Space

SPACE DISAD

Negative

INC = 1
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By: Alexandria Seaton & Garrett Abelkop

INC

A.) Unique Link: Space colonization is being fueled by the perception of an immenent eco crisis. Plan stops that.

ENGDAHL --2001
Space and Human Survival: My Views
on the Importance
of Space http://www.sylviaengdahl.com/space.htm

One big reason why they should not is the "narrow window" concept. The other is that they could not. I have explained why I believe the problem of war can't be solved without expansion. The problem of hunger is, or ultimately will be, the direct result of our planet's limited resources; though it could be solved for the near-term by political reforms, we are not likely to see such reforms while nations are playing a "zero-sum game" with what resources Earth still has. Widespread poverty, when not politically based, is caused by insufficient access to high technology and by the fact that there aren't enough resources to go around (if you doubt this, compare the amount of poverty here with the amount in the Third World, and the amount on the Western frontier with the amount in our modern cities). Non-contagious disease, such as cancer, is at least partially the result of stress; and while expansion won't eliminate stress, overcrowding certainly increases it. The problem of atmospheric pollution is the result of trying to contain the industry necessary to maintain our technology within the biosphere instead of moving it into orbit where it belongs.
In short, all the worldwide problems we want to solve, and feel we should have solved, are related to the fact that we've outgrown the ecological niche we presently occupy. I view them not as pathologies, but as natural indicators of our evolutionary stage. I would like to believe that they'll prove spurs to expansion. If they don't, we'll be one of evolution's failures.

B. Nuclear war, asteroids, and atmospheric pollution are just some of the reasons that the earth will collapse now – Space colonization is necessary for human life.

Oscar Falconi, B.S. Degree n physics from MIT, "The Case for Space Civilization-Now!"
October 16, 2001

As the years pass, it has become more and more apparent that intelligent life on this earth has very little time remaining, and that we're about to experience a terrifying, unpreventable holocaust!

No, this conclusion isn't reached by religious Armageddon-type considerations. Not at all. All life on earth is threatened by political and environmental problems that are quickly coming to a climax: World War III, nuclear wastes, atmospheric pollution, and many more, each by itself able to put an end to man.

This book frankly examines these many causes of our destruction and gives incisive and logical arguments that will convince the reader that the colonization of space must be our generation's very first priority and must be undertaken immediately in order to save our fine civilization and to preserve our culture.

Able to do so and Needs

The fact that the colonization of space is the only way to save our civilization is an important concept. In this book it is shown that mankind is very possibly alone in the universe. We therefore have an enormous responsibility to prevent our destruction. This can only be done by colonizing space with self-sufficient backup civilizations, a task we are presently quite capable of accomplishing, both technically and financially, within the next 25 years.

Space Space Colonization Possible END 1/6

COLONIES FEASIBLE; WATER IS THERE

DAVID 2000
NOV 11, Senior Space Writer
http://www.spaceviews.com/2000/11/11b.html

Space resource experts continue to be intrigued by the prospect that water is stashed at the Moon's poles. Tucked away in craters that never see sunlight, water would have been primarily brought to the lunar surface via impacting comets. If there, water could be processed to yield both rocket fuel and oxygen. That would be a resource bonanza, workshop participants said, ideal for supporting future Moon bases and other human space exploration goals.
NASA's Lunar Prospector spacecraft that orbited the Moon in 1998-99 did spot rich fields of hydrogen. While some scientists infer from the probe's data that water had been detected, others contend that Lunar Prospector measured deposits of hydrogen implanted there by blasts of solar wind washing across the Moon's crater pocked face.
"The question of what's at the permanently shadowed craters on the Moon is of great interest," said Gerald Sanders, a space resources expert at the NASA Johnson Space Center in Houston, Texas. "Is it hydrogen, or water, a combination, or something else? That one answer could totally shape how we progress going back to the Moon," he said.
Tons of water
"I suspect that we have found water ice," said Alan Binder, director of the Lunar Research Institute in Tucson, Arizona. He was Lunar Prospector's principal investigator.
Lunar Prospector found numbers of "cold traps," Binder said. These are small expanses of lunar surface that he believes hold water-ice crystals mixed in with surface materials. "What we are probably seeing in the data is water ice," he said. Binder told SPACE.com that he estimates on the order of 300 million metric tons of water is available on the Moon. But more knowledge is needed about where and how large permanently shadowed regions are, he said, as are lunar landers to conduct up-close-and-personal look-sees into those resource-laden spots.

MOON COLONY VERY FEASIBLE IN NEXT 10 YEARS

HENDERSON 2001
APRIL 6 http://www.thetimes.co.uk/article/0,,2-110510,00.html

MAN could return to the Moon to set up a permanent base by 2007 at half the cost of building the International Space Station, a Nasa scientist said yesterday. A lunar space station staffed by four astronauts would offer unprecedented opportunities to advance human understanding of the Universe at an affordable price and should be a priority for Nasa and the European Space Agency, Paul Spudis told the National Astronomy Meeting in Cambridge.

Dr Spudis, from the Lunar and Planetary Institute in Houston, Texas, said that such a project was already technically feasible and could be accomplished within six years of gaining approval from politicians and funding bodies. It would cost an estimated $50 billion (£35 billion) — less in real terms than the $25 billion spent on the Apollo Moon missions of the 1960s and 1970s.

Once established, an international base would house powerful telescopes to take advantage of the Moon's lack of atmosphere and clouds and allow detailed surveys of the surface. It would also provide an ideal test bed for technology that might one day sustain astronauts on a mission to Mars.

INC

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Scribbles Space — Space Colonization Possible — End 3.12

MOON COLONIES FEASIBLE AND INEVITABLE

DAVID-2002
http://www.space.com/scienceastronomy/solarsystem/moon_nss_020604.html JUNE 4

Strong support for lunar colonization comes from Niklas Jarvstrat, a senior scientist at Volvo Aero Corporation, headquartered in Trollhättan, Sweden. He detailed the manufacturing facilities required for a lunar colony to survive without supplies from Earth.

Jarvstrat recently completed a NASA Institute for Advanced Concepts (NIAC) study on a small, self-sustainable Moon base. That work reviewed survival needs per person in the sense of food, oxygen, and clean water. Furthermore, learning how to get a firm foothold on the Moon will have potential impact on production chains here on Earth.

Once again, the Moon's South Pole offers a wealth of advantages as the site of choice for a human outpost. Heaps of sunlight…cold traps that likely contain water ice, or at least hydrogen. Those are distinct pluses for making a Moon base viable, Jarvstrat said.

"The air you need to breathe, you just have to squeeze it from the rocks," Jarvstrat said. There's no significant research that's needed to set up a Moon colony. "It's not just manufacturing what you need to eat. It's manufacturing what you need to manufacture what you need to eat,"
"We can do it. It's just expensive," Jarvstrat told the audience. There is water, or at least hydrogen. Raw materials are available for the picking and processing. And there are places flooded by near constant sunlight, he said."We can get there…at least 30 years ago we could, even if nobody has been there recently," Jarvstrat added. He noted that a consortium of 24 organizations from 13 countries have joined forces, searching for research funds to study the fabrication of the first Moon colony.
"The question is not if," Jarvstrat concluded. "The question is how soon and by who?"

Emory
End I
03 Space Colonization Possible

HUMANS NOW HAVE NARROW WINDOW OF OPPORTUNITY FOR COLONIZATION

ENGDAHL –2001
Space and Human Survival: My Views
on the Importance
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They tell themselves that if we do our best to conserve resources and give up a lot of the modern conveniences that enable us to spend time expanding our minds, we can avoid such a fate--as indeed we can, for a while. But not forever. And most significantly, not for long enough to establish space settlements, if we don't start soon enough. Space humanization is not something that can be achieved overnight.

I have called this stage in our evolution the "Critical Stage." Paul Levinson [the Director of Connected Education] uses different terminology for the same concept. He says that we have only a narrow window to get into space, a relatively short time during which we have the capability, but have not yet run out of the resources to do it. I agree with him completely about this. Expansion into space demands high technology and full utilization of our world's material resources (although not destructive utilization). It also demands financial resources that we will not have if we deplete the material resources of Earth. And it demands human resources, which we will lose if we are reduced to global war or widespread starvation. Finally, it demands spiritual resources, which we are not likely to retain under the sort of dictatorship that would be necessary to maintain a "sustainable" global civilization.
Because the window is narrow, then, we not only have to worry about immediate perils. The ultimate, unavoidable danger for our planet, the transformation of our sun, is distant--but if we don't expand into space now, we can never do it. Even if I'm wrong and we survive stagnation, it will be too late to escape from this solar system, much less to explore for the sake of exploring.

Space DA

Space Colonization Possible

END: 4/Ce

Space Colonization is possible in the near future.

Oscar Falconi, B.S. Degree n physics from MIT, "The Case for Space Civilization-Now!" October 16, 2001

A method has emerged for the efficient colonization of space which can be implemented quickly, economically, and in addition be very tangibly beneficial to man. Gerard K O'Neill, a professor of physics at Princeton, has devoted years to perfecting a design for satellite colonies that would orbit the earth about every 2 or 4 weeks. Each of these early colonies, constructed from easily obtained lunar material, would orbit between 100,000 and a quarter million miles from earth, would initially support in fine style about 10,000 men, women and children, and would soon be self-sufficient. These 1000's of pioneers would be put to work constructing solar-collecting satellites, hundreds of them, that would be placed in earth orbit 22,290 miles above sea level at the equator. At that height, these satellites would orbit the earth exactly once a day and remain above the same point of the equator. These solar collecting satellites would gather vast amounts of the sun's energy, convert it into microwaves, and beam it down to stationary receivers on earth where it would be again converted into the form of electrical energy we can use in the home. All this is done with surprising efficiency, day and night, rain or shine. No breakthroughs are required - the technology is here - and both NASA and Congress are having a hard look at the benefits vs. costs of Prof. O'Neill's Satellite Solar Power System. O'Neill has shown that the power obtained would, in just a couple decades, completely pay for all the development and construction of all the space colonies, solar-collecting satellites, and ground stations, including the interest on the capital investment.**

A number of different configurations have been proposed for the colony. Preliminary estimates indicate costs would only be several hundred billion dollars spread over two decades or so. Remember that this money would be spent here in the United States where we would benefit in the many ways previously listed. After such a venture, the U.S. would undoubtedly find itself in a powerful economic, technical, and political position, well worth the expenditure of just a small fraction of one year's GNP. And to achieve all this, there'll be no need to fight a war. In fact, a disastrous war may well be prevented and our civilization rescued.1

space DA

Space Colonization Possible

ENDI
5/6

Raw materials are plentiful in Space allow space colonization possible.

Andrew Nowicki, The Trumpeter, "Diversity", 1993.

Raw materials are plentiful in outer space. They can be easily mined from comets, asteroids, and small satellites. Trojan asteroids are particularly attractive as a source of raw materials, because they are relatively close to the Earth, and yet, as far as we know, have enough volatiles (mostly ices of water, ammonia, and carbon dioxide) to satisfy the needs of space colonies. Some asteroids abound with heavy metals, including gold, and so may trigger an "asteroid gold rush."

The asteroids are broken into smaller pieces which are carried by large cargo vehicles to distant space colonies. The most economical method of propulsion is a combination of solar-thermal propulsion, gravity assist, and aerobreaking. The solar- thermal propulsion is a fancy name for a boiler heated with sunlight. Thrust is produced by a steam spewing from the boiler. When the cargo vehicle flies near a planet, its course is altered by gravity, and by drag against the atmosphere. These phenomena are respectively known as gravity assist and aerobreaking. Both phenomena can save the valuable volatiles which are consumed by the solar-thermal propulsion. With the help of the enormous gravity of Jupiter, it is fairly easy to accelerate the cargo vehicles to 10 kilometers per second or so, which corresponds to a one-way trip to the Earth lasting about 1 decade.

cont...

Raw materials are plentiful in space allow space colonization possible.

Cont...

What shall we do with the cargo vehicle when it arrives close to the Earth? One possibility is to slow it down park it in an Earth orbit, and build human colonies from its cargo. This idea makes sense as long as the colonies are limited to a small human population. Unfortunately, there is not enough room in the vicinity of the Earth to house its present population; the colonies would shade both each other and the Earth from sunlight. Another problem is that it is difficult to slow down the massive cargo vehicles. Aerobraking in the Earth's atmosphere is out of the question; one miscalculation could result in a disaster comparable to that of the Tunguska meteor. Aerobraking in the dense atmosphere of Venus is feasible, but requires time-consuming maneuvers. And slowing down the cargo vehicles by drag against a long rail constructed on the Moon is quick, but expensive.

It seems that the best location for the space colonies are the eccentric orbits of the cargo vehicles. The orbits provide easy, though infrequent (once every 12 years) access to the Earth and to the Trojan asteroids. When a cargo vehicle flies by the Earth, it drops off tourists and picks up colonists. The colonists convert the cargo vehicle into a permanent, greenhouse-like settlement, an example of which is depicted in Figure 2. If the greenhouse is large enough, and if it has significant thermal gradients, natural patterns of wind and rain will develop, thus eliminating the need for fans and sprinklers to mimic terrestrial weather. In my opinion, it is feasible to move the entire human population into the orbital greenhouses within 50 years.

The raw materials have to be separated into simple chemical components before they can be converted into the greenhouses. A device depicted in Figure 3 can accomplish most of the separation. The device comprises a solar-heated furnace that vaporizes the raw materials. The vapors are carried by gaseous helium to cool collector bins where they precipitate into powder. During processing, the temperature of the furnace is raised gradually. Because different elements vaporize at different temperatures, they can be collected in different bins.

Space DA — Have Space Colonization technology

END: 1/1

(_) The U.S. is the leader in excelenece for new in formation technology w/ NASA in areas like aviation efficiency, Networking Data, and aerospace design.

Glenn E. Bugos, "Atmosphere of Freedom; Sixty Years at the NASA Ames Research Center" 2001.

"The future of NASA lies in information technology and information systems," proclaimed Goldin in May 1996 in a ceremony designating Ames as the NASA Center of Excellence for Information Technology (CoE-IT). The CoE-IT developed rapidly, directed by Jack Hansen and then Kenneth Ford, as the center of a virtual corporation that linked NASA Centers, industry, and academia into tight-knit teams. These teams developed "enabling technologies" in modeling, database management, smart sensors, human-computer interaction, and supercomputing and networking. These enabling technologies then supported key areas of NASA's missions — integrating aerospace design teams, networking data to improve simulations, improving efficiency in aviation operations, and developing autonomous probes to make space exploration more frequent, reliable and scientifically intense. Ames led NASA efforts to incorporate advanced information technologies into all NASA space and aeronautics programs in support of faster, better, cheaper programs.

new tech new age

(_) There is vitality in Space exploration tech nology.

NPR: Talk of the Nation/Science Friday, "Analysis: Future of Space Exploration and the Space Program" February 7, 2003.

I think there's a vitality in space exploration, not to mention, of course, the Space Station and the things I mentioned a few minutes ago about what's been proposed in the new budget. So I think there's a vitality in space exploration. What's needed, and I agree with Dr. Sadeh--what's needed is to bring the human and robotic programs together in that common goal of exploration outward. That's the part that's been missing all along. The robotic man program and the human--the robotic Mars program, I mean, and the human Mars program need to be brought together in a common goal and we ought to be doing things in a robotic program that lead directly to human flight. We ought to be doing things in the human program that can enhance some of the performance of these robotic missions.

But having said that, I do think that there'll be a determination out of this whole accident and the discussions that follow to make it play together a little better. And that's what happened after Challenger, and the program in the early '90s, reinvigoration of a space program which had really gone awry in the early '80s, was good for the country, good for the world. And I believe that will happen again.

vitality in space explor

Schiller's space DA Have Space colonization technology END 2/2

(_) Bush is funding new nuclear-powered rocket-technology.

LA Times January 17, 2003 and London Times, Guardian January 19, 2003.

NASA SAYS BUSH WILL FUND NUCLEAR-POWERED ROCKET PROGRAM.

The Bush Administration has signed off on an ambitious nuclear-rocket project, and the President may announce the inititative in his State of the Union Address, according to NASA Administrator Sean O'Keefe, in an interview he gave to the {Los Angeles Times.} The item was also front-page news in London newspapers, Jan. 18, 2003.

new space flight tech

The nuclear-powered propulsion system would triple the speed of space travel, making it possible for humans to reach Mars in a two-month voyage. The nuclear rocket project would be an expansion of nuclear propulsion plans that NASA announced last year, when it said it might spend a modest $1 billion over the next five years to design a nuclear rocket. The {LA Times} reports that some analysts question whether the President would even mention NASA in his State of the Union address, in the midst of a budget crisis and a potential war in Iraq. The {LA Times} cites NASA Administrator O'Keefe saying that the Bush Administration has, so far, only supported the nuclear-rocket project, and not specifically the Mars landing. However, O'Keefe himself is cited in the British newspaper reports, calling for putting men on Mars as early as 2010. "We're talking about doing something on a very aggressive schedule to not only develop the capabilites for nuclear propulsion and power generation, but to have a mission using the new technology within this decade," NASA's O'Keefe is cited as saying. EIR is investigating whether any or all of this wonderfully optimistic news is correct.

Development of a nuclear-powered rocket for space travel, was a part of the United States' ambitious space colonization program, all the way back in the 1950s. Chemical-powered rockets burn out the great bulk of their fuel in leaving the atmosphere, and coast the rest of the way to their target. A rocket powered by an onboard nuclear fission plant, could produce continuous thrust and acceleration, greatly shortening the travel time. The nuclear power plant could also supply the energy needed to create an artificial gravity by centrifugally rotating the space vehicle. This would overcome the greatest stress of space travel, which is the damage to bones, and the body overall, caused by prolonged weightlessness. Prototype nuclear rockets were developed under a NASA program, known as NERVA, which was scratched in 1972. As part of the deindustrialization paradigm shift that began after the 1963 assassination of President John Kennedy, the U.S.A. abandoned its commitment to a Moon-Mars colonization, stopped production of even chemical-powered rockets to reach the Moon, and settled for the Space Shuttle, which is only capable of Earth orbital flights.

Space DA Have Space Colonization technology ENG1 3/7

(-) We now posses the technology for colonization of space.

Daniel Ust, "For A Free Frontier: The Case for Space Conlonization," {http://uweb.superlink.net/~neptune/SpaceCol.html} 2001

When will it be done? This is hard to say. Looking at technological limits can give us a clue. With current technology, small station colonization is possible. Already several space stations have been built and operated, e.g., the US SKYLAB and the Soviets' MIRs. They were intended for research, not colonization, but they show small scale space colonies are within our grasp.

It's one thing to show what is possible and another to show when it will happen. One could argue the technology needed for Spain to cross the Atlantic Ocean had been around for years before Columbus, but this in itself did not cause that historic expedition. On the other side of the ledger is economics. We need not only the skill but the money to colonize space. In this regard, out of the above list, small scale colonization is not only the most feasible technologically but also economically – at least in the short run. In the long run, other forms of colonization might overtake it because of economics of scale. Still, we should be wary of making long-range predictions. (Would people living in the sixteenth century have been able to predict even roughly the way American colonization would take shape?) I think this points to space colonization in the next few decades.

How will it be done? In answering the last question, a rough answer to this question was given. Small scale colonies will probably grow out of existing space stations. Modifications need to be made. Existing (and several planned) space stations, including NASA's proposed high-priced "Freedom" space station, are not designed to be colonies. Of course, there are plans for space colonies, but most of these are for O'Neill-style habitats, not the small scale ones I envision for the near future.

What modifications are necessary? Current space stations are designed for short crew rotations, not as permanent homes. Reworking them will have to take this into account. Permanent living makes certain demand on design. One is reliability. This can be overcome by simplifying systems so they are less likely to breakdown and easy to repair.

(-) we have been and continue to be increasing our technology for space exploration/ colonization.

Graham T Molitor, Association Management, "Pioneering a New Space Age" November 1, 2000

Expect the unexpected as a new space age gets under way.
For centuries, increasingly sophisticated telescopes and observational instruments have been searching and studying the cosmos. Spacecraft, manned and unmanned, already have begun the daunting task of exploring outer space. Sometime prior to the year 3000, perhaps as early as 2500, extraterrestrial enterprise-a new space age-will become the main engine of economic activity. Astrophysics and a score of other new disciplines and fields of inquiry will slowly but steadily pry into the infinite wonders of the universe.

Space DA Have Space Colonization Technology ENDI 4/12

(–) We control information technology, air traffic control, and astrobiology all need for space.

Glenn E. Bugos, "Atmosphere of Freedom; Sixty Years at the NASA Ames Research Center" 2001.

[In addition to its leadership in information technology and air traffic control, Ames accepted the lead center mission in astrobiology—defined as the multidisciplinary study of life in the universe. Astrobiology incorporated the issues early explored as exobiology—the origin of life within the context of evolving planetary systems, and how life evolved, specifically within Earth's harshest environments. Astrobiology also addresses the distribution of life, and how we might search for other biospheres in our solar system. It addresses the destiny of life, how life might adapt to environments beyond Earth, and how life might end as it may have on Mars or Venus. And it includes any scientific approach to these issues—observational, experimental and theoretical.]

leader in tech for space.

The term "astrobiology," as well as revolutionary plans to pursue it, were sparked to life in the intense pressure and complex chemistry of the primordial zero base review. The future of space science at Ames looked especially bleak, since Ames would likely get no

Space DA Have Space Colonization technology END. 5/2

(-) We have the technology for space at ames research center

Glenn E. Bugos, "Atmosphere of Freedom; Sixty Years at the NASA Ames Research Center" 2001.

We have tech

[Ames' collaboration with the Federal Aviation Administration (FAA) grew more vibrant in the 1990s. As the federal agency responsible for the national airspace system, the FAA often turns to Ames for technologies to infuse that system with greater safety, efficiency and timeliness. In November 1996, Ames announced a NASA/FAA integrated plan to focus the various facets of Ames' air traffic management research and technology. In June 1997, NASA announced a $450 million aviation system capacity program, with Ames as the lead center to make bold technological leaps forward in air traffic control.]

(-) we have beneficial technology for space colonization

NPR: Talk of the Nation/Science Friday, "Analysis: Future of Space Exploration and the Space Program" February 7, 2003.

We have tech and should go to space

[Dr. SADEH: Well, they clearly see it in these specific terms, as our caller indicated. The whole idea is that, you know, our next grand enterprise should be, you know, the human colonization of space, establishment of essentially bases on the moon and Mars. And we completely look at the shuttle program and space station program as enabling technologies to essentially allow us to do this. Maybe it's not the most practical way to do it, but we have a lot of sunk costs into these programs. I think people clearly decide that both shuttle and station are geared towards doing science. You know, if we can remedy the problems in terms of the crew on the space station program, there are a tremendous amount of scientific investigations that we do that really have a lot of benefits here back home in modeling diseases, remote sensing, microgravity materials processing, etc. Plus, the fundamental issue that we need to understand how humans can live and function in space, and that is essential. If we are going to go forward with this grand enterprise into future of colonizing space, we must first learn how to live there on a long-term basis. And station and shuttle both play a fundamental role in that particular endeavor.
FLATOW: Professor Friedman, the president submitted his budget, NASA's 2004 budget proposal for NASA. Anything of interest in there that you teased out of it that looks very hopeful for you?
Dr. FRIEDMAN: Yeah, it's a remarkable commitment to the future of space exploration. We need to compliment NASA administrator Sean O'Keefe, who a year ago came in talking about budgets and fixing the paperwork at NASA and, within a year, has sort of adopted the view which we've shared all along, which is that exploration and science is what NASA's primarily about. And in the submitted budget is a commitment to deep space exploration with the introduction of a nuclear propulsion and nuclear power initiative for a mission to Jupiter and its icy moons, Europa and Ganymede, in particular, which maybe have underground oceans that could be important in the protection of extraterrestrial life. He's introduced an optical communication capability for use on the 2009 Mars Orbiter. This is really important if we're going to choose landing sites on Mars from observations around Mars, if we're going to bring lots of data back to Mars so that we can all have 3-D holograms and do virtual reality...]

Space DA Have Space Colonization technology ENO 6/12

(–) we posses safety and new info. technology.

Glenn E. Bugos, "Atmosphere of Freedom; Sixty Years at the NASA Ames Research Center" 2001.

[Another spectacular example of the application of information technology to solve safety issues is the Future Flight Central facility (FFC, though it was first named the surface development test facility). "Surface movement around airports," said Stanton Harke, manager of the Ames program, "is really the bottleneck to making the air transportation system more safe and efficient."[21] Originally conceived to test new versions of Ames' surface movement advisor, the Ames information technology staff saw ways to make something better, faster and cheaper. They used off-the-shelf video and the latest in Silicon Graphics imaging computers to provide a high resolution display with a 360 degree view out the window. Coupled with a sophisticated and changeable console design, for less than $10 million the FFC became the world's most sophisticated test facility for air and ground traffic control simulations. The FFC can be configured to look like the air traffic control tower of any of the world's major airports—both in the arrangement of modular equipment inside the tower and in the view out the window. By reprogramming the display, airport designers can see how well aircraft can move around a proposed airfield, and evaluate any technical innovations, or revise procedures, before concrete is poured.]

we have technology new stuff

Space DA Have Space Colonization technology

ENDS
1/2

(–) telepresce technology that we have is critical to research and space colonization.

Glenn E. Bugos, "Atmosphere of Freedom; Sixty Years at the NASA Ames Research Center" 2001.

[Ames made telepresence the key to NASA plans for planetary exploration. In 1990, the Ames space instrumentation and studies branch, led by Scott Hubbard, developed mission plans for the Mars environmental survey (MESUR). The plan was to build a global network of sixteen landers around the Martian surface—each capable of atmospheric analysis on the way down and, once on the surface, of performing meteorology, seismology, surface imaging, and soil chemistry measurements. Because the network could grow over several years, the annual costs would be small and the landers could be improved to optimize the scientific return. With the data, NASA could pick the best spot to land a human mission to Mars. However, in November 1991, NASA headquarters transferred MESUR to JPL, where it was trying to centralize work in planetary exploration. JPL invented the idea of a single MESUR lander, renamed it and developed it into Mars Pathfinder, which roved across the Martian landscape in July 1997.]

tele presence is to planetary research we have tech

Sex in space is possible

Marcia Dunn, Associated Press, The Salt Lake Tribune, September 6, 1992.

Sex in space will remain the last frontier, for the moment. But just for the moment. Birds do it, bees do it, and inevitably, astronauts will do it.

"The actual act of sex is really going to be quite remarkable," said Dr. Patricia Santy, a former NASA flight surgeon who now is a psychiatrist at the University of Texas in Galveston. "Human beings are infinitely adaptable. If they can do it in the back of a '57 Chevy, they can do it anywhere."

"Can sex happen in space? Can human beings copulate in space?" asked Lynn Wiley, a developmental biologist at the University of California at Davis. "We really don't have any physiological evidence that we won't."

Wiley, a member of a NASA science advisory committee, is more interested in the morning after and the morning after that.

"Can men make good sperm in space and women make good eggs, and can that grow into a little baby? What happens when birth happens? We have no clue," Wiley said. "If it -birth} happens normally, what happens to the developing child? Will his muscles be strong enough to walk on Earth? We don't know."

That anyone is raising the possibility in the first place is the result of an unusual circumstance. Lee and Davis fell in love and got married while training for Endeavour's upcoming Spacelab mission, set to begin around Sept. 12. Because they were so far along in their training, NASA reluctantly made an exception to its policy barring married couples from flying together.

SpaceDA Sex in Space Possible ENDI

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Psychologically, sex is very possible in Space.

The New York Times, St. Petersburg Times, February 13, 1992.

"It's foolish and perhaps dangerous to pretend that a long-duration space mission will differ from any office where you have men and women working together," said Dr. Patricia A. Santy, a psychiatrist at the University of Texas in Galveston and a former flight surgeon at the agency. "Sex is a normal part of human behavior. It happens in offices. It happens in the Antarctic. It happens wherever you have males and females together."

She added that physical intimacy in the weightlessness of space would probably be enjoyable, perhaps more so than on Earth. "You're going to have lots of freedom of movement," she noted.

Nothing suggests that human mating can't happen in space.

Kathy Sawyer, Washington Post the Plain Dealer Cleveland, Ohio, September 19, 2000

The public has long been fascinated with the free-flying romantic potential of weightlessness. And yet, the textbook on **sex in space** remains largely unwritten.

Advocates of human space flight in the United States and other spacefaring nations have long known that, sooner or later, they would have to address the sensitive issue more directly. With the advent of the $63 billion, 120-ton international space station, some researchers hope, the excuses for evasion may soon fade away.

The arrival of the station's first residents, set for early November, heralds a new era in which people will learn to live and work in space for extended periods, its advocates say. The facility is designed to serve as a stepping stone to the solar system. But humanity's ability to spend years in transit across the void, or colonize other worlds, could ultimately depend on an ability to reproduce and raise healthy children, as well as plants and animals, in those environments. Much more than voyeurism will be at stake, then, in the pursuit of understanding spaceflight's effects on sex, reproduction and development in living organisms.

Human side

"There is nothing that suggests there would be any problem with humans mating" in microgravity, according to University of Texas obstetrician-gynecologist Richard Jennings, former chief of flight medicine at NASA's Johnson Space Center, now a consultant to the astronaut corps. Eventually, "issues of reproduction and development will be very important" not only in zero-gravity but in the varying gravities of the moon and Mars.

As women have joined men in space in increasing numbers and for longer stays, rumors and speculation have swirled around the topic of that most intimate of orbital rendezvous. But for the foreseeable future, officials and researchers emphasize, critters other than humans will be the only ones testing their procreative proclivities in orbit. NASA has never sanctioned any experiments in which humans attempt sex and has no plans to do so. And astronauts reject as ludicrous any suggestion that they would indulge in zero-G hanky- panky.

Because of the elaborate physical monitoring that took place during the early days of manned space flight, in which sensors recorded the most intimate bodily functions of the astronauts, NASA sources say they can reliably report that male hydraulics will work in weightlessness. And studies also have long shown that there are "no operational gynecological or reproductive constraints" to prevent women from being successful space explorers.

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NASA officially moves twords Sex in space.

The New York Times, St. Petersburg Times, February 13, 1992.

One of the most delicate and secret topics of the space age is beginning to go public, at least a bit: **sex in space.**

Astronauts duck questions about it, and officials of the National Aeronautics and Space Administration often wince at its mention, fearful of appearing to condone eroticism in the heavens at public expense.

For years they have avoided the topic in public, even while struggling with it in private.

Though experts say intercourse itself has yet to occur on a spaceship of any kind, rumors abound.

And despite the space agency's unease and reticence, the topic of celestial intimacy is starting to emerge from private meetings because of a number of major plans and preparations it has been undertaking in recent years.

The most immediate is the world's first space mission by a husband and wife, who are scheduled to fly aboard the shuttle in September.

That plan has already prompted hundreds of calls about the sexuality issue to the space agency from news organizations around the world, and more are expected as the flight draws nearer.

More generally, the agency is moving toward an era of long-duration missions with crews of men and women. Space Station Freedom is to be completed this decade, putting four astronauts into orbit for possibly as long as six months at a stretch.

Sex is possible in space

The New York Times, St. Petersburg Times, February 13, 1992.

Until the onset of planning for long-duration missions, the topic of intimacy between astronauts of opposite sexes was generally moot. The space capsules of the Apollo era were little more than big cans and were inhabited only by men.

The space shuttle, first flown in 1981, is far more spacious, yet its crew compartment has only about 2,300 cubic feet of space - less than that of a good-sized living room.

"It's like camping out with your seven best friends in a tent - and you can't go outside," said Barbara Schwartz, a spokeswoman at NASA's Johnson Space Center in Houston. "The living quarters are close. There's no privacy."

So far, 124 men and 14 women have flown aboard shuttles, with no serious public interest in the sexuality issue. But that began to change last year, when the agency announced that Air Force Lt. Col. Mark C. Lee, 38, and Dr. N. Jan Davis, 37, a mechanical engineer, had married and would fly together this September.

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Sex in Space Possible

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Buoyancy tank at NASA proves sex is possible without gravity.

Usha Lee McFarling, Los Angeles Times, October 31, 2000.

An oft-repeated story, recounted in the book Life in Space by former NASA consultant G. Harry Stine, is that weightless sex was simulated-after-hours and unofficially-in a neutral buoyancy tank NASA keeps for astronaut training at Marshall Space Flight Center in Huntsville, Ala.

In Stine's account, it was possible but difficult for two people. The act worked much better, he said, when a third person assisted by holding one of the others in place.

Japanese researchers prove that gravity is not required for fertilization of mice eggs.

Reuters Health, "Pregnancy in Space seems possible", December 18, 2000.

NEW YORK (Reuters Health) -- Future space travelers who plan to have weightless sex better not leave their birth control on Earth. New research suggests you do not need gravity to make a baby.

In experiments with mice, Japanese researchers found that embryos created in low-gravity conditions that simulated space travel went on to implant and develop normally.

The scientists first fertilized mice eggs in vitro -- in laboratory culture dishes--under normal or "microgravity" conditions. Some embryos were transferred into female mice for gestation and birth. No significant differences in the success of fertilization or in birth rates occurred in the two different gravity conditions, according to a report in the December issue of Fertility and Sterility.

Dr. Yoshiyuki Kojima of Nagoya City University Medical School led the study. According to the authors, these findings suggest that in vitro fertilization is not dependent upon gravity.

"We believe that gravity is not required for fertilization," they write.

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It's been proven that plants and animals can successfully reproduce in space.

Jane Poynter, CEO, Paragon Space Development Corporation, from the article, "A Milestone in the Quest for Space: Plants and Animals Complete Their Lives n Earth Orbit" {http://www.paragonsdc.com/1C1QuestArticle.htm} 2001

The first experiment to demonstrate the viability of seeds produced by plants grown in space was on the Mir Space Station in 1997. The plants, a relative of the mustard plant, Brassica rapa, grew from seed and set seed in space. Those space seeds were then planted and successfully grew the first generation of space plants. The experiment was designed by Dr. Gail Bingham of the Utah State University's Space Dynamics Laboratory.

The first animals to reproduce and complete their life cycle in space were species of aquatic invertebrate, the small crustacea Daphnia pulex, and an ostracod species. These animals were two of several species that reproduced within a small closed artificial ecosystem or "biosphere" during the first of two four-month experiments on board the Mir Space Station in 1996 - 1997. The specific biosphere used was the Autonomous Biological SystemTM (ABS), designed and built by Paragon Space Development Corporation. The ABS was initially flown and tested on the Space Shuttle in 1996 on a 10-day experiment that included the first aquatic angiosperms to ever go into space, Ceratophyllum demersum (Hornwort) and the tiny floating aquatics, Lemna minor and Wolffia sp. The aquatic invertebrate animals in the ABS were introduced as populations, and included: two species of gastropods, Helisoma planorbis and Physa sp. (rams horn and common pond snails); ostracods; Daphnia sp.; the amphipod Hyalella azteca, cyclopoid copepods and Planaria sp. //

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We will die Now

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SPACE KEY TO SURVIVAL; ITS ONLY WAY TO SOLVE BIOTECH IMPACTS

PROF. STEPHEN **HAWKING—Cambridge U cosmologist/physicist-2001**

http://nutri.com/space/

"The human race is likely to be wiped out by a doomsday virus . . . unless we set up colonies in space. Although Sept. 11th was horrible, it didn't threaten the survival of the human race like nuclear weapons do," said the Cambridge University Scientist. "In the long term, I'm more worried about biology. Nuclear weapons need large facilities, but genetic engineering can be done in a small lab. The danger is that, either by accident or design, we create a virus that destroys us. I don't think the human race will survive . . unless we spread into space. There are too many accidents that can befall life on a single planet."

SPACE KEY TO SURVIAL; NUCLEAR WAR, BW OR ASTEROIDS WILL INEVITABLY CAUSE EXTINCTION

ENGDAHL –2001
Space and Human Survival: My Views
on the Importance
of Space http://www.sylviaengdahl.com/space.htm

A more urgent cause for concern is the need not to "put all our eggs in one basket," in case the worst happens and we blow up our own planet, or make it uninhabitable by means of nuclear disaster or perhaps biological warfare. We would all like to believe this won't happen, yet some people are seriously afraid that it will--it's hardly an irrational fear. Peace with Russia may have drawn attention from it, yet there are other potential troublemakers, even terrorists; the nuclear peril is not mere history. Furthermore, there is the small but all-too-real possibility that Earth might be struck by an asteroid. We all hope and believe our homes won't burn down, and yet we buy fire insurance. Does not our species as a whole need an insurance policy? (Even Carl Sagan, a long-time opponent of using manned spacecraft where robots can serve, came out in support of space colonization near the end of his life, for this reason; see his book Pale Blue Dot.)

(–) Earths atmosphere polluted by man – we will die now.

Oscar Falconi, B.S. Degree n physics from MIT, "The Case for Space Civilization-Now!" October 16, 2001

"But earth's atmosphere is now being strongly modified by man and the risk of some runaway effect is not negligible. For the past half dozen years there has been a change in the global weather patterns. Tragically for us, they're changing in a highly unpredictable way. Is this the onset of a runaway situation? Our air now contains 15% more carbon dioxide than it did 100 years ago. There hasn't been that much CO2 in our atmosphere for about 800 million years. Dr WL Gates, Director of the Climatic Research Institute, states: "If atmospheric CO2 increases at its present rate, global warming may amount to a climatic catastrophe in the 21st Century."

Simple pollution will never kill off mankind. As the pollution level becomes lethal, the population decreases, and so does the pollution. A population-pollution equilibrium is thus established. However, we know very little about the complicated, non-linear interplay between the various pollutants and the environment. Increasing the concentration of some pollutant over and above an unknown threshold level might start a runaway reaction that quickly increases some lethal factor's level until all human life on earth is dead. We just don't know!"

(–) Space colonization is necessary – life on earth will cease.

Oscar Falconi, B.S. Degree n physics from MIT, "The Case for Space Civilization-Now!" October 16, 2001

"Life on earth will certainly cease to exist some day, but can we predict how soon? Unfortunately, every science (except mathematics) is based upon laboratory and field observations of the world as it's handed to us. The experimentalists are usually far ahead of the theorists who spend the great majority of their time trying to explain what has been observed. It's clear, since we're almost always one step behind in our understanding of the facts, that no advance warning of our imminent demise can be expected from the theorists.

Since our scientists can't enlighten us, what about our politicians? Can they somehow control the geometrically increasing indicators (population, energy, etc.) and peacefully level them out to a stable plateau? Or will there be some sort of earthly "big bang"? One might only predict from the manner in which world leaders have solved their problems in the past, and by judging the caliber of our leadership in the world today.

It may be that the only way we can have of predicting the time by which we should set up our colony is to look at the curves that depict these geometrically increasing indicators of impending disaster. These rates of increase surely cannot be maintained for many years - and so we must get on with the construction of space colonies - Now!"

We will Die. Now

(-) man will destroy himself now – colonization is needed.

Oscar Falconi, B.S. Degree n physics from MIT, "The Case for Space Civilization-Now!
October 16, 2001

The adventure is the colonization of space. The argument is that man may soon destroy himself on earth before he can set up a backup civilization elsewhere.

Now man may or may not be the only life in the universe capable of abstract thought, but we surely must agree that much would be lost if man's existence were to cease right now. Trillions of trillions of potentially happy and productive man-years would never come to pass. We are obligated to do all we can, now, to protect this future!

In the last generation or two, man has clearly reached some sort of milestone or turning point. The present is unprecedented, and so the future is completely unpredictable. For the first time in man's history, many things seem to be doubling every decade or two, such as population, research, energy usage, pollution, nuclear capability, total knowledge, and more.

In addition, man has achieved the ability to destroy himself and all his future generations. The probability of man's self-destruction is clearly increasing at a rate much greater than, for instance, population growth. An in-depth study could well uncover some alarming statistics here. It behooves us to immediately begin work toward getting a self-sufficient colony away from earth. We just may be the only life in the universe with the foresight to have "moved out" before it destroyed itself.

So, should America go all-out for space colonization? What follows can only touch the surface of this question. The points that are made, however, are felt to be convincing enough to warrant immediate and forceful action.

Many of the ideas in this book are very new and very important. Read them with a receptive mind and criticize them fairly and logically, remembering all the while the importance of what's at stake.

"What can happen, will happen." - Anon

eScholars SpaceDA

We will Die Now

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(_) nuclear war will destroy us now— colonization is our only hope

Oscar Falconi, B.S. Degree n physics from MIT, "The Case for Space Civilization-Now!" October 16, 2001

But unquestionably there will be wars, there will be nuclear wars. International Communism versus "Imperialistic" Capitalism has been the cause of an enormous buildup of increasingly sophisticated nuclear weapons in Russia and the United States. And now several other countries have joined the buildup for whatever reasons they've found to justify nuclear capability. So will there be war ?

Five panelists at a 1975 Harvard-MIT Arms Control Seminar said they believed nuclear war in some form will erupt before 1999, originating most probably with a small nation in the Near East, Middle East, or Africa.

(_) Colonization is good for planning ahead for future disasters

Sylvia Engdahl, "Space and Human Survival" http://www.sylviaengdahl.com/space.htm, February 3, 2003.

A more urgent cause for concern is the need not to "put all our eggs in one basket," in case the worst happens and we blow up our own planet, or make it uninhabitable by means of nuclear disaster or perhaps biological warfare. We would all like to believe this won't happen, yet some people are seriously afraid that it will—it's hardly an irrational fear. Peace with Russia may have drawn attention from it, yet there are other potential troublemakers, even terrorists; the nuclear peril is not mere history. Furthermore, there is the small but all-too-real possibility that Earth might be struck by an asteroid. We all hope and believe our homes won't burn down, and yet we buy fire insurance. Does not our species as a whole need an insurance policy? (Even Carl Sagan, a long-time opponent of using manned spacecraft where robots can serve, came out in support of space colonization near the end of his life, for this reason; see his book *Pale Blue Dot*.)

Plan ahead for the worst

Space DA

We Will Die Now

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(_) List of reasons for human extinction on earth.

Oscar Falconi, B.S. Degree n physics from MIT, "The Case for Space Civilization-Now!" October 16, 2001

PARTIAL LIST OF CAUSES OF MAN'S EXTINCTION

1. Genetic Manipulation - A good possibility that peaceful research now taking place will evolve uncontrollable 100% lethal epidemics from man-made organisms.

2. Mass Vaccination - of populations with vaccines that were insufficiently researched and tested, or improperly prepared, either accidentally or deliberately. Mass sterility, death, or genetic destruction, now or later, could result.

3. Ecological "Flip" - The establishment of a very different, but stable, environmental equilibrium by man's exceeding an unknown pollution threshold level.

a. Atmospheric pollution, affecting earth's thermal balance, from auto, industry, or SST effluents.

b. Atmospheric pollution, affecting the ozone layer, from aerosol sprays, SST's, and nitrogen oxides from a limited nuclear war.

c. Ocean pollution, from industrial wastes and human sewage. The manner of man's demise, soon, by important authorities.

d. Weather (or climate) manipulation, but with no knowledge of short and long term effects, or threshold levels. The effect of reactor effluent Krypton-85.

4. World War III - Third World nuclear capability plus irresponsible, impulsive, actions of incompetents, or a great nuclear holocaust due to large quantities of superweapons: B-52's, B-1's, Minuteman III, Polaris, Trident, etc., and their Russian counterparts, resulting in man's extinction due to excessive worldwide radiation level or by inducing an ecological flip.

5. Chemical, Bacteriological, Biological, or Germ Warfare, resulting in uncontrolled epidemics, long term genetic effects, or an ecological flip, eliminating human life.

6. Nuclear Reactors - The present controversy centers around major accidents, leakage, transport of fuel and waste, sabotage, release of extremely carcinogenic plutonium, waste disposal, theft of fuel or waste by individuals or terrorist groups.

7. Advanced Experimentation - Furious competition in all fields of research, possibly initiating some catastrophe which man had no reasonable possibility of predicting. Modern lasers, particle accelerators, etc., are creating effects unknown in the universe until now. Also, a research breakthrough could tempt a country to undertake world conquest, accidentally ending all human life.

8. Short or Long-Term Genetic Effects - due to:

a. Irresponsible mass vaccination or fluoridation.

b. Mass ingestion of vast quantities of large numbers of untested food additives.

c. Massive irradiation from television sets, medical X-rays, and industry.

d. Accidental or deliberate leakage from many nuclear reactors now extant or planned.

e. Deterioration, leakage, theft, or sabotage of underground or underwater radioactive waste disposal sites.

Above have been listed many different ways in which man can be wiped out. Further study should uncover many, many more. And surely no amount of study will be able to ferret out the vast number of very subtle, and thus very unpredictable ways of ending our fragile human existence. We should marvel at how the aerosol problem was predicted before there was any indication of a problem. Many thanks are due chemists Molina and Rowland, for they just may have given mankind a few more important years on Earth.

Examining the above list, both known and unknown, one must be impressed with its quantity, variety, and subtlety. Hopefully these deleterious effects will only add, and not multiply. We might allay our fears by applying some sort of "Environmental Superposition Theorem" and thus justify addition instead of multiplication, but again, we just don't know.

In our ignorance we should take urgent steps to protect man's future and proceed with the colonization of space immediately.

(-) an asteroid mpx is comparable to 3,300 full scale nuclear wars.

James Marusek, Degree in Physics UCLA and Department of the navy Physicist, July 14 2001.

According to David Morrison (NASA Ames Research Center) the usual figure for the kinetic energy from the Cretaceous/Tertiary (K/T) impact of 65 millions years ago is 100 million megatons. That is based primarily on the size of the crater, and secondarily on the extraterrestrial signature.

A stick of dynamite contains the equivalent of 2 pounds of TNT. Imagine lighting the fuse of one stick of dynamite and watching it burn. The explosion from this single stick of dynamite could tear your body apart. What would you do? Your natural reaction is to drop the dynamite and run. The impact of a K/T diameter comet or asteroid with Earth would produce the equivalent energy of approximately 100,000,000,000,000,000 sticks of dynamite and the main problem is that there are no safe places to run to.

asteroid mpx

It is estimated that the entire arsenal of nuclear weapons in the world during the height of the cold war in the 1960's was equivalent to 30,000 megatons of TNT. Comparing the energy released by the K/T impact on Earth; such an impact equals the energy released during **3,300 full-scale nuclear wars.**

(-) An asteroid will inevitabley hit the earth; its on its way

Dr. David Morrison, Senior Scientist, NASA Ames Research Center, from the HEARING before the SUBCOMMITTEE ON SCIENCE HOUSE OF REPRESENATIVES, one hundred seventh congress, 2002

Recent Impacts and Near-Misses: In early January of this year (2002), an asteroid designated as 2001 YB5 passed the Earth at a distance of 510,000 miles, less than twice the distance of the Moon. It is estimated to be several hundred meters in size, which is large enough to destroy an entire country the size of England. (Asteroids of about a kilometer in size could wipe out life on the entire planet.) The asteroid was discovered only one month earlier by the NEAT (Near-Earth Asteroid Tracking) telescope at Mount Palomar. At present, nothing could have been done to avert it if the asteroid had been found to be on a collision course with the Earth. Another asteroid, 2002 EM7, passed the Earth at roughly the distance of the Moon on March 8th of this year, but was not detected until March 12th after it moved out of the Sun's glare. More recently, asteroid 2002 MN, a football-field sized object, passed by Earth at only one-third the distance to the Moon. Such discoveries are stark reminders of the possibility of impacts, but they also signify the importance of performing the NEO survey. It is expected that many of these discoveries will occur after the object has passed by the Earth. The current survey picks up some of these smaller objects, but a complete survey of such objects will require an extension of the survey goals, capabilities, and support. There are other impacts of note within the last decade. In 1994, for example, Comet Shoemaker-Levy 9 collided with Jupiter in a spectacular display.

Astroids fly over our heads & we can't do anything.

(-)

Asteroid impx

(–) The asteroid impact would produce a very high electro-magnetic pulse that produces a damaging voltage surge.

James Marusek, Degree in Physics UCLA and Department of the navy Physicist, July 14, 2001.

An impact can produce a very high Electro-Magnetic Pulse (EMP). The pulse would occur almost instantaneously after the impact. This pulse is typically of a very short duration, approximately 1 microsecond and is caused by Compton-recoil electrons and photoelectrons from photons scattered in the surrounding medium. The resulting electric and magnetic fields may couple with electrical/electronic systems to produce damaging current and voltage surges. This pulse is not harmful to humans but it is deadly to electronics, especially transistors, semiconductors and computer chips. The scope of this effect has been only minimally studied. Comparing a surface impact to a nuclear weapon EMP can provide a crude measurement of the effective range of this effect. A ground-level nuclear explosion will produce a Source Region Electro-Magnetic Pulse [SREMP] as far as the distance at which the peak overpressure is 2 psi.

mpx EMP

(–) Asteroid impacts would trigger earthquakes, landslides, lava flows.

James Marusek, Degree in Physics UCLA and Department of the navy Physicist, July 14, 2001.

A large impact can trigger a variety of secondary effects including earthquakes, landslides, volcanoes and lava flows. Most of these events will be triggered by the Primary Ground Shock. Although we have experienced during the coarse of human history many large disasters of this type, we have not experienced the depth and breath of simultaneous disaster events that can be triggered by a large impact. Various disasters will sweep across the globe. They will generate great devastation, which will further compound the problems during recovery efforts. Volcanoes and lava flows can produce vast amount of debris and aerosols and propel this material into the upper atmosphere and stratosphere. The aerosols, and sulfur dioxide in particular, can result in global cooling that can impact crop production.

mpx

A large ocean impact will produce two areas (not one) of extensive damage on the surface of the Earth. The first is at the site of the impact. The second is on the opposite side of the globe, where the Earth will be turned into a jumbled debris field from which lava and deadly gases (such as sulfur dioxide) will spew forth for decades. These lava flows represent the major cause of extinctions from an asteroid or comet impact because they result in long term global ecological damage. (There was a massive episode of lava flows in what is now India, producing huge sheets of volcanic material known as the Deccan Traps at the end of the Cretaceous Period. There was also a very massive episode of lava flows called the Siberian Traps at the end of the Permian Period.) This phenomena is even observed on other planets. On the planet Mercury, a very large comet or meteorite impact formed the Caloris Basin. The shock wave from this impact traveled through the planet and produced a jumbled terrain on the opposite side.

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A LIFE SPIRALS TO MILITARY ROBOTS, WORSE THAN ANHILIATION

RHEINGOLD 92
HEADLINE: At the beginning of the twentieth century; computational biology; Whole Earth Review Sept 22nd

The human species has precious little time to gain the wisdom necessary to handle the knowledge scientists have discovered. Artificial life is too important to remain an esoteric specialty. The time to think about what it might mean is now, while we still have a choice. Military applications of autonomous, self-reproducing robots might lead to worse fates than mere annihilation. There's some question about whether it is ever possible to put knowledge back in the bottle, but there is no question that we still have time to make sure that the self-reproducing increasingly intelligent, interstellar lifeforms that we are about to create are more closely modeled on E.T. than on the Alien.

Generic Aff

(–) Space info technology leads to Bad artificial technology.

Daniel Ust, "For A Free Frontier: The Case for Space Conlonization," {http://uweb.superlink.net/~neptune/SpaceCol.html} 2001

The posthuman alternative is to redesign humans, either through genetic engineering or by a machine-like fix such as artificial lungs that can process Martian air. [See my What is posthumanism?.] This demands technology of a higher order than today. The advantage here is that one can take planets as they are. The disadvantage is the need for the high tech base. Some might believe that this high tech base can only be brought about by large scale government funding or corporate investment. However, as the technology becomes more readily available, e.g., home genetics labs, cheaper and better prosthetics and wider human/machine interfaces, the potential for grassroots posthumanism also increases. Another disadvantage is that people altered to live in an environment might not be able to live in others. However, this is not a serious problem. Any technology capable of altering people to this degree will most probably be capable of altering them further. We can easily imagine someone adapted to a Martian habitat later being adapted to suit a Titanian (after Saturn's big moon) one and so on. Also, current environment suits, such as space suits, scuba gear and fire fighting equipment, allow people to live in hostile surroundings. There's good reason to think people adapted, say, to live on Mars, could use such things to get by in other environments.

(–) Born in space animals were abnormal.

Jane Poynter, CEO, Paragon Space Development Corporation, from the article, "A Milestone in the Quest for Space: Plants and Animals Complete Their Lives n Earth Orbit" {http://www.paragonsdc.com/1C1QuestArticle.htm} 2001

During the second four-month ABS experiment on Mir, Paragon also flew the first digital camera to record animal behavior and ecosystem responses to microgravity. Daphnia and ostracods were recorded swimming in abnormal circular patterns in microgravity, while the amphipods swam in a normal straight line. The ostracods and daphnia showed no gross morphological changes during the four months and ensuing generations during spaceflight. The amphipods, on the other hand, demonstrated broken or misshapen legs, unlike their counterparts on the ground in normal earth gravity.

Aff: Animal offspring were abnormal

Space DA Sex in Space NOT possible

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(-) a bounce in space during sex would make it impossible.

Betsy Cohen, Associated Press Newswire, August 7, 1999.

MISSOULA (AP) - Humans have walked on the moon and orbited Earth, but to explore the billions of galaxies in the great beyond, scientists must find the answer to a burning question: How do we have **sex in space**?

Really.

sex not poss

Our galaxy is 100,000 light-years across, said Jerry Brown, U.S. Space Foundation executive director for education.

"If it's going to take 10,000 years for us to get to the next place, we need to have children in space," Brown told about 25 Montana grade-school teachers at the University of Montana on the last day of a weeklong "space camp."

First and foremost, it's a problem of physics.

"For every action there is a reaction, and our bodies are like big sacks of fluid," Brown said. "They compress and go apart. One compression and one bounce and it's over."

(-) a child could never be born in space.

Betsy Cohen, Associated Press Newswire, August 7, 1999.

Then there's the travel patterns of sperm and egg.

Here on Earth a woman's egg "drops" down the Fallopian tube, and the male's sperm swims "up" the vaginal canal to dock with the egg and fertilize in the uterus. When the embryo grows, it drops down towards the canal, and is pushed out, with the help of gravity, nine months later.

But in space there is no up and down flow. Everything just floats, Brown said.

And that plays havoc on the fluids in the body.

No one knows how amniotic fluid or blood flow through the umbilical cord would be affected, Brown said, because in zero gravity, body fluid gets pumped into the upper body, draining the legs and waist area, dramatically changing the shape of a person's body. The result: the "fat face chicken leg syndrome."

In fact, even if we do find a way for humans to procreate in the heavens, scientists wonder what the babies will look like.

"If we go to space will we remain the same species? If we go and stay, the children will be born in microgravity and we better figure out what that would look like," Brown said. "They may not look human, they may not survive, and they may not be able to return to Earth."

Because astronauts in space have lost up to 40 percent of their calcium mass, it is probable that children born (however unlikely) would be without a complete skeletal structure, which would be debilitating on Earth, but perhaps beneficial in space, Brown said.

Children would also develop in an environment without ever learning how to crawl, which is also essential for hand-eye coordination and development.

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Bad time frame for space colonization.

Ellen Barry, Globe Staff, The Boston Globe, March 19, 2002.

When the first humans depart to colonize space, there will be no port waiting, no native guide to greet them, and no guard against despair.

Using present technology, a trip to the nearest star system, Alpha Centauri, would take 70,000 years, but NASA engineers are conceptualizing rocket technology that would shorten it to several centuries. Passengers would depart knowing that they, and at least several generations of their descendants, would only know life confined within a space capsule. For that to work, social scientists say, NASA will have to turn to the work of anthropologists.

SPACE BAD; MULTPLE SCENRIOS FOR DISASTER

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Space Exploration and Exploitation
What kind of seed will we take from Earth?

Potential dangers do exist though. Barry DiGregorio, author and founder of the International Committee Against Mars Sample Return, has written that "...any Martian samples returned to Earth must be treated as biohazardous material until proven otherwise." At the present time NASA has taken no action to create a special facility to handle space sample returns. On March 6, 1997 a report issued by the Space Studies Board of the National Research Council recommended that such a facility should be operational at least two years prior to launch of a Mars Sample Return mission. Reminding us of the Spanish exploration of the Americas, and the smallpox virus they carried that killed thousands of indigenous people, DiGregorio warns that the Mars samples could "contain pathogenic viruses or bacteria."
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Former Apollo astronaut Harrison Schmitt, a key proponent of Moon mining for helium 3, has called the Moon Treaty "Not a wise idea". He wrote in a July 1998, Space News article that "the mandate of an international regime would complicate private commercial efforts and give other countries political control over the permissibility, timing and management of all private commercial activities."
Efforts are now underway at several levels to rid the world of pesky and restricting international law that would hamper corporate access and control of "untold riches" in space. CONTINUES..
We are now poised to take the bad seed of greed, environmental exploitation and war into space. Having shown such enormous disregard for our own planet Earth, the so-called "visionaries" and "explorers" are now ready to rape and pillage the heavens. Countless launches of nuclear materials, using rockets that regularly blow up on the launch pad, will seriously jeopardize life on Earth. Returning potentially bacteria-laden space materials back to Earth, without any real plans for containment and monitoring, could create new epidemics for us. The possibility of an expanding nuclear-powered arms race in space will certainly have serious ecological and political ramifications as well. The effort to deny years of consensus around international space law will create new global conflicts and confrontations.

Now is the time for all who care about peaceful and scientific space exploration to learn more about these issues and to begin organizing to prevent this insanity before it happens. An international debate must be created about the kind of seed we from Earth will carry with us as we explore space. Let this historic debate begin now.

Sceptisism about space exploration in the future.

NPR: Talk of the Nation/Science Friday, "Analysis: Future of Space Exploration and the Space Program" February 7, 2003.

IRA FLATOW, host: The shuttle disaster is making a lot of people think about our space program and rethink about where we have come from, where we are and where we want to go. And some people have called for a national debate on the future of manned space flight. Why not? It seems like a good time to do that, and so for the rest of the hour, we'll be taking your thoughts on the direction of the space program. Should we be focusing so much time and money and attention on the shuttle fleet? Should it be scrapped? Should it be upgraded? What do you think? What would you do differently? And what about the International Space Station? What should we do with that? And even should the government be in the space flight business anymore?
I mean, if you think about it, it's been 40 years since we got into space. Forty years after the Wright brothers--and this is the hundredth anniversary this year of the Wright brothers. Forty years later, we had all kinds of airliners and airplanes and things like that. The government was not really in the airline business. We're now 40 years after our first satellites and people in space. Why don't we have, you know, private industry involved in space? Maybe they should be taking over where the government leaves off.