

KARL GROSSMAN

**Weapons
in Space**

Foreword by Dr. Michio Kaku

THE OPEN MEDIA PAMPHLET SERIES

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Foreword by Dr. Michio Kaku

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About the Author

When historians write the history of the 20th century, they will remark that the threat of a hot nuclear war, involving a cataclysmic exchange of tens of thousands of hydrogen bombs between the two superpowers, receded with the ending of the Cold War.

But just when one danger is fading, another one is rising ominously. Instead of ushering in an era of peace and prosperity, the beginning of the 21st century, historians will note, saw increased militarization, marked by the weaponization of outer space. They will remark that this represented a missed opportunity of enormous dimensions. Right before our eyes, the prospects of banning nuclear weapons is slipping through our fingers.

Unfortunately, most people are not aware of this. Vaguely hearing of arms control talks at the United Nations, people have been lulled to sleep, thinking that the great powers are finally dismantling their weapons.

Nothing could be farther from the truth. Sadly, the U.S. military is dangerously pursuing its goal of military superiority, even though there is not an enemy in sight.

The U.S. military is shadowboxing with itself.

The weaponization of space represents a real threat to the security of everyone on Earth. Not only will this squander hundreds of billions in taxpayer dollars, which are better spent on education, health, housing, and the welfare of the people, it will greatly accelerate a new arms race in space, with other nations working feverishly to penetrate a U.S. Star Wars program, or to build one themselves. A whole new round of the arms race could begin.

Ironically, it is the U.S. that stands to lose the most in such a race to militarize outer space. It is the U.S., not China or Russia, which is highly dependent on a vulnerable, fragile network of communication satellites. It is the U.S., not the developing countries, which has a high concentration of resources centered on just a handful of cities. In case of war, the U.S. would suffer greatly, its satellites blinded by anti-satellite weapons, its communications centers neutralized.

The time to stop this madness, therefore, is now, while Star Wars and affiliated programs are still in their infancy. That is why this book is so important. It raises people's awareness about a matter which is largely ignored by the established media. Once again, Karl Grossman has done a great public service in unmasking the true implications of weapons in space, which would not be shields of peace, but weapons of war. Mr. Grossman's efforts in alerting people to the true danger posed by the weaponization of space have greatly aided the cause for world peace.

Michio Kaku is Henry Semat Professor of Theoretical Physics at City University of New York

VISION FOR 2020: FULL SPECTRUM DOMINANCE

The United States is preparing to make space a new arena of war.

U.S. military documents speak of the U.S. seeking to “control space” and from space “dominate” the earth below. The U.S. military, furthermore, would like to base weapons in space. Billions of tax dollars are being poured annually into U.S. preparations for space warfare.

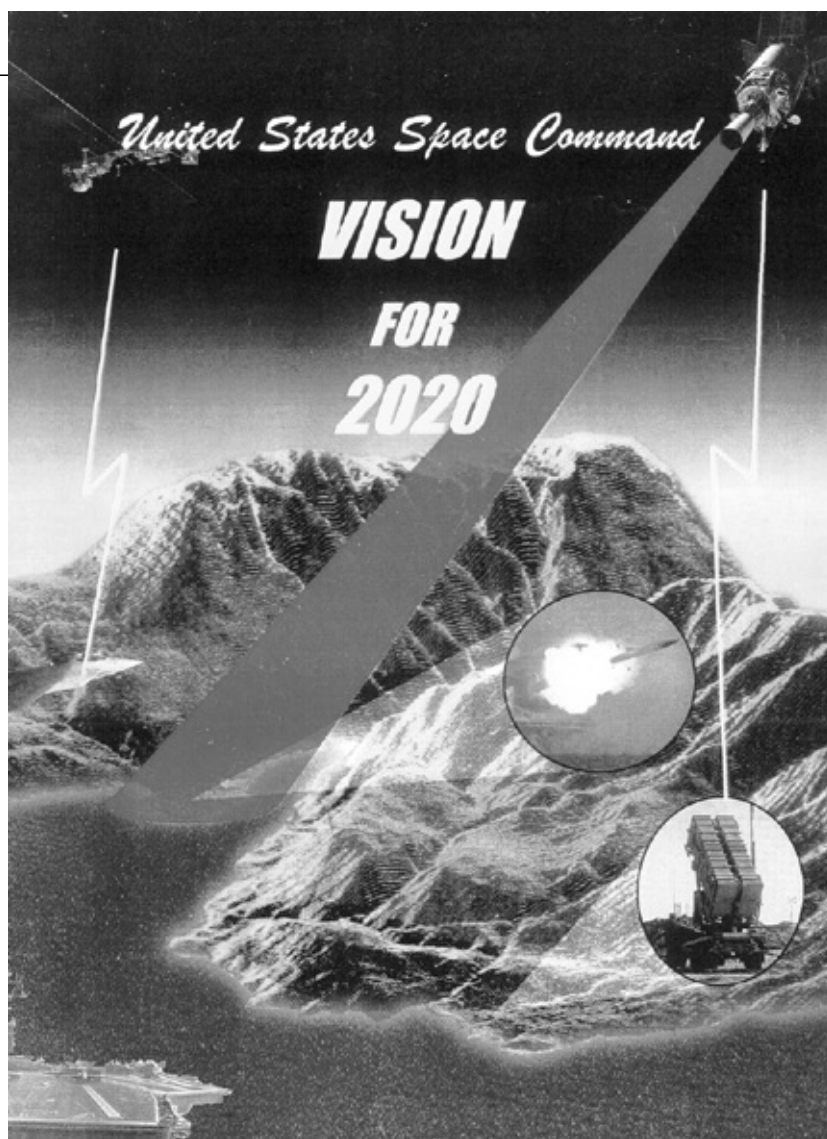
Is it a “return” of Star Wars? In fact, Star Wars, the popular name given to the Strategic Defense Initiative of President Ronald Reagan, never went away. With its enormous and powerful complex of backers, it developed and maintained a momentum of its own.

With the assumption of power by George W. Bush and Richard Cheney and an administration intimately linked to corporate and right-wing interests committed to expanding space military activities, Star Wars has received a huge boost.

What the U.S. is up to is a violation of the intent of the Outer Space Treaty, the landmark 1967 international agreement that sets space aside for peaceful uses. Ironically, the U.S. was a leader in drafting this visionary treaty which seeks to keep war out of space.

There is only a narrow window to stop the U.S. plans from going forward and triggering what inevitably would follow: other nations meeting the U.S. in kind, an arms race, and ultimately war in space.

“If the U.S. is allowed to move the arms race into space, there will be no return,” says Bruce Gagnon, coordinator of the Global Network Against Weapons and Nuclear Power in Space, the organization that is internationally challenging U.S. preparations to turn space into a war zone, that has been striving at the grassroots to keep space for peace. “We have this one chance,” he emphasizes, “this one moment in history, to stop the weaponization of space from happening.”¹

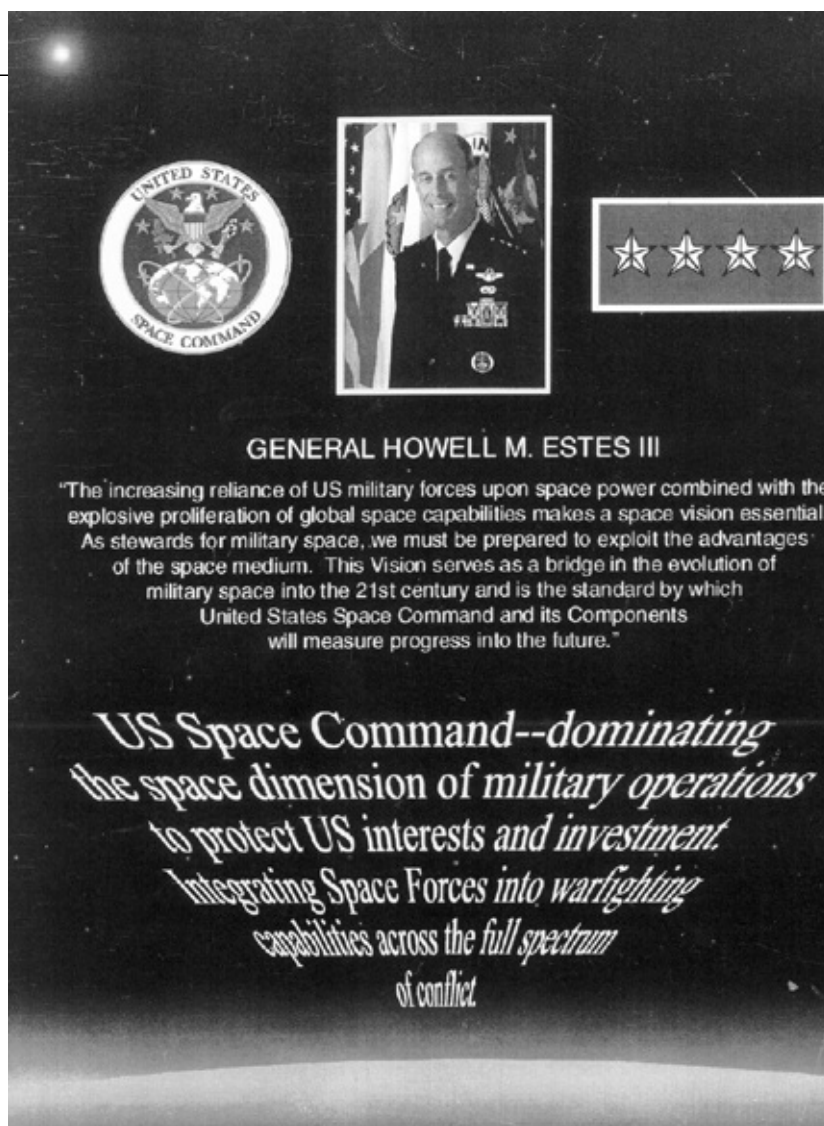


The U.S. space warfare plans are explicitly laid out in documents including the *Vision for 2020* report of the U.S. Space Command.² (The U.S. Space Command “coordinates the use of Army, Naval and Air Force Space Forces” and was set up by the Pentagon to “help institutionalize the use of space,” notes its website <http://www.spacecom.af.mil/usspace>.)

The multicolored *Vision for 2020* features a laser weapon firing a beam from space zapping a target below. (Its cover is reprinted here because U.S. preparations for space warfare are so unbelievable, so incredible that it is best to see the actual documents firsthand. You can fully download this and many of the documents noted in this book from the U.S. Space Command website. The U.S. military is so brazen about its plans for space war, it displays them publicly on-line.)

Vision for 2020 starts with wording that crawls as in the beginning of the *Star Wars* movie: “US Space Command—dominating the space dimension of military operations to protect U.S. interests and investment. Integrating Space Forces into war-fighting capabilities across the full spectrum of conflict.”³

Vision for 2020, issued in 1996, compares the U.S. effort to control space and the earth below to how centuries ago “nations built navies to protect and enhance their commercial interests,” how the great empires of Europe ruled the waves and thus the world.⁴



And *Vision for 2020* stresses the global economy. “The globalization of the world economy will also continue, with a widening gap between ‘haves’ and ‘have-nots,’ “says the U.S. Space Command.⁵ The view is that by controlling space and the earth below, the U.S. will be able to keep those “have-nots” in line. The U.S. Space Command is readying itself to be “the enforcement arm for the global economy,” says Bill Sulzman, director of Citizens for Peace in Space, the group challenging U.S. space military activities in Colorado Springs, Colorado, where the U.S. Space Command is headquartered.⁶

The U.S. military not only acknowledges—it proudly proclaims that U.S. corporate interests are involved in setting U.S. space military doctrine. President Dwight Eisenhower warned in his “farewell address” to the nation in 1961 of the “military-industrial complex.” That linkage is stressed in the U.S. Space Command’s *Long Range Plan*.⁷

The *Long Range Plan*, also starting out with a Star Wars-like type, states: “The *Long Range Plan* has been U.S. Space Command’s #1 priority for the past 11 months, investing nearly 200 man-years to make it a reality. The development and production process, by design, involves hundreds of people including about 75 corporations.”⁸

You don’t need to do much investigating to find out the identities of those corporations. The *Long Range Plan* provides a list—beginning with Aerojet continuing through Boeing, Hughes Space, Lockheed Martin, Rand Corp., Raytheon, Sparta Corp. and TRW to Visi Technologies.⁹

The *Long Range Plan*, issued in 1998, explains in its introduction that *Vision for 2020* “guides

how our military space strategy will evolve in the 21st Century and is the standard for measuring the progress of USSPACE-COM [U.S. Space Command] and its components.... To carry out the Vision, we have developed a very ambitious and much needed *Long Range Plan*.”¹⁰

“Now is the time,” says the *Long Range Plan*, “to begin developing space capabilities, innovative concepts of operations for war-fighting, and organizations that can meet the challenges of the 21st Century.... Even as military forces have become more downsized in the 1990s, their commitments have steadily increased. As military operations become more lethal, space power enables our streamlined forces to minimize the loss of blood and national treasure.... Space power in the 21st Century looks similar to previous military revolutions such as aircraft-carrier warfare and Blitzkrieg.”¹¹

“The time has come to address, among warfighters and national policy makers,” the *Long Range Plan* goes on, “the emergence of space as a center of gravity for DOD [Department of Defense] and the nation. We must commit enough planning and resources to protect and enhance our access to, and use of, space. Although international treaties and legalities constrain some of the LRP’s [*Long Range Plan*’s] initiatives and concepts, our abilities in space will keep evolving as we address these legal, political, and international concerns.”¹² Not to worry about international law, says the U.S. Space Command. It’ll be taken care of.

The *Long Range Plan*—amid boxes containing quotes such as this from General Ronald Fogelman, Air Force chief of staff: “I think that space, in and of itself, is going to be very quickly recognized as a fourth dimension of warfare”¹³—makes a series of declarations:

The United States will remain a global power and exert global leadership.... It is unlikely that the United States will face a global military peer competitor through 2020. ... The United States won’t always be able to forward base its forces.... Widespread communications will highlight disparities in resources and quality of life—contributing to unrest in developing countries.... The global economy will continue to become more interdependent. Economic alliances, as well as the growth and influence of multinational corporations, will blur security agreements.... The gap between ‘have’ and ‘have-not’ nations will widen—creating regional unrest.... The United States will remain the only nation able to project power globally.... One of the long acknowledged and commonly understood advantages of space-based platforms is no restriction or country clearances to overfly a nation from space. We expect this advantage to endure.... Achieving space superiority during conflicts will be critical to the US success on the battlefield.”¹⁴

And for those concerned about turning the heavens into a war zone, the *Long Range Plan* counsels: “Space has been ‘militarized’ for 40 years. Reconnaissance, surveillance, warning communications, weather, and most recently, navigational satellites were designed and deployed to serve national security needs.... The increasing number of countries and consortia turning to space to provide and receive services—and to generate wealth—will force nations to adapt to this emerging environment.”¹⁵

The *Long Range Plan* then continues on for more than 100 pages detailing U.S. plans for “Control of Space,” “Full Spectrum Dominance,” “Full Force Integration,” and “Global Engagement.”¹⁶

“Space is the ultimate ‘high ground,’ “says *Guardians of the High Frontier*,¹⁷ a 1997 U.S. Air Force Space Command report. The Air Force Space Command is committed to “the control and exploitation of space,” it says.¹⁸

“Master of Space” is a motto of the Air Force Space Command. “Master of Space” appears as a Space Command uniform patch displayed in *Guardians of the High Frontier* and emblazoned on the front entrance of a major Space Command element, the 50th Space Wing in Colorado. Master of Space. That pretty well sums up the U.S. military attitude toward space.

Almanac 2000 is a just-issued Air Force Space Command report that flatly declares: “The future of the Air Force is space.”¹⁹

“Into the 21st Century,” it says, the U.S. Air Force needs to be:

Globally dominant—Tomorrow’s Air Force will likely dominate the air and space around the world ... *Selectively lethal*—The Air Force may fight intense, decisive wars with great precision, hitting hard while avoiding collateral damage in both ‘real’ space and in computer cyberspace. *Virtually present*—Space forces compliment [sic] the physical presence of terrestrial forces. Although they are not visible from the ground, space forces provide virtual presence through their ability to supply global mobility, control the high ground, support versatile combat capability, ensure information dominance and sustain deterrence. The future Air Force will be better able to monitor and shape world events.”²⁰

U.S. military leaders are blunt in describing U.S. plans to make war in, from and into space. As General Joseph Ashy, then commander in chief of the U.S. Space Command, put it, “It’s politically sensitive, but it’s going to happen. Some people don’t want to hear this, and it sure isn’t in vogue, but—absolutely—we’re going to fight *in* space. We’re going to fight *from* space and we’re going to fight *into* space,” Ashy told *Aviation Week & Space Technology* in 1999 (Italics in *Aviation Week and Space Technology*.) “That’s why the U.S. has developed missile programs in directed energy and hit-to-kill mechanisms.”²¹

In the article, headlined “USSC [U.S. Space Command] Prepares for Future Combat Missions in Space,” Ashy spoke of “space control,” the U.S. military’s term for controlling space, and “space force application,” its definition for dominating Earth from space. Said General Ashy: “We’ll expand into these two missions because they will become increasingly important. We will engage terrestrial targets someday—ships, airplanes, land targets—from space. We will engage targets in space, from space.”²²

Or as then Assistant Secretary of the U.S. Air Force for Space Keith Hall, also director of the National Reconnaissance Office, told the National Space Club in 1997: “With regard to space dominance, we have it, we like it, and we’re going to keep it.”²³

And as General Richard B. Myers, then commander in chief of the U.S. Space Command, in a speech titled “Implementing Our Vision of Space Control” delivered in 1999 to the U.S. Space Foundation, stated: “The threat, ladies and gentlemen, I believe is real. It’s a threat to our economic well-being. This is why we must work together to find common ground between commercial imperatives and the president’s tasking me for space control and protection.”²⁴

SPACE-BASED LASERS

Far more than reports and rhetoric are involved. There is a multibillion dollar project underway to build what was initially named the “Space-Based Laser Readiness Demonstrator,” now called the “Space-Based Laser.” The promotional poster for this laser shows it firing its ray in space while a U.S. flag somehow manages to wave in space above it.

The “Space-Based Laser” is considered by the military as a first step in space-based weaponry. It is a joint project of TRW, Boeing, Lockheed Martin, the U.S. Air Force and the Ballistic Missile Defense Organization. It “follows more than 15 years of TRW work developing technologies” for U.S. military-sponsored “space-based initiatives,” declared a 1998 press release announcing the project. “It also complements work that TRW and Boeing have already done as members of Boeing-led Team ABL, which is developing the Air Force’s first Airborne Laser system.”²⁵

In November 2000, the U.S. Department of Energy requested public comment on a “Environmental Assessment” for full development of the “Space-Based Laser.” The development program “is estimated at \$20–\$30 billion,” said the Public Affairs Office at the Army’s Redstone Arsenal in Huntsville, Alabama in March 2000. It said Redstone, base of the U.S. Army Aviation & Missile Command, was among “four finalists” for the “Space-Based Laser test facility.” A “team” including the Aviation & Missile Command and the adjoining NASA’s Marshall Space Flight Center was formed “to support the SBL program.”²⁶ In December 2000, the Pentagon gave approval for the “Space-Based Laser” project to go ahead at NASA’s Stennis Space Center in Mississippi.



Then there is a second space-based laser already in testing, the Alpha high-energy laser. Built by TRW, it conducted its twenty-second successful test firing on April 26, 2000. “In addition to producing about 25 percent more power than previous tests, Alpha generated an output beam that was almost perfectly round and more uniform in energy density,” proclaimed after the firing a happy Dan Novoseller, TRW’s Alpha Laser Optimization program manager.²⁷

“Megawatt Laser Test Brings Space-Based Lasers One Step Closer,” exclaimed *Space Daily*, the internet space website, about the test. It was “a significant step forward in the nation’s

disciplined maturation of the technology required to deploy the Space-Based Laser Integrated Flight Experiment.” The article included a drawing of the Alpha laser with the caption, “Turning swords into lasers.”²⁸

Some six billion dollars-a-year—plus funds in the “black” or secret—are now going into U.S. space military activities. Much is being spent on what is now called U.S. Ballistic Missile Defense, what Reagan’s Strategic Defense Initiative was renamed. Missile defense? In the fuller picture, what is sought is largely offensive.

Star Wars proponents regard missile defense—and have through the years—as a “layer” of a broad U.S. program for space warfare. The program is to be “multi-layered” and to include “theatre defense” (weaponry used in or in close proximity to an area of conflict) space-based weaponry and missile defense.

As Pulitzer Prize-winning author Frances FitzGerald concludes in her book, *Way Out There In The Blue: Reagan, Star Wars and the End of the Cold War*, published in 2000, Star Wars backers see an “initial deployment” of a missile defense system as “not an end in itself.” In their view the ‘thin’ defense would have to be thickened as time went on. ‘It’s better than having nothing,’ Republican Representative Curt Weldon of Pennsylvania said of the Clinton program, but ‘we’re probably going to have to use space-based assets.’ As always for the Republican right, the goal was weapons in space—that is, weapons which, if they materialized could contribute to an offense, as well as provide a defense for the United States.”²⁹

With the Bush-Cheney takeover, “the Republican right” with its “goal” of weapons in space is now back in power.

PREVENTING AN ARMS RACE IN SPACE

Well aware of the U.S. space warfare plans, other nations of the world arranged for a vote in the United Nations General Assembly in New York on November 1, 1999, to reaffirm the Outer Space Treaty and, specifically, its provision that space be reserved for “peaceful purposes.”

Some 160 nations voted for the resolution entitled “Prevention of An Arms Race In Outer Space.” It recognized “the common interest of all mankind in the exploration and use of outer space for peaceful purposes” and reiterated that the use of space “shall be for peaceful purposes ... carried out for the benefit and in the interest of all countries.” The measure stated that the “prevention of an arms race in outer space would avert a grave danger for international peace and security.”³⁰

Only two nations refused to support the resolution: the U.S. and Israel. Both abstained. That stance was in line with a consistent U.S. pattern in international forums in recent times of opposing efforts to keep space for peace as set forth in the Outer Space Treaty.

On November 20, 2000, the “Prevention of An Arms Race In Outer Space” resolution came again before the UN General Assembly and 163 nations voted in favor. Again the U.S. and Israel abstained, joined this time by Micronesia, a cluster of Pacific islands that depends on U.S. aid.³¹

Canada, certainly in no way a potential foe, has been highly active at the UN in seeking to strengthen the Outer Space Treaty with an agreement to ban all weapons in space. At a UN presentation in October 1999, Marc Vidricaire, counsellor of the Permanent Mission of Canada, noted that “Canada first formally proposed ... a legally binding instrument” for a “ban of the weaponization of space” in January 1997 and “renewed our proposal” earlier in 1999. He cited in his speech the U.S. Space Command’s *Long Range Plan* “including its recommendation to ‘shape [the] international community to accept space-based weapons.’” “The Canadian diplomat said, “Our objective is to ensure that pursuing the concepts of space control and force application are not extended by any state to include actual deployment of weapons in outer space.”³²

On October 19, 2000, Vidricaire was again at the UN sounding the alarm on behalf of Canada. “Outer space has not yet witnessed the introduction of space-based weapons. That could change if the international community does not first prevent this destabilizing development through the timely negotiation of measures banning the introduction of weapons into outer space,” he said.³³

“It has been suggested that our proposal is not relevant because the assessment on which it rests is either premature or alarmist,” he said. “In our view, it is neither. One need only look at what is happening right now to realize that it is not premature ... We have heard often before that there is no arms race in outer space. We agree. We would like to keep it that way for the sake of our own national security and for international peace and security as a whole.” Vidricaire said: “There is also no question that no state can expect to maintain a monopoly on such knowledge—or such capabilities—for all time. If one state actively pursues the weaponization of space, we can be sure others will follow.”

Russian President Vladimir Putin, in his first address at the UN, to the “Millennium Summit,” on September 6, 2000, stated that “particularly alarming are the plans for the militarization of the outer space. In spring of 2001 we shall celebrate the 40th anniversary of

the first flight of man to the outer space. That man was our compatriot, and we suggest to organize on that date, under the umbrella of the UN, an international conference on the prevention of the outer space militarization.”³⁴

In December 2000, Canadian Prime Minister Jean Chretien and Putin, visiting Canada, issued a joint statement announcing that “Canada and the Russian Federation will continue to pursue close cooperation in preventing an arms race in outer space, including interaction in the preparation and holding in Moscow in the spring of 2001 of an international conference on the nonweaponization of outer space.”³⁵ That conference, titled “Space Without Weapons,” was held in Moscow between April 11 and 14, 2001.

UN Secretary General Kofi Annan declared at the opening of the UN Conference on Disarmament in Geneva, Switzerland in January 1999 that space must be maintained “as a weapons-free environment” and he urged “that we codify principles which can ensure that the outer space remains weapons-free.”³⁶

Two months later at the UN in Geneva, a seminar was held on “The Prevention of an Arms Race in Outer Space” organized by the Women’s International League for Peace and Freedom. It began with a presentation by me—an “Overview of the Current Stage of Militarization of Outer Space”—that included the information I’ve conveyed so far in this publication.

I concluded, “What the government of my country, the United States of America, is doing in space ... gravely endangers life on this planet. It pushes us toward nuclear catastrophe. The military use of space being planned by the U.S. is in total contradiction of the principles of peaceful international cooperation that the U.S. likes to espouse. The aim is to develop a world in which it would literally be U.S.A. *uber alles*. This flies in the face of the spirit, the ideals of the United States of America. It denigrates those courageous men and women who came to this continent and fought the horrific evil of fascism in World War II. It pushes us—all of us—toward war in the heavens.”

I was followed by Wang Xiaoyu, first secretary of the Delegation of China, who declared “Outer space is the common heritage of human beings. It should be used entirely for peaceful purposes and for the economic, scientific, and cultural development of all countries as well as the well-being of mankind. It must not be weaponized and become another arena of the arms race.”³⁷

The U.S., he said, “has over the years continued its efforts in developing space weapons with a view to deploying such advanced weapons in outer space in the near future. Huge amount[s] of human, material and financial resources have already been put into relevant plans and programs. The momentum has recently been greatly intensified. These ominous efforts will bring about the weaponization of outer space and lead to an arms race there.”

The Chinese official cited the U.S. Space Command’s *Long Range Plan*. “According to the plan, military space capabilities will become the major leverage in implementing national security and military strategies. Therefore, the priority task of the Space Force of the country [U.S.] in the 21st century is to gain and maintain space superiority,” he said. “Its Space Command has thus put forward several operational concepts such as ‘Control of Space’ and ‘Global Engagement.’ ”

“To put it simply,” stated Wang Xiaoyu, the U.S. “is seeking to deploy in some years from now the ground-based interceptors which use outer space as a battlefield” as well as “weapon systems that are directly deployed in outer space, such as space operation vehicles, space

based platforms and lasers.... Thus people have come to realize that the weaponization of outer space has already become the sword of Damocles.”

“Space domination is a hegemonic concept,” he emphasized. “Its essence is monopolization of space and denial of others’ access to it. It aims at using outer space for achieving strategic objectives on the ground.” The result of the U.S. placing weapons in space, said Wang Xiaoyi, would be either that other countries would simply cave in and “acquiesce” to U.S. military dominance, or they would compete and further spread “weapons on the ground, sea, air and space.”

He said that “against this background, the international community should act without any further delay to take effective measures, with a view to keeping the worst from happening.” He said the UN “Conference on Disarmament, as the single multilateral disarmament negotiation forum, should live up to its obligations [and] negotiate and conclude legal instruments banning the test, deployment and use of any weapons, weapon systems and their components in outer space with a view to preventing the weaponization of outer space.... Let us work together to maintain a weapon-free and peaceful space for the 21st century.”

The ambassador of Sri Lanka, H.M.G.S. Palihakkara, who is also special coordinator on the Prevention of an Arms Race in Outer Space for the UN Conference on Disarmament, then spoke declaring that “the international community should do something about this. It will be far too late even for the space powers to wait and let the technological momentum dictate the next stage of outer space weapons development. The moment you do research, there is the urge to deploy. The moment you deploy, others will deploy. Then we have a race on our hands.”

Bill Sulzman, director of Citizens for Peace in Space, presented to the audience—which included many UN delegates—U.S. Space Command Major Kevin Kimble’s 1998 lecture “The future Air Force officers” at the U.S. Air Force Academy. The lecture, appearing as a slide overhead on a screen, began: “There is a role for military use of space. Space is a medium useful for human endeavor. Human endeavor is accompanied by conflict. Human conflict, at its extreme, requires military solutions. Space is a medium requiring exploitation for military purposes. Space Control is the first order of business.”

“It is clear from that presentation and from other recent Space Command printed materials that the U.S. does not recognize any international restrictions by treaty or otherwise to its military activities in space,” said Sulzman. He cited *Vision for 2020*, *The Long Range Plan* and *Guardians of the High Frontier*. He spoke about a “most direct action of the U.S. in nullifying the ‘peaceful purposes’ concept of space law ... its maintenance of a Space Warfare Center at Schriever Air Force base in Colorado Springs where future wars are being scripted with space as an area of conflict.”

And Sulzman, a former Roman Catholic priest, ended by saying “I want to emphasize the positive. Many astronauts from many different countries have returned from their space travels to sing the praises of cooperation in keeping space free from human conflict. They point out the stunning beauty of the planet with its blue atmosphere and they always refer to the lack of borders and boundaries which separate us who live here below. Nationalism and militarism are the farthest things from their minds. We need to build on that spirit as we try to work together in the future to keep space as the common heritage of all humankind and reserve it for peaceful purposes.”

Also making a presentation was Helen John of the Menwith Hill Women's Peace Camp who has been arrested many times for protests at the Menwith Hill military facility, a key command-and-control component of the U.S. space military program and a communications surveillance center, located in North Yorkshire in the United Kingdom.³⁸

"We, who have protested outside the base at Menwith Hill at a Greenham-style women's peace camp for the past five years, cannot imagine how the international community can allow this to continue," said John. "This kind of power and this kind of spy technology is beyond Hitler's wildest dreams.... Following in the Fuhrer's footsteps, the U.S.A. now intends to dominate space to protect the American military and American business and commercial interests, having stolen everyone else's.... The U.S. Space Command documents *Vision for 2020* and *The Long Range Plan* spell out the far from peaceful future Uncle Sam has worked out for the rest of us. It involves increasing uses of deadly plutonium to produce the power sources for laser weapons.... Wernher Von Braun and Edward Teller's dream of orbiting battle stations is about to come true."

Women's International League for Peace and Freedom issued a statement declaring that "we see outer space as an integral part of the common heritage of humankind. All scientific exploration and any other use of outer space should be for civilian research only with a view to furthering the well-being of humanity and not for the destruction of life and the environment."

The following day, at the UN Conference on Disarmament, Li Changhe, ambassador for disarmament affairs of China, noting that the U.S. "in recent years has been intensifying its efforts in developing and testing weapons and weapons systems in outer space" thus making "prevention of an arms race in outer space [a] more pressing" issue, formally proposed "an international legal instrument banning the test, deployment and use of any weapons, weapons system and their components in outer space, with a view to preventing the weaponization of outer space."³⁹

"My delegation requests that this be circulated as an official document of the Conference on Disarmament," said the Chinese diplomat, on the floor of the historic Council Chamber of the UN in Geneva, a room built for the UN's predecessor, the League of Nations, bedecked with murals illustrating the struggles and accomplishments of humanity. "We are ready to listen to the views and positions of all parties and make joint efforts in promoting substantive progress."⁴⁰

From the floor, country after country declared their support.

However, the U.S. has refused to back this measure or the Canadian resolution to ban weapons in space. Because the Conference on Disarmament works on a consensus basis, U.S. obstinacy has frozen movement on this critical issue.

Ironically, it was the U.S. that was originally involved in initiating the Outer Space Treaty, according to Craig Eisendrath, a former U.S. State Department officer who helped in its creation. Keeping space weapons-free was the original intent of the treaty, says Eisendrath. The Soviet Union had launched its Sputnik satellite in 1957 and "we sought to de-weaponize space before it got weaponized." A model the State Department used for its draft of the Outer Space Treaty, says Eisendrath, was the Antarctic Treaty which bars military deployments among states, "Antarctica shall continue forever to be exclusively used for peaceful purposes."⁴¹

The Soviet Union and the United Kingdom joined the U.S. in presenting the Outer Space

Treaty, and it was adopted by the UN General Assembly in 1966. The Outer Space Treaty has now been ratified or signed by 123 nations. It entered into force in October 1967. The final wording of the treaty provided that “State Parties to the Treaty undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in space in any other manner.”

The intent of the Outer Space Treaty was “to keep war out of space,” said Eisendrath, who became an educator after working for the State Department to and is now a senior Fellow at the Center for International Policy in Washington, D.C. He is a co-author of the forthcoming book, *The Phantom Defense: America’s Pursuit of the Star Wars Illusion*. Eisendrath views the deployment in space of weapons such as the lasers that the U.S. military is delivering as “a violation” of the Outer Space Treaty.⁴²

The resolutions put forth at the UN by Canada and China, urged by Kofi Annan and supported by most nations of the world, would clear up any confusion and specifically ban any weapons in space. If approved, solid mechanisms could then be put in place to assure compliance, and violators would face international action. A huge problem could then be solved—in harmony with the foresight of those who developed the Outer Space Treaty. But that is not to the liking of the U.S. government today.

Mike Moore, then editor of *The Bulletin of the Atomic Scientists*, wrote in 1999: “The notion that the United States—or any country—might actually place weapons in space, as envisioned by the [U.S.] Space Command, is so repugnant that the United States ought to clearly repudiate it. Better yet, it should push to amend the Outer Space Treaty so as to definitively prohibit all weapons in space, not just weapons of mass destruction.”⁴³

But this is not the view shared by most of those in power in the U.S. in recent years and now. The same day that China introduced the resolution to ban all weapons in space at the UN Conference on Disarmament in 1999, I had a talk with a high U.S. official at the UN in Geneva. He was not happy with my remarks the day before at the seminar on “The Prevention of an Arms Race in Outer Space.” On an anonymous basis, he sought to explain the U.S. stance.

In the wake of the Vietnam War, he said, the U.S. military believes it “can’t field large numbers of ground troops.” It was done for the Persian Gulf War, he noted as we stood in front of the U.S. Mission to the UN in Geneva—its entrance area strewn with razor-wire fencing and guarded by heavily-armed Swiss soldiers—but that took quite a build-up, “nine months of a drum roll.” There is strong U.S. public resistance to having U.S. troops fight on the ground. But the U.S. military believes “we can project power from space,” said the official, and that is why the U.S. military is moving in this direction.

There are profound moral, national and international issues raised by the determination of the U.S. to “control space” and from it “dominate” the earth, I noted, remarking that my uncles didn’t go to Europe during World War II to fight for that kind of United States. Meanwhile, I said, I was not naive about the record of U.S. intervention in the affairs of other countries, pointing out that in the 1980s I wrote a book on U.S. efforts against Nicaragua (*Nicaragua: America’s New Vietnam?*). But, I said, the U.S. seeking to control space “is well beyond the Monroe Doctrine.”

Moreover, if the U.S. moved ahead with this, would not other nations respond and an arm

race in space follow? The official replied that the U.S. military has done analyses and determined that China is “thirty years behind” in competing with U.S. militarily in space and Russia “doesn’t have the money.”

I recounted to him my travels in China, seeing its technological power, and I pointed to its space prowess—how U.S. companies are now using China for launches. If the U.S. moves to “control space” and from it the earth, to deploy weapons in space, the Chinese would militarize space too—in something like three not thirty years, I suggested. And Russia might not have the rubles now, but it’s a nation rich in natural resources and with enormous space abilities. A huge, potentially catastrophic miscalculation is being made, I said, heading the world toward war in the heavens. We parted in disagreement.

Later that day, I sat with a group of Chinese diplomats who indicated that if forced to do so, their nation could move into space militarily. “But we don’t want to,” said a young Chinese official. Rather, he said, China wants to use its resources to educate, house, feed and provide medical care for her billion people.

Echoing the myopic military view that the U.S. somehow can have an exclusive military use of space is George Friedman, a “defense expert” and co-author, with Meredith Friedman, of the 1997 book *The Future of War: Power, Technology & American World Dominance in the 21st Century*—yes, American World Dominance in the 21st Century. It’s a detailed exposition on the proposition that the U.S. can dominate the earth for many years to come through the control of space.

“The age of the gun is over.... He who controls space controls the battlefield,” said Friedman, in an interview, arguing that other nations “lack the money and/or technology to compete with us in the development of space-age weapons.” He described China and Russia as “passing blips.”⁴⁴

His book, *The Future Of War*, concludes: “Just as by the year 1500 it was apparent that the European experience of power would be its domination of the global seas, it does not take much to see that the American experience of power will rest on the domination of space.... Just as Europe expanded war and its power to the global oceans, the United States is expanding war and its power into space.... Just as Europe shaped the world for half a millennium, so too the United States will shape the world for at least that length of time. For better or worse, America has seized hold of the future of war....”⁴⁵

U.S. military plans for space will likely involve the use of nuclear power as an energy source for space-based weapons. The weapons the U.S. military is interested in deploying in space—especially lasers—will need large amounts of power and nuclear energy is seen as the power source.

As *New World Vistas: Air and Space Power for the 21st Century*, a 1996 U.S. Air Force Board report, states: “In the next two decades, new technologies will allow the fielding of space-based weapons of devastating effectiveness to be used to deliver energy and mass as force projection in tactical and strategic conflict.... These advances will enable lasers with reasonable mass and cost to effect very many kills.⁴⁶ This can be done rapidly, continuously and with surgical precision, minimizing exposure of friendly forces. The technologies exist and can be developed in this time period.”⁴⁷

“Force application by kinetic kill weapons will enable pinpoint strikes on target anywhere in the world,” says *New World Vistas*. “The Equivalent of the Desert Storm strategic a

campaign against Iraqi infrastructure would be possible to complete in minutes to hours, essentially on immediate notice.”⁴⁸

But there is a problem: space weapons would require large amounts of energy, and “power limitations impose restrictions” thus making “space-based weapons relatively unfeasible now.”⁴⁹ “A natural technology to enable high power is nuclear power in space.... Setting the emotional issues of nuclear power aside, this technology offers a viable alternative for large amounts of power in space,” asserts *New World Vistas*.⁵⁰

Solar power just cannot produce the necessary amount of energy needed for military purposes in space: “All solar collection systems in Earth orbit are limited by the solar constant of 1.4 kilowatts per square meter,” claims the report, and “large powers from solar collectors require large collection areas.”⁵¹

Nuclear power “remains one of the attractive alternatives in generating large amounts of power in space,” says the report,⁵² declaring that “the Air Force should continue effort toward making a safe nuclear reactor in space.”⁵³

The fifteen-volume report was prepared not only by U.S. military officers but, according to its appendix, high corporate, civilian and academic figures including, for its “Space Technology” volume, a Lockheed Martin vice president, NASA astronaut and manager from its Jet Propulsion Laboratory—Ronald Sega—and academics from MIT and Cornell.⁵⁴

It was through investigating the use of nuclear power in space that I became aware of military plans to base weapons in space. In 1985 I learned that NASA intended to launch two space shuttles in 1986—one of the shuttles being the Challenger—with plutonium-fueled space probes aboard. After reaching orbit, the shuttles would launch the probes into space.

After reading about the plan in a Department of Energy publication, *Energy Insider*, I filed a Freedom of Information Act (FOIA) request with NASA, DOE and the national laboratories cited by *Energy Insider* as involved in the missions. *Energy Insider* said that the government had evaluated the consequences of an accident with the probes—on launch, in the atmosphere, or if a probe fell back to Earth—and I asked for this information.

It took nearly a year to get it. It was quite an uphill fight although FOIA requires that the government handle FOIA requests expeditiously. What the government finally advised was that, yes, there could be quite a disaster if the plutonium—considered the most toxic radioactive substance—was dispersed in an accident. But, DOE and NASA claimed, the chance was “very small ... due to the high reliability inherent in the design of the Space Shuttle.” The likelihood of a catastrophic shuttle accident was put at 1-in-100,000.

On January 28, 1986, I was on my way to teach my Investigative Reporting class at the State University of New York, Old Westbury, when I heard over the car radio that the Challenger had blown up. I stopped at an appliance store and saw that horrible image on 100 TV sets—and thought, what if it was May of 1986, the date of the Challenger’s next mission when it was to have onboard the Ulysses plutonium-fueled space probe with 24.2 pounds of plutonium? There would have been many more lives lost if the explosion occurred then and plutonium was dispersed far and wide.

I began writing articles, then TV documentaries and a book (*The Wrong Stuff: The Space Program’s Nuclear Threat To Our Planet*), on the use of nuclear materials on space devices. In the wake of the Challenger accident, NASA, incidentally, soon changed the odds of a catastrophic shuttle accident from 1-in-100,000 to 1-in-76. We only know real probabilities

through empirical evidence.

Why use nuclear materials on space devices? For example, Ulysses was to be carried up by the Challenger and sent to orbit the sun. The plutonium on it and other space probes is used not for propulsion but to generate a small amount of electricity—256 watts on Ulysses—to power onboard instruments. Why not use solar energy? Why put the entire space program at risk by using nuclear material?

Part of the answer to that question was simple: as the informant “Deep Throat” told reporter Bob Woodward as he investigated the Watergate scandal—“follow the money.” Who makes money on the use of nuclear devices in space? General Electric, which manufactures the plutonium systems, and, in recent years, Lockheed Martin, which took over that division of GE. Both GE and Lockheed Martin, it turns out, long lobbied the government to use the plutonium systems in space. Furthermore the national laboratories involved in developing space nuclear systems, such as Los Alamos National Laboratory and Oak Ridge National Laboratory, seek to retain and expand their funding.

Then I got to the military connection: the desire of the U.S. military to deploy nuclear-powered weapons in space. NASA was set up in 1958 as a civilian agency but, particularly after the end of the Apollo man-on-the-moon missions and its budget was cut, it became increasingly involved with the U.S. military. Indeed, the space shuttle program itself was created as a half-civilian, half-military program. The February 2000 mission of NASA's Endeavor space shuttle, for example, a flight to map the earth, was in large part a mission for the Pentagon, as some news reports mentioned but did not emphasize. “By using two radar antennas—one on the end of the mast and a much larger one anchored in the cargo bay—scientists hope to obtain 3-D snapshots of Earth's terrain,” reported the Associated Press in the last paragraph of its account. “And they expect those snapshots to be more plentiful and more accurate than any taken before” and they would be “a boon” to “the Pentagon.”⁵⁶

The U.S. military wants nuclear-powered weapons in space and that's been a key reason why NASA has been insisting on using nuclear power in space even when solar power would suffice. NASA coordinates its activities with the military.

Most recently, in 1997, NASA launched its Cassini space probe with more plutonium than ever used on a space probe—72.3 pounds. Afraid to use a shuttle for this launch, NASA sent Cassini up on a Titan-4 military rocket manufactured by Lockheed Martin. This Titan-4 made it up although three Titan-4's since have blown up on or soon after launching. Indeed, the Titan-4 launch record is now 1-in-10, one catastrophic accident for every 10 launches, a worse record than the space shuttle has.

Then, in what NASA admitted was the most dangerous phase of the Cassini mission, in 1999 it sent the Cassini space probe and its pounds of plutonium fuel back from space to burn up in the earth. On August 17, 1999, NASA had Cassini whip by the earth at 42,300 miles per hour and 700 miles above it—in order to give it a “gravity assist” push to reach its final destination of Saturn. The good news: Cassini got past. It didn't dip down into the earth's 70-mile high atmosphere and break up, as NASA conceded it would have, for Cassini had no heat shield.

The bad news: on September 23, NASA's Mars Climate Orbiter seeking to pass over Mars came too close to the Martian atmosphere and crashed into the planet. That could have been Cassini crashing into the earth five weeks earlier. It turned out that the two teams of Mars

Orbiter scientists—one a Lockheed Martin group, the other at NASA's Jet Propulsion Laboratory—were working with different scales of measurement: one feet, the other meters and that's how the screw-up occurred. "Red-Faced Over The Red Planet: Metric Mixup Doomed Mars Spacecraft" was the headline of the Associated Press story, describing how "NASA's scientists' embarrassing failure to convert English units of measurement to metric ones ... caused the navigation error.... 'It does not make us feel good that this happened,' said Tom Gavin of NASA's Jet Propulsion Laboratory."⁵⁷ Yes, accidents will happen when human beings are involved. Indeed, NASA does not consider human failure in its accident probability estimates because human stupidity can't be quantified.

More bad news: NASA, according to the U.S. General Accounting Office report, *Space Exploration: Power Sources for Deep Space Probes*, is "studying eight future space missions between 2000 and 2015 that will likely use nuclear-fueled electric generators."⁵⁸

The next nuclear-fueled space mission is that of the Europa Orbiter, scheduled in 2003 to go to Europa, a moon of Jupiter (although NASA's Jet Propulsion Laboratory officials have been saying that the 2003 date for the Europa mission is "under review").⁵⁹

The European Space Agency, ESA, meanwhile, has developed new "high efficiency solar cells" for use in space—as a substitute for nuclear power. And in 2003 ESA will be launching its Rosetta probe using solar arrays for power—to go beyond the orbit of Jupiter to rendezvous with a comet called Wirtanen. "Rosetta will make first contact with Wirtanen about 675 million km from the sun," notes ESA. That's 500 million miles from the Sun. "At this distance, sunlight is 20 times weaker than on Earth," ESA points out.⁶⁰

But, again, NASA—seeking to coordinate its activities with the military and wanting to keep Lockheed Martin and the national nuclear laboratories in funds—sticks with nuclear power in space.

Accidents involving nuclear devices in space are not theoretical, they are real. It's not a sky-is-falling issue. Accidents have already occurred in the space nuclear programs of both the U.S. and the former Soviet Union, now Russia—in fact, there has been a 15% accident rate in both nations' space nuclear programs.

The most serious U.S. mishap occurred on April 21, 1964 when a U.S. navigational satellite (Transit 5BN-3) powered by a SNAP-9A (SNAP for Systems Nuclear Auxiliary Power) fueled with plutonium failed to achieve orbit and fell from the sky, disintegrating as it burned up in the atmosphere. The 2.1 pounds of plutonium scattered around the world. "A worldwide soil sampling program carried out in 1970 showed SNAP 9-A debris to be present at all continents and at all latitudes," according to the 1990 publication, *Emergency Preparedness for Nuclear Powered Satellites*, a report by Europe's Organization for Economic Cooperation and the Swedish National Institute of Radiation Protection.⁶¹

Importantly, the type of plutonium used in space devices—Ulysses, Cassini, SNAP-9A and the others—is Plutonium-238, which is 280 times "hotter" in radioactivity than the more widely known plutonium isotope, Plutonium-239, which is used in nuclear weapons.

Dr. John Gofman, professor emeritus of medical physics at the University of California at Berkeley, an M.D. and Ph.D. who developed some of the first methods of isolating plutonium for the World War II Manhattan Project, and co-discoverer of several radioisotopes including Uranium-233, has long connected the SNAP 9-A mishap to an increase of lung cancer on Earth. "Although it is impossible," he has said, "to estimate the number of lung cancer

induced by the accident, there is no question that the dispersal of so much plutonium-238 would add to the number of lung cancers diagnosed over many subsequent decades.”⁶² The SNAP-9A accident caused NASA to become a pioneer in developing solar photovoltaic energy technology—solar panels that convert sunlight directly to electricity—now the power system on all U.S. satellites.

The worst Soviet space nuclear accident occurred on January 24, 1978 when Cosmos 954, a reconnaissance satellite powered by an onboard nuclear reactor, fell from orbit crashing in the Northwest Territories of Canada splattering nuclear debris over a huge area. “Eyewitnesses near the impact zone reported seeing a brilliant, glowing object accompanied by at least a dozen smaller glowing fragments,” according to *Emergency Preparedness for Nuclear Powered Satellites*. “During the first weeks of search, it became apparent that sizeable amounts of radioactive debris had survived reentry and was spread over a 600 km [kilometer] path from Great Slave Lake to Baker Lake.”⁶³

The most recent Russian space nuclear accident: the break-up of the Russian Mars 1996 space probe with a half-pound of plutonium aboard over the border region of Chile and Bolivia on November 16, 1996.⁶⁴

Cassini carried the most plutonium of any space device so far.

And what a colossal disaster could have occurred if it had screwed up.

NASA in its *Final Environmental Impact Statement for the Cassini Mission* said that if the probe did not fly overhead as planned but dipped into the earth’s atmosphere on the “flyby”—it would make an “inadvertent reentry,” break up, and release plutonium and—these are NASA’s words—“approximately 5 billion of the ... world population at the time ... could receive 99 percent or more of the radiation exposure.”⁶⁵

NASA, in its statement, said that if plutonium rained down on areas of natural vegetation it might have to “relocate animals,” if it fell on agricultural land, “ban future agricultural land uses” and, if it rained down on urban areas, to “demolish some or all structures” and “relocate affected population permanently.”⁶⁶

As to the human death toll: Dr. Gofman projected 950,000 dying as a direct result of a Cassini “flyby” accident. Dr. Ernest Sternglass, professor emeritus of radiological physics at the University of Pittsburgh School of Medicine, estimated the death toll at between 20 and 40 million people.⁶⁷

The Outer Space Treaty has a provision that addresses damage caused by space devices. The treaty declares that a nation that launches “an object into outer space ... is internationally liable for damage” caused by it. A follow-up 1972 UN treaty, “Convention on International Liability for Damage Caused by Space Objects,” says “a launching state shall be absolutely liable” for such damage. But, in 1991, the NASA and the U.S. Department of Energy entered into a “Space Nuclear Power Agreement” to cover U.S. nuclear space flights with the Price-Anderson Act. This is a U.S. law which limits liability in the event of a nuclear accident to \$8.9 billion for U.S. domestic damage and \$100 million for damage to all foreign nations.⁶⁸

Thus if an “inadvertent reentry” of Cassini back into the earth’s atmosphere had occurred in 1999 and a part of Europe or Africa or Asia suffered nuclear contamination, all the nations and all the people affected could only have collected in damages—despite the land polluted and the number of people who would develop cancer—\$100 million. The same will be true for a

accident involving the plutonium-fueled Europa and other planned U.S. space nuclear show ahead.

Meanwhile, in the event of an exchange involving nuclear-powered weapons in space, how would the resulting radioactive pollution affect life on Earth?

Furthermore, warfare in space will produce large amounts of space debris that could prevent humanity from journeying into space and limit us to the earth. The space above Earth is already littered with debris ranging from bolts and metal bits to defunct satellites and booster rockets. There are now 110,000 manmade objects orbiting in the space above the earth, some “8,870 larger than a softball,” according to one recent survey.⁶⁹

It has gotten so bad that NASA “now replaces pitted orbiter windows after most flights” on space shuttles, noted a 1997 report of the National Research Council, which warned that far more serious accidents involving space debris could occur resulting “in the loss of life or the vehicle.”⁷⁰ It said: “The speed at which objects in low Earth orbit can collide makes these objects dangerous.” The “typical impact velocities” of more than 20,000 miles per hour means that “even millimeter-sized objects can cause considerable damage.”⁷¹

The U.S. Space Command monitors space debris and when the space shuttle is flown, it advises NASA. This Department of Defense “Space Surveillance Network (SSN) warns the space shuttle program of possible close conjunctions with catalogued orbiting objects. But probably more than 95 percent of the objects that could cause critical damage to the orbit are not catalogued because they are too small to be reliably detected by SSN detectors,” said the report, *Protecting the Space Shuttle from Meteoroids and Orbital Debris*. It was done under a U.S. government contract involving the National Academy of Sciences and NASA.

The amount of “space junk” has doubled since 1990 and now poses “a navigation hazard” in space, says Norwegian space expert Erik Tandberg. The U.S. and Norway are planning a giant radar station, to be called Globus II, in Norway’s Arctic, specifically to better monitor orbiting debris.⁷²

An exchange involving space weaponry—a shooting war in space—would far surpass the amount of junk in orbit now above the earth. The heavens would be thoroughly littered.

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