone levels with corresponding increases in primary hormones (private communication from J. V. Danellis, NASA/Ames Research Center). The medical problems on returning to Earth from zero g are also significant. Readaptation to 1 g has been almost as troublesome as the initial changes due to weightlessness. Following even the relatively short missions that have been flown to date astronauts have experienced increases of 10-20 beats/min in heart rate, decreased cardiac silhouette, changes in muscle reflexes, venous pooling, and leucocytosis (refs. 3-5). Although changes in physiology have been reversible, it is not known whether this will be so after prolonged weightlessness. Vascular changes, such as reduction in the effectiveness of veins or variations in the pattern of response of mechano-receptors in the walls of blood vessels, or changes such as decrease in the effectiveness of the immune system, or the manifestation of differences in fetal development (especially possible inhibitions of the development of the balance mechanism of the inner ear), may become irreversible. From present knowledge of the effects of weightlessness on physiology it seems appropriate to have at least some level of gravity acting on humans in space most of the time. Levels below the Earth normal (1 g) are not considered because there is no data on the effects of long-term exposure to levels of gravity between zero and one. Consequently because short term excursions into weightlessness reveal the complexity of the resulting physiological phenomena, and because the study group decided to be cautious in the absence of specific information, a criterion for safe permanent habitation is adapted - that the residents should live with the same sensation of weight that they would have on the Earth's surface, namely 1 g. Some variation about this figure is inevitable and so it is specified that humans permanently in space should live between 0.9 g and 1 g. This choice of a 10 percent variation is arbitrary, but also maintains conditions as Earth-like as possible.

# \*\* A2 Space Weaponization \*\*

## Weaponization Doesn’t Mean Peace

### No motivation or ability for adversaries to challenge us in space

Hitchens, 3 (Theresa, Director of the Center for Defense Information, “ Monsters and Shadows: Left Unchecked, American Fears Regarding Threats to Space Assets Will Drive Weaponization,” Disarmament Forum No1, Accessed on Spacedebate.com, http://ctbtdebate.org/evidence/1222/)

It is obvious that American space systems do have inherent vulnerabilities. It is also obvious that technologies for exploiting those vulnerabilities exist, or are likely to become available over the next several decades. However, neither vulnerabilities in American systems nor the potential capabilities of others necessarily translate into threats. In order to threaten American space assets, a potential adversary must have not only the technological ability to develop weapons and the means to develop and use them, but also the political will and intent to use them in a hostile manner. There is little evidence to date that any other country or hostile non-state actor possesses both the mature technology and the intention to seriously threaten American military or commercial operations in space and even less evidence of serious pursuit of actual space-based weapons by potentially hostile actors. There are severe technical barriers and high costs to overcome for all but the most rudimentary ASAT capabilities, especially for development of on-orbit weapons. It further remains unclear what political drivers outside of American development of space-based weaponry would force American competitors, in the near- to medium-term to seriously pursue such technology. Neither vulnerabilities in American systems nor the potential capabilities of others necessarily translate into threats.

### Weaponization won’t solve heg or deterrence – our conventional superiority means that the calculus is already set

Krepon, 3 – president of the Stimson Center (Michael, with Christopher Clary, “Space Assurance or Space Dominance?.” The Henry L. Stimson Center, http://www.stimson.org/images/uploads/research-pdfs/spacebook.pdf)

These presumed benefits have already been demonstrated by U.S. power projection capabilities featuring conventional munitions of increasing range and lethality. Further advances can be expected, so advocates of U.S. space warfare capabilities have the added burden of explaining why these terrestrial advances are insufficient to support a dominant U.S. military capability, and what added value would accrue from even greater increases in lethality, promptness, and reach from space. Moreover, further improvements in the range, promptness, and lethality of terrestrial weapons are likely to come far sooner, and at a fraction of the diplomatic, political, and financial cost, than the advent of “space strike” capabilities. Are space weapons needed to destroy hardened, underground bunkers? Existing or improved conventional weapons can serve to deny access to such facilities, thereby rendering the weapons inside unusable. The nullification of such threats could thereby be accomplished at a small fraction of the multiple costs associated with flight-testing and deploying space warfare capabilities. For the same reasons, the rationale for “improved” nuclear weapons designed for this purpose is deeply suspect. The presumed additional deterrent value of U.S. space weapons is also questionable. If existing U.S. conventional military and nuclear superiority prove insufficient to deter, it is doubtful that the addition of space warfare capabilities would make an appreciable difference in an adversary’s calculus of decision. The search to strengthen or supplant nuclear deterrence by means of space warfare capabilities will therefore appear to many as a quest to escape from, rather than “enhance,” deterrence. When viewed though this lens, the pursuit of space weapons appears designed less for strengthening deterrence and more for negating the deterrents of potential adversaries. To the extent that this perception holds, the flight-testing and deployment of space weapons is unlikely to raise the nuclear threshold, as proponents claim. To the contrary, the use of conventionally armed "space-strike" weapons could prompt unwanted escalation by threatening the nuclear forces of a weaker foe. In this event, the United States will receive little or no applause of the choice of weaponry used in preemptive strikes.

### Weaponization won’t deter global conflict—their argument that the US would be seen as benign is nonsense

Coffelt, 5 – Lt. Colonal; thesis to the school of advanced air and space studies (Christopher A, “The best defense: Charting the future of US space strategy and policy.” A Thesis Presented to the Faculty of the School of Advanced Air and Space Studies For Completion of the Graduation Requirements, School of advanced air and space studies air university, Maxwell Air Force Base, Alabama. June 2005.)

Second, the argument goes further, asserting that being in such a position enables the US to provide protection from ballistic missile launches, air raids, and even land invasions by aggressor nations against their neighbors. It envisions that this may even allow the US to put an end, once and for all, to interstate conflict.287 ABM discussions in the MIRV and SDI case studies reveal the weaknesses in this argument. Assuming one could deploy a perfect, impenetrable defensive shield that also had the capability to affect other targets in space, in the air, on land, or at sea, there is no evidence that such a capability would have any ability to prevent cross border incursions or conflicts. The monopoly on nuclear weapons did not prevent such acts, therefore, why would the US assume that orbiting space weaponry would? Analyses of these cases indicate that deployment of an impenetrable defense is also highly unlikely. Even if the US could deploy a system that was 99.9999% reliable, these machines still will have some associated, finite mean time between failures. Essentially, the question becomes “when” not “if.” The US would certainly not find itself in a tenable position if it had publicly stated it would shoot down all ballistic missile launches only to experience a system failure or simply miss when country a fired a missile on country b. World opinion would be more apt to believe the US allowed the impact of country a’s missile on country b’s sovereign territory vice the truth that the system simply malfunctioned. The US would immediately be viewed as having taken a side in the conflict and would be subject to the accompanying strategic implications of that perceived support or non-support. Therefore, there is no evidence to support a conclusion or belief that an offensive space strategy enabled by orbital weapons would be welcomed by the rest of the international community who would accept the US as the benevolent trustee of space.

### No impact to space attack - the US only needs 4 to have full GPS capabilities and redundancy means an attack would leave some standing

Forden, 7 – writer for Arms Control Today (Geoffrey, “After China's Test: Time For a Limited Ban on Anti-Satellite Weapons. Arms Control Today, April 2007, http://www.armscontrol.org/act/2007\_04/Forden)

On the other hand, an attacker would have to destroy a considerable number of satellites in order to have an immediate effect on military operations. There are on average about 10 GPS satellites visible at any given time and point on the Earth's surface even though a high positional accuracy requires only six. An attacker would have to destroy at least six satellites to affect precision-guided munitions even momentarily because other GPS satellites would soon appear as their orbits took them into view. A country would need to disable nearly one-half of the United States' 24 NAVSTAR/GPS satellites currently in orbit to eliminate the ability to employ precision-guided munitions for more than a few hours each day.[9] Likewise, the United States has a number of alternatives for communications satellites in the short term. Other space assets, such as weather and mapping satellites, although important in the long term, are not as time critical.

## A2 Space Lasers

### Space Lasers are impractical and vulnerable

Eisendrath, Goodman, Marsh 01’ Center for International Policy (Washington, D.C.) The phantom defense: America's pursuit of the Star Wars illusion Greenwood Publishing Co. 2001 Google Books

What, then, of the more exotic approaches to ballistic missile defense, such as the Air Force's Airborne Laser, mounted on a Boeing 747, or space-based lasers? Both approaches fail without even considering the technology because of their vulnerability. Anti-aircraft missiles do work, and the components of space-based defenses are sitting ducks for longer-range missiles. Space-based lasers also have to be in the right place when a missile is launched. Since they have to be in low earth orbit to maximize the energy they can put on the missile, to always have one in the right place to destroy an attacking missile means there must be a very large constellation of lasers in space. Not only are a large number of expensive laser battle stations needed, but a space-based laser defense is impractical in any case since the lasers are themselves large and vulnerable. The need for a large constellation is the same problem faced by Lawrence Livermore National Laboratory's "Brilliant Pebbles" fantasy. Space-based "Brilliant Pebbles" have a very limited engagement range leading to the need for far more of them in orbit. This game gets very expensive, very quickly. Still another problem is that space-based systems would violate the 1967 Peaceful Uses of Outer Space Treaty and set a dangerous precedent of weaponizing outer space.

# \*\* A2 Time Travel \*\*

## Time Travel Impossible

### Time travel will never happen

Steve Connor, Science Editor, The Big Question: Is time travel possible, and is there any chance that it will ever take place?, The Independent, February 8 2008

Two Russian mathematicians have suggested that the giant atom-smasher being built at the European centre for nuclear research, Cern, near Geneva, could create the conditions where it might be possible to travel backwards or forwards in time. In essence, Irina Aref'eva and Igor Volovich believe that the Large Hadron Collider at Cern, which is due to be switched on this year for the first time, might create tiny "wormholes" in space which could allow some form of limited time travel. If true, this would mark the first time in human history that a time machine has been created. If travelling back in time is possible at all, it should in theory be only possible to travel back to the point when the first time machine was created and so this would mean that time travellers from the future would be able to visit us. As an article in this week's New Scientist suggests, this year – 2008 – could become "year zero" for time travel. Is this really a serious proposition? The New Scientist article points out that there are many practical problems and theoretical paradoxes to time travel. "Nevertheless, the slim possibility remains that we will see visitors from the future in the next year," says the magazine says, rather provocatively. It has to be said that few scientists accept the idea that the Large Hadron Collider (LHC) will create the conditions thought to be necessary for time travel. The LHC is designed to probe the mysterious forces that exist at the level of sub-atomic particles, and as such will answer many important questions, such as the true nature of gravity. It is not designed as a time machine. In any case, if the LHC became a time machine by accident, the device would exist only at the sub-atomic level so we are not talking about a machine like Dr Who's Tardis, which is able to carry people forwards and backwards from the future. What do the experts say about the idea of time travel? The theoretical possibility is widely debated, but everyone agrees that the practical problems are so immense that it is, in all likelihood, never going to happen. Brian Cox, a Cern researcher at the University of Manchester, points out that even if the laws of physics do not prohibit time travel, that doesn't mean to say it's going to happen, certainly in terms of travelling back in time. "Saying that the laws of physics as we know them permit travel into the past is the same as saying that, to paraphrase Bertrand Russell, they permit a teapot to be in orbit around Venus," Dr Cox says. It's possible, but not likely. "Time travel into the future is absolutely possible, in fact time passes at a different rate in orbit than it does on the ground, and this has to be taken into consideration in order for satellite navigation systems to work. But time travel into the past, although technically allowed in Einstein's theory, will in the opinion of most physicists be ruled out when, and if, we develop a better understanding of the fundamental laws of physics – and that's what the LHC is all about."

### Moving backwards in time is mathematically impossible, we can only move forward

Sara Goudarzi, You Can't Travel Back in Time, Scientists Say, Live Science, March 07 2007 http://www.livescience.com/1339-travel-time-scientists.html

The urge to hug a departed loved one again or prevent atrocities are among the compelling reasons that keep the notion of time travel alive in the minds of many. While the idea makes for great fiction, some scientists now say traveling to the past is impossible. There are a handful of scenarios that theorists have suggested for how one might travel to the past, said Brian Greene, author of the bestseller, “The Elegant Universe” and a physicist at Columbia University.“And almost all of them, if you look at them closely, brush up right at the edge of physics as we understand it. Most of us think that almost all of them can be ruled out.” In physics, time is described as a dimension much like length, width, and height. When you travel from your house to the grocery store, you’re traveling through a direction in space, making headway in all the spatial dimensions—length, width and height. But you’re also traveling forward in time, the fourth dimension. “Space and time are tangled together in a sort of a four-dimensional fabric called space-time,” said Charles Liu, an astrophysicist with the City University of New York, College of Staten Island and co-author of the book “One Universe: At Home In The Cosmos.” Space-time, Liu explains, can be thought of as a piece of spandex with four dimensions. “When something that has mass—you and I, an object, a planet, or any star—sits in that piece of four-dimensional spandex, it causes it to create a dimple,” he said. “That dimple is a manifestation of space-time bending to accommodate this mass.” The bending of space-time causes objects to move on a curved path and that curvature of space is what we know as gravity. Mathematically one can go backwards or forwards in the three spatial dimensions. But time doesn’t share this multi-directional freedom. “In this four-dimensional space-time, you’re only able to move forward in time,” Liu told LiveScience.

### Time travel has never been possible, and it won’t be possible in the future

Ker Than, a science writer, Time Travel Impossible, Mini "Big Bang" Hints, National Geographic, April 27, 2011, http://news.nationalgeographic.com/news/2011/04/110427-time-travel-not-possible-physics-big-bang-space-science/

You may want to put plans for building that flux capacitor on hold: A "toy" big bang created in the lab suggests time travel may not be possible after all. In a new study, Igor Smolyaninov and Yu-Ju Hung of the University of Maryland simulated the birth of the universe using advanced materials that can bend light in unusual ways. Their device supports the idea that the forward marching "arrow of time" cannot curve back on itself to undo events that have already happened. So far time travel hasn't been possible in real life, Smolyaninov said, and this new material suggests it won't ever be possible. (Related: "Time Will End in Five Billion Years, Physicists Predict.")

### Making a wormhole is near impossible; traveling through it is just as hard

Joaquin P Noyola, Department of Physics, University of Texas at Arlington, Relativity and Wormholes, spring 2006, http://74.125.155.132/scholar?q=cache:ZBSLGBgghkMJ:scholar.google.com/+there+is+%22no+use+for+time+travel%22&hl=en&as\_sdt=0,23

Obviously making a wormhole is not an easy task, and it is even harder to make a traversable one. Next there is a small list outlining some of the problems encountered when trying to make traversable wormholes.

1) It takes too much mass. Even if the amount of mass needed is much less than the mass of the universe, it is still too much for humanity to handle.

2) It has been proven that all wormholes need exotic (negative) matter to stay open. Not only is exotic matter difficult to get in significant quantity, but nature seems to limit how much there can be in a given volume at a given time.

3) How to engineer the wormhole. Assuming we solve the first two problems. Then we need to learn how to open the mouth for the wormhole and how to keep the exotic matter inside the throat to keep it open.

4) Tuning the wormhole. If we made a traversable wormhole, we would need to know where it is going. Furthermore, we need to be able to decide where the wormhole will take us. This is harder than it seems at first. It has been calculated that to fine tune a wormhole to transport a single proton to a desired place, it requires fine tuning to 1 part in 1030; a human would require fine tuning of 1 part in 1060!7, 11

It can be seen that before we think of interstellar travel we must first learn how to make a wormhole; any wormhole or any size.

# \*\* A2 US-China Space War \*\*

## No US-China War

### A Chinese first strike is impossible for multiple reasons

Forden, 08 (Geoffery, PhD, MIT research associate and former UN weapons inspector and strategic weapons analyst at the Congressional Budget Office. 1-10-08. “How China Loses the Coming Space War” http://blog.wired.com/defense/2008/01/inside-the-chin.html)

But China could not launch the massive attack required to have anything like a significant effect on US ability to utilize space without months of careful planning and pre-positioning of special, ASAT carrying missiles around the country. It would also have to utilize its satellite launch facilities to attack any US assets in deep space: the GPS navigation satellites and communications satellites in geostationary orbit. Most importantly, it would have to time the attack so as to hit as many US satellites as simultaneously as possible. And, despite all that movement, Beijing would somehow have to keep the whole thing secret. Failure to do so would undoubtedly result in the US attacking the large, fixed facilities China needs to wage this kind of war before the full blow had been struck. Even if the United States failed to do so, China would undoubtedly plan for that contingency. Based on the orbits of US military satellites determined by the worldwide network of amateur observers, there appears to be a large number of low Earth orbit military satellites over China several times each week. To hit them, China would have to preposition its ASAT-tipped missiles and their mobile launchers in remote areas of China, one position for each satellite. (If reports of low reliabilities for these missiles are correct, two or more missiles might be assigned to each satellite.) Furthermore, these positions are really only suitable for a particular day. If China’s political and military planners have any uncertainty at all about which day to launch their space war, they would need to pre-position additional launchers around the country. Thus, attacking nine low Earth orbit satellites could require as many as 36 mobile launchers—enough for two interceptors fired at each satellite with a contingency day if plans change—moved to remote areas of China; areas determined more by the satellite orbits than China’s network of road. (As will be discussed below, nine is about the maximum they could reasonably expect to hit on the first day of the space war.) At the same time that China would be trying to covertly move its mobile missile launchers around the country, it would also have to assemble a fleet of large rockets -- ones normally used for launching satellites. The more large rockets China uses for this task, the more deep-space satellites it can destroy. At present, however, China only has the facilities for assembling and launching a total for four such rockets nearly simultaneously. Two would have to be assembled out in the open where they could be observed by US spy satellites and two could be assembled inside a vertical assembly building during the 18 days it takes to stack and fuel the Long March rocket’s stages while preparing to launch. [See right.] Even the two assembled indoors would need to arrive by train and eventually would have to be moved, one after the other, to the launch pad. Each of these rockets, usually reserved for launching satellites into geostationary orbits, could carry three to four interceptors and their special orbital maneuver motors to attack either US navigation satellites, at about 12,000 miles altitude, or communications satellites at about 22,000 miles. Four days prior to the attack, China would launch the first of its Long March rockets carrying deep-space attack ASATs; the same launch pad would have to be used for the second rocket stacked inside the vertical assembly building. As the technicians renovated that pad, the first rocket’s payload would circle the Earth in a parking orbit at about 200 miles altitude waiting to be joined by the other deep-space ASATs. This would appear to be a tell-tale sign of an impending strike. But China could explain the delay to the international community by claiming that the third stage, intended to take the payload it its final altitude, had failed to fire and that they were working on it. Roughly six hours before the first the attack on the US’s low Earth orbit military satellites, the other three Long March rockets would have to be fired since it takes roughly that long to get their payloads up to their target’s orbits. Delays or failures to launch any of these rockets would strand their interceptors on the launch pad and subject them to possible retaliatory bombing by the US.

## No Impact US-China War

### Even if it succeeded, the US has too many satellites

Forden, 08 (Geoffery, PhD, MIT research associate and former UN weapons inspector and strategic weapons analyst at the Congressional Budget Office. 1-10-08. “How China Loses the Coming Space War” http://blog.wired.com/defense/2008/01/inside-the-chin.html)

If all goes as planned, China would have launched between 12 and 16 ASATs, each capable of destroying a strategically important deep-space satellite. However, the United States military has many, many more deep space satellites. There are, as of December 2007, 32 functioning GPS navigation satellites even though the original design calls for only 24. [See above, left] In addition, the US has 23 military communications satellites, six early warning satellites that observe missile launches, and six surveillance satellites—most of which detect and monitor electronic transmissions of potential adversaries but one, apparently capable of photo-reconnaissance—in geostationary orbit.

# \*\* A2 US Space Leadership \*\*

## Collapse Inevitable

### History proves – the US can’t sustain space dominance

Johnson, 03 (Dir. Disarmemtn and Arms Control Program, Liu Inst. for Global Issues, U. of British Columbia. Rebecca, “Missile Defense and the Weaponisation of Space,” ISIS Policy Paper on Missile Defense, January, www.isisuk.demon.co.uk/0811/isis/uk/bmd/no11.html)

Those who argue that weaponising space is inevitable tend to evoke the "flag follows trade" analogy of sea and air power, relating military development to the safeguarding of commercial expansion. They also argue that whoever weaponises first will enjoy an advantage. These analogies are seductive, but flawed. Indeed, some analysts have come to the conclusion that the weaponisation of space is only inevitable if the US itself drives a race to do so. Moreover, history abounds with examples showing that the security advantage enjoyed by the leader in innovative military technology is soon narrowed. The history of nuclear weapons, for example, demonstrates how any benefit from being the first to deploy a new type of weapon is quickly eroded, leading to greater national and international insecurity in the longer run. Alternative analogies, based on a military interpretation of the concept of sanctuary, show how co-operative international action can be successful in preventing military competition and deployments from threatening a potentially strategic area of international and scientific importance, as in the case of Antarctica.

# \*\* A2 Wormholes \*\*

## Wormholes don’t exist

### There is no evidence stating that there is a wormhole.

NASA October 14, 2005 http://helios.gsfc.nasa.gov/qa\_sp\_sl.html

Wormholes are allowed to exist in the math of "General Relativity", which is our best description of the Universe. Assuming that general relativity is correct, there may be wormholes. But no one has any idea how they would be created, and there is no evidence for anything like a wormhole in the observed Universe.

### Even if wormholes DO exist, it will be hard to find them and we don’t have the technology to travel through them

Ian O’Neill January 21, 2008 “Forget Black Holes, How Do You Find A Wormhole?” O’Neill is a Discovery News Space Science Producer, space physics doctor, science writer, editor and blogger. Experienced website developer

Wormholes are a valid consequence of Einstein’s general relativity view on the universe. A wormhole, in theory, acts as a shortcut or tunnel through space and time. There are several versions on the same theme (i.e. wormholes may link different universes; they may link the two separate locations in the same universe; they may even link black and white holes together), but the physics is similar, wormholes create a link two locations in space-time, bypassing normal three dimensional travel through space. Also, it is theorized, that matter can travel through some wormholes fuelling sci-fi stories like in the film Stargate or Star Trek: Deep Space Nine. If wormholes do exist however, it is highly unlikely that you’ll find a handy key to open the mouth of a wormhole in your back yard, they are likely to be very elusive and you’ll probably need some specialist equipment to travel through them (although this will be virtually impossible). Alexander Shatskiy, from the Lebedev Physical Institute in Moscow, has an idea how these wormholes may be observed. For a start, they can be distinguished from black holes, as wormhole mouths do not have an event horizon. Secondly, if matter could possibly travel through wormholes, light certainly can, but the light emitted will have a characteristic angular intensity distribution. If we were viewing a wormhole’s mouth, we would be witness to a circle, resembling a bubble, with intense light radiating from the inside “rim”. Looking toward the center, we would notice the light sharply dim. At the center we would notice no light, but we would see right through the mouth of the wormhole and see stars (from our side of the universe) shining straight through. For the possibility to observe the wormhole mouth, sufficiently advanced radio interferometers would be required to look deep into the extreme environments of galactic cores to distinguish this exotic cosmic ghost from its black hole counterpart.However, just because wormholes are possible does not mean they do exist. They could simply be the mathematical leftovers of general relativity. And even if they do exist, they are likely to be highly unstable, so any possibility of traveling through time and space will be short lived. Besides, the radiation passing through will be extremely blueshifted, so expect to burn up very quickly. Don’t pack your bags quite yet…

# \*\* A2 Zero Point Energy \*\*

## Not Efficient

### The amount of energy it takes to develop ZPE is more then you get

Yam, 97 (managing editor of ScienceAmerica.com) Exploiting Zero Point Energy Philip Yam 1997 http://www.padrak.com/ine/ZPESCIAM.html

In fact, several signs indicate that the amount of energy in the vacuum isn't worth writing home about. Lamoreaux's experiment could roughly be considered to have extracted 10^-15 joule. That paltry quantity would seem to be damning evidence that not much can be extracted from empty space. But Puthoff counters that Casimir plates are macroscopic objects. What is needed for practical energy extraction are many plates, say, some 10^23 of them. That might be possible with systems that rely on small particles, such as atoms. "What you lose in energy per interaction, you gain in the number of interactions;" he asserts. Milonni replies by noting that Lamoreaux's plates themselves are made of atoms, so that effectively there were 10^23 particles involved. The low Casimir result still indicates, by his figures, that the plates would need to be kilometers long to generate even a kilogram of force. Moreover, there is a cost in extracting the energy of the plates coming together, Milonni says: "You have to pull the plates apart, too.

### ZPE is not a good source of energy-science proves

Illinois Department of Physics, 7/6/11 (Illionois department of physics) Q & A department of Physics, http://van.physics.illinois.edu/qa/listing.php?id=1256

This is kinda cool, but it really isn't a very good source of energy. In particular, once you've brought your conducting plates together, that's it -- no more energy can be extracted from these plates until you pull them apart again. The force acts a like an weak attractive spring between two conducting plates; it can be overshadowed by other forces, like the electrostatic force if the plates aren't at exactly the same voltage, or perhaps even gravitational forces.

## ZPE Impossible

### Zero Point energy is impossible to extract

Yam, 97 (managing editor of ScienceAmerica.com) Exploiting Zero Point Energy Philip Yam 1997 http://www.padrak.com/ine/ZPESCIAM.html

Demonstrating the existence of zero-point energy is one thing; extracting useful amounts is another. Puthoff's institute, which he likens to a mini Bureau of Standards, has examined about 10 devices over the past 10 years and found nothing workable.

### ZPE is impossible

Stenger 1999, (Vic Stenger, Professor of physics/ Ph.D in Physics) Phantom of free energy, http://www.colorado.edu/philosophy/vstenger/Briefs/phantom.html

It's like the power we extract from falling water. We find this in nature, so it is "free" in that sense. But the sun provided the original energy that evaporated the water and raised it up into the air where it could then fall back down as rain and snow. It does no good to suggest that we put a line of slaves to work carrying buckets of water to the top of a hydroelectric dam built out on a flat plain. We still have to feed the slaves to give them the energy to do the lifting.

## **A2 Harold Puthoff**

### **Puthoff is unreliable- his theories are inane and were rejected before**

Gardner 98 (Martin, Mathematics and science writer, “Zero-point energy and Harold Puthoff”, The Skeptical Inquirer, pg. 61)

In the December 1997 issue of Scientific American, staff writer Philip Yam's article "Exploiting Zero-Point Energy" is devoted to a ten- year struggle by physicist Harold E. Puthoff to build a device that could tap the fluctuating energy of supposedly empty space-time. An episode called "Beyond Science" of PBS's Scientific American Frontiers, which aired on television the previous month, also had a segment devoted to Puthoff's ambitious research program. What Scientific American failed to reveal, both in Yam's excellent piece and on its TV show, was that Puthoff is none other than the Harold Puthoff who twenty years ago validated the psychic powers of Uri Geller. In 1976 Puthoff and his friend Russell Targ were on the staff of what was then called the Stanford Research Institute (SRI), now SRI International. Their book Mind-Reach (1976) tried to convince the world that ESP, PK (psychokinesis), and precognition now have, thanks to their valiant efforts, become firmly established phenomena. Margaret Mead wrote the book's enthusiastic introduction. Most of the work of Puthoff and Targ at SRI was devoted to what they called "remote viewing"—the ability of psychics to "see" scenery at any distance away—perhaps even to remote view the surfaces of other planets. Chapter 7 described experiments which they said proved that Israeli magician Uri Geller had strong psychic powers. In later papers Puthoff and Targ claimed astonishing success with an ESP teaching machine. They also claimed to have validated Geller's ability to guess correctly how a die had fallen when shaken inside a closed box. The original manuscript of Mind- Reach contained several pages outlining what the authors insisted was a sure-fire technique of using precognition to win large sums of money at roulette tables. Although Mead believed strongly in paranormal powers, she objected so vigorously to including this betting method in the book that it was removed from the published edition, though not from proofs sent to reviewers.

### Puthoff’s bias towards the church of Scientology ruins his credibility

Gardner 98 (Martin, Mathematics and science writer, “Zero-point energy and Harold Puthoff”, The Skeptical Inquirer, pg. 61)

Prior to his work at SRI, Puthoff was an active Scientologist. He had been declared what the group calls a "clear". A person free of "engrams." Engrams are alleged to be records on an embryo's brain, long before it grows ears, of what its pregnant mother is speaking or hearing. These records are said to cause neuroses and psychoses in one's adult life. When Puthoff married, a Scientology minister performed the ceremony. The Church of Scientology proudly published a 1970 notarized letter written by Puthoff when he was a Stanford University physicist specializing in laser research, a topic on which he had coauthored a textbook. Five years earlier he had earned his doctorate in electrical engineering at Stanford."Although critics viewing the system [Scientology] from the outside," Puthoff wrote in his letter, "may form the impression that Scientology is just another of many quasi-educational quasi-religious 'schemes,' it is in fact a highly sophistical and highly technological system more characteristic of the best of modern corporate planning and applied technology." The letter goes on to praise Scientology's E-meter, a simple electronic device used by "auditors" to uncover a patient's engrams. "In the technical community here at Stanford, we have projects underway employing the techniques developed in Science.