



FENCING THE GLOBAL COMMONS

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AMSC 1

Research Essay

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FENCING THE GLOBAL COMMONS

Any threat to our use of space is a threat to our nation's security.

General Howell M. Estes III,
Commander United States Space Command

Since man could first regard the heavens, it has been a place of wonder. Home to gods, the heavens were also a place of danger, as Icarus learned when he dared fly too high. Space has been a home to our imagination, whereby flying towards the 'second star to the right and straight on 'til morning' one could find Peter Pan's lost boys in Neverland. Space also holds the promise of the future, a future where the Star Trek crews will live their lives and experience trials and tribulations far beyond earthly comprehension.

Space is also the here and now, polluted with the debris of various nations' space programs, casually dropped by satellites and their launch vehicles, posing an environmental hazard to all who would go there. Beyond these physical dangers are disturbing indications that promises made in the early days of space flight, to keep space a peaceful sanctuary, may be abandoned.

The evidence that space-faring nations might resemble early sea-faring nations is growing as the potential for profit in, or from, space dramatically increases. There are also signs that some elements within the United States no longer embrace the notion enshrined in the 1967 Outer Space Treaty that space is a resource to be shared by all the world's nations without regard to wealth or technical ability. This paper will demonstrate that the United States has become so dependent on the use of space for both its commerce and security that it is considering breaking treaties that prohibit the deployment of space weapons, but that intervention by the United

Nations, perhaps through the creation of new space law, could prevent complete U.S. control of space.

This will be accomplished by exploring the growing reliance of the world's economies on space, and how this is creating a security concern for the United States. This will be followed by a review of how United States Space Command (USSPACECOM) intends to address these issues through a new *Long Range Plan*. Next, this paper will examine space law as it currently exists and the way in which USSPACECOM's Long Range Plan threatens the provisions of the 1967 Outer Space Treaty. The paper will then conclude with some comments on one alternative proposal to address the U.S. concerns.

THE GROWING VALUE OF SPACE

The Soviet launch of Sputnik I on 4 October 1957 marked the beginning of the occupation of space. That launch also supported the USSR's claim to possess an Intercontinental Ballistic Missile (ICBM) that could threaten North America with a nuclear warhead.¹ This single event touched off a space race between the superpowers, as each sought to gain either political advantage through propaganda opportunities, or military advantage through the use of space to support remote sensor platforms and deliver weapons.

The end of World War II also marked the end of the alliance of the Soviet Union with the western countries. An Iron Curtain surrounded the Soviet Union, through which disturbing hints of military menace occasionally leaked. The perceived need to assess the Soviet ICBM capability drove the U.S. to create surveillance satellites, capable of looking over the top of that Iron Curtain. The first success came in August 1960 when a U.S. Air Force (USAF) C-119

¹ United States Air Force, Space Handbook A War Fighters Guide to Space, 2 vols (Maxwell Air Force Base: Air UP, December 1993) 1:6.

transport aircraft snagged the parachute of the satellite Discoverer XIV as it returned from space to earth. Although billed as a scientific satellite, Discoverer XIV's scientific discoveries were solely image intelligence (IMINT) of the USSR.²

Space Surveillance and Remote Sensing

Surveillance has long been one of the drivers of space programs. Since that first successful IMINT satellite gave U.S. analysts a glimpse of the Soviet military facilities, surveillance from space has grown from a curiosity to an important asset in both civilian and government sectors. Aimed primarily at providing intelligence information to the Central Intelligence Agency, but also selectively to other government agencies and allied nations, a series of very large IMINT satellites were built and launched by the United States over the following decades. In addition to high resolution film cameras, other sensors were added to the satellites to overcome the limitations of visible light cameras. Infra-red sensors could defeat attempts to camouflage items of interest, while radar demonstrated its ability to sense through cloud layers that blinded other sensors. Today, these and other sensors are used together to create 'hyperspectral' systems that operate over a wide range of bandwidths and use data fusion to detect targets.³

From the technology used to observe the USSR's military capability grew civilian uses of the same technology. Weather information, for instance, was one of the early migrants to civilian use, and has become so commonplace as to be virtually unnoticed as an overlay on the evening news weather map. As satellite imaging resolution improved, satellite photos were

² Bill Sweetman, "Spy satellites: the next leap forward," Jane's International Defense Review 1 (1997): 26.

³ Sweetman 32.

increasingly used for such purposes as measuring ice distribution in the arctic to aid offshore shipping, updating topographic maps or surveying land use. A typical user of such information, the Canadian Wheat Board relies on satellite sensor information to determine drought and crop conditions for prairie farmers.⁴

Various satellites have been built and launched to accommodate the growing civilian sector use of space sensors. The French SPOT series of satellites provides information using both visible and near visible portions of the light spectrum to give colour-infrared type images. By contrast, the Canadian RADARSAT satellite uses synthetic aperture radar as its primary sensor.⁵ With the improvements to civilian remote sensors, however, have come defence issues. Civilian controlled satellite imagery has now reached the point where it is militarily significant. On 26 July 1998, the United States Commerce Department notified a number of United States companies, including Earthwatch, Orbital Sciences and Space Imaging, that they could not sell high-resolution images of Israel. The prohibition prevents the sale of images of Israel that have a resolution of 2m² or better, in an effort to: “protect Israeli national security from potential adversaries.”⁶

Communications

Support to military communications has also been a long-standing task for satellites. In the 1960s the United States built and launched the first satellites of the Defense Satellite

⁴ Ian Darragh, E.A. Godby and R.A. Ryerson, “Remote Sensing,” The Canadian Encyclopedia, 1998 ed.

⁵ LCol D.J. McCoubrey et al, Space Indoctrination Handbook, 5th ed. (Winnipeg: Canadian Forces School of Aerospace Studies, August 1996) 11-5.

⁶ Bryan Bender, “US resolution to protect satellite imagery of Israel,” Jane’s Defense Weekly 2 September 1998: 20.

Communications System (DSCS.) The system was originally designed to provide U.S. government agencies with secure, high capacity communications. Now using third generation satellites, DSCS III forms a constellation in earth orbit and can support users with access to large ground stations, but it also broadcasts high power spot beam transmissions to service small, portable receivers, adjusting its transmissions to suit the needs of the users.⁷

The U.S. is not the only user of military communications satellites. With the launch of the Skynet 1A satellite in November 1969, the United Kingdom (UK) was the first nation to develop and deploy a military communications satellite into geostationary orbit. The Skynet system has been servicing the UK military since that time. NATO also collectively owns a military satellite communications system as does France.⁸

As in space surveillance, space communications technologies invented to support military use have migrated to the civilian sector. Telesat Canada Corporation was established by an act of Parliament in 1969 specifically to establish a domestic satellite communications system. The three Anik A satellites launched in 1972 gave Canada the world's first domestic satellite system using geostationary orbits. The Anik B, C, D and E series satellites have continued to provide commercial communications to North American users to the present.⁹

Internationally, communications satellites and their information distribution systems have been collectively owned and managed since INTELSAT was established in 1964. Growing from 11 member countries to over 123 since then, INTELSAT manages 13 satellites over the Atlantic, Pacific and Indian oceans, serving television and telephone needs around the world. Other

⁷ Space Handbook A War Fighters Guide to Space 91-92.

⁸ Alasdair McLean, Western European Military Space Policy (Aldershot: Dartmouth Publishing Company Limited, 1992) 87-88.

⁹ B.C. Blevis, "Space Technology," The Canadian Encyclopedia, 1998 ed.

collectively owned, commercial satellite communications ventures include INMARSAT and ARABSAT.¹⁰

Most recently, the rapid growth of telecommunications services, caused by the explosive increase in Internet use, has led to proposals for five new telecommunications satellite systems in orbit over the earth. Internet equipped households are expected to triple between 1998 and 2000, increasing the amount spent on related services to US\$30 billion in 2000.¹¹ To support this growth, these new telecommunications systems will employ between 10 and 66 new satellites per system, depending on their orbiting altitudes. The first of the new commercial systems, named Iridium, should be providing services in late 1998. Those services will include voice, data and paging, using a handset about the size of a standard cellular telephone.

The appearance of small, portable and relatively inexpensive direct satellite communications will be especially significant in those areas of the world that do not possess the fibre optic and copper cable infrastructure of most industrialised nations. The International Telecommunications Union estimates that the 59 lowest income countries account for 56% of the world's population but only 7% of the world's telephone mainlines.¹² These new satellite communications systems will allow those nations to bypass the costs of installing and maintaining hard-wired telecommunications systems, substituting wireless systems where it is economically advantageous.

¹⁰ LCol D.J. McCoubrey et al 5.4.

¹¹ John V. Evans, "New Satellites for Personal Communications," Scientific American April 1998: 76.

¹² United Nations, Administrative Committee on Coordination, "ACC Statement on Universal Access to Basic Communication and Information Services" Internet URL: <http://www.itu.int/acc/rtc/acc-rep.htm>.

Navigation

In addition to remote sensing/surveillance and communications, satellites have also brought tremendous changes in the methods of navigation across the earth's land and seas as well as through its air. The original U.S. Navy and Air Force satellite navigation programs began independently in the 1960s, then later combined to become the Global Positioning System (GPS) commonly used today. The latest Soviet equivalent system, GLONASS, was launched in 1982.¹³ Both of these world-wide systems, as well as several regional ones, provide navigation services in the same way. The satellites broadcast signals that a receiving interprets to provide a geographical position in three dimensions, and then displays that positional information in any one of several reference systems. The American GPS system broadcasts two signals, one for commercial users that is accurate to about 100 metres, and a second, separate, encoded signal that is available only to authorised, mainly military, users and that is accurate to about 30 metres.¹⁴ GPS navigation systems have become so popular in the commercial world that there has been tremendous pressure brought to bear to allow civilian users access to the military signal.

Another satellite navigation system that has substantial civilian use is the COSPAS/SARSAT Search and Rescue Satellite system. This joint project of several nations, including Canada, the USA, France, Russia, Norway and Sweden, uses U.S. and Russian satellites carrying Canadian repeaters and French signal processors to locate downed aircraft.¹⁵ The system relies on Emergency Locator Transmitters (ELT) to broadcast signals to the satellites

¹³ LCol D.J. McCoubrey et al 12-1.

¹⁴ LCol D.J. McCoubrey et al 12-2.

¹⁵ LCol D.J. McCoubrey et al 17-1.

that then relay the information to ground stations in the participating nations. National Search and Rescue units then use this information to conduct a search.

Profit From Space

The increasing use of space by the civilian sector for remote sensing, communications and navigation is the result of several factors. One of the more important of these has been the release of information on the equipment used in military programs. During the Cold War, the military capabilities of the satellite systems were closely held national secrets. Since the fall of the Berlin Wall and the collapse of the Soviet Union and its collective economy, nations have slowly peeled back the veil of secrecy to reveal satellite capabilities. Formerly top secret satellites such as the Lacrosse, with its 1 metre resolution radar imaging system,¹⁶ are now appearing in *Aviation Week and Space Technology*.

A second factor has been the decrease in cost to put a satellite into orbit. During the last decade competition for launches has increased and prices have fallen as a result. Russian Proton satellite launches are now priced at a bargain basement US\$25 million,¹⁷ while India is attempting to reduce its launch costs to US\$10 million.¹⁸

These lower launch costs make more civilian space enterprises viable. *Aviation Week* noted that: “[i]ncreasing numbers of space-based products are being designed for market, such as farming, urban planning and biotechnology.”¹⁹ Direct-to-home television satellite broadcasts

¹⁶ Craig Covault, “Secret Relay, Lacrosse NRO Spacecraft Revealed,” *Aviation Week & Space Technology* 23 March 1998: 26.

¹⁷ “US Military Space Programmes in 1998,” *Jane’s Defense Weekly* 26 August 1998: 26.

¹⁸ “US Military Space Programmes in 1998” 27.

¹⁹ Covault 69.

have recently increased in numbers, with two new companies appearing in Canada over the last two years. GPS receivers are now an option on selected car and truck models. New satellite systems are being programmed at a prodigious rate. The new African Satellite Network was contracted in January 1998 at an estimated cost of US\$835 million.²⁰ Estimates of the revenues from space are running at US\$85 billion annually and are projected to grow to US\$121 billion by 2000.²¹ Space is finally about to become profitable. Unfortunately, the pursuit of profit will probably set the stage for serious competition.

THE SECURITY CONCERN

There is no shortage of analysis on the relationship between a nation's security concerns and the causes of conflict. The principle role of government is to act in such a way that it will defend its citizens and, as many writers point out, the economic well-being of a country. One author, Henry Norton, goes so far as to assert: "it is doubtful if we have had or shall have any war in which the economic motive is not paramount.... Whatever danger still lurks in the other causes of war, we shall find the economic factors so powerful that if the world can understand, and control those it will have gone so far toward the elimination of war that the other factors should readily yield to similar treatment."²²

By comparison, in his treatise, Frederick Emery notes that a mix of political and economic ingredients intermingles to define security concerns, especially those that lead to conflict. In his view, the economic sector has to be politically astute, the government has to be

²⁰ "Telesat to Help Build, Operate New African Satellite Network," Business Wire 01-13-1998.

²¹ Eric Shonfeld, "The Space Business Heats Up There is a New Breed of Entrepreneurs Who Think of Space Less as a Scientific Frontier Than as a Place to Make Money," Fortune, 24 November 1997: 142.

²² Henry Kittredge Norton, Back of War (New York: Doubleday, Doran & Co., 1928) 40-41.

involved in the process, popular support is required, the military forces ready and alliances created.²³ Reginald Ellery, on the other hand, states that one can identify three causes of war: “the socio-economic set-up, the quality of leadership and the frustration and aggressions of society.”²⁴ Finally, Geoffrey Blainey in his book *The Causes of War*, lists seven factors that are weighed by a nation before deciding for war.²⁵ What is consistent in the writings of all of these authors, however, is the theme that economics plays a major part in the causes for conflict.

Norton is one of the more insistent on the relationship between trade and conflict. He defends the notion of inter-linking trade as essential for some nations’ survival and notes that the well-being of the country’s traders reflects the well-being of the country itself. He concludes that: “[t]rade disputes in the modern world are much more likely to involve nations, since the nations have come to depend for their very sustenance upon the successful operations of their traders.”²⁶ He continues to press his thesis to assert that governments interfere in international trade to secure the largest share of profits for their people, including employing armed forces to achieve that end. He also notes that when the sea was the principle trade route then: “control of the sea was a dominating consideration from the days of Tyre down through the Greeks, the Romans, and Venetians, the Genoese, the Dutch, the French and the English...[t]here was no

²³ Frederick E. Emery, “Economic Conflicts in Relation to War,” *Paths to Peace*, ed. Victor H. Wallace (London: Cambridge UP, 1958) 47.

²⁴ Reginald S. Ellery, “Frustration and Aggression in Relation to War,” *Paths to Peace*, ed. Victor H. Wallace (London: Cambridge UP, 1958) 121.

²⁵ Blainey’s seven factors are: military strength and the ability to apply that strength efficiently in the chosen zone of war; predictions on how outside nations would behave in the event of war; perceptions of internal unity and of the unity or discord of the enemy; memory or forgetfulness of the realities and sufferings of war; perceptions of prosperity and ability to sustain, economically, the kind of war envisaged; nationalism and ideology; and the personality and mental qualities of the leaders who weighed the evidence and decided for peace or war. Geoffrey Blainey, *The Causes of War* (London: The MacMillan Press Ltd, 1973) 123.

²⁶ Norton 68.

hesitation in utterly destroying the shipping of the enemy in order to finally eliminate him as a competitor...’’²⁷

In his book, Norton explores the world of commerce in some detail, identifying those commodities that are produced in one country or area, but required in another area of the world. He notes that production of those commodities: “gives to various countries certain advantages in world commerce, and the desire of those countries to increase those advantages or of other countries to neutralise them frequently leads to dispute and occasionally to conflict.”²⁸

Information has become a commodity that is traded around the world like cotton and rubber were in the past. Space has become an important medium of trade for this commodity. Yet, until now, there have been few signs that the U.S. government and its space industry have been conspiring together to eliminate others who trade in information as competitors. If anything, the U.S. space industry appears to be at odds with its government. For instance, in April 1998 Hughes Electronics came under scrutiny from the Pentagon and the Justice Department for allegedly providing sensitive information to the Chinese that might have helped their missile program.²⁹ Hughes, it seems, was not prepared to pay the costs of using U.S. space launchers and chose a Chinese alternative. The resulting Justice Department investigation suggests that Hughes and the government are not on the best of terms. In addition, U.S. Congressional testimony reveals that the U.S. space industry is pressing hard against a somewhat reluctant government for complete privatisation of Intelsat and Inmarsat.³⁰ The giant corporation

²⁷ Norton 70.

²⁸ Norton 98.

²⁹ [Excerpts] U.S. Department of State Daily Press Briefing, Question and Answer Session, James P. Rubin Briefer, 13 April 1998.

³⁰ Statement of Gerald B. Helman, before the Subcommittee on Telecommunications, Trade and Consumer Protection, U.S. House of Representatives, 30 September 1997.

Comsat, that is also partly owned by the U.S. government, is under attack for its complete domination of the American satellite market.³¹ Finally, at least one of the companies that was prohibited from selling high resolution imagery of Israel remarked that: "[t]his was a bolt out of the blue" and that: "[t]his decision was made in the dark corridors of the national security apparatus"³² suggesting that there is a lack of co-operation between the U.S. government and its industry.

USSPACECOM in its Long Range Plan (LRP) proposes to change the adversarial relationship that appears to exist. To reduce the costs at U.S. launch sites, the LRP suggests that either new or some existing launch facilities could be turned over to commercial firms to run as a business, making each a kind of "spaceport."³³ Another proposal is to have commercial firms operate military satellites, using the same commercial ground control stations that those firms use for their own satellites.³⁴ The LRP also proposes that the U.S. military abandon its current strategy of exclusively building, launching and operating its own communications satellites and lease bandwidth on commercial satellites instead.³⁵ In addition, the LRP proposes joint procurement of key satellite components by the U.S. military, commercial firms and key allies as a cost saving measure.³⁶ Going even further, the LRP proposes coupling military IMINT with

³¹ "Space Law," Britannica Online, Internet Site: <http://www.eb.com:180/cgi-bin/g?DocF=micro/559/34.html>.

³² Bender, 20.

³³ United States Space Command, Long Range Plan (Peterson AFB: USSPACECOM Director of Plans, March 1998) 115.

³⁴ Long Range Plan 114.

³⁵ Long Range Plan 118.

³⁶ Long Range Plan 119.

commercial imagery satellites and systems, even to the point of sharing military technology in the process.³⁷

Thus, at least one segment of the U.S. government plans to closely integrate the U.S. commercial world very tightly with itself. There is some evidence that this is not just an idle plan but is in fact a policy that is being pursued. Currently, NASA is working with the civilian firm, United Space Alliance, on plans to use the space shuttle Columbia for commercial flights. United Space Alliance and NASA have even “looked at eventually privatizing the whole [space shuttle] fleet.”³⁸ This brief review suggests that there is currently little sign of the kind of relationship between the space industry and the U.S. government noted by Norton et al as a precursor to conflict. This could change, however, if the proposals in the LRP mature to the point that military and civilian space assets become interdependent and the profit potential increases as expected.

Very recently there have been some disturbing examples within the U.S. of government sanctioned anti-competitive behaviour. The most significant of these has been the decision by the U.S. government to turn loose its civilian industry into the commercial imagery world. U.S. commercial imagery sales were authorised by Presidential Decision Directive 23, issued in 1994. That directive permitted U.S. companies to develop metre-resolution satellites and sell the product, with the caveat that the U.S. government reserved the right to stop the sale of imagery that could harm U.S. national security. Although it was this decree that halted U.S. companies from selling high resolution images of Israel, it also effectively: “unleashes the Pentagon’s most experienced contractors on the international market and sets a relatively high level of resolution

³⁷ Long Range Plan 123.

³⁸ Covault 71.

for non-US competitors to match. The U.S. strategy can be seen as a pre-emptive commercial strike, aimed at securing U.S. dominance of the open high-resolution market, and thereby extending U.S. control worldwide.”³⁹ This attempt to dominate the commercial imagery is reputed to include both the Pentagon and the State Department. The State Department is alleged to have been shocked in February 1998 when Canada: “unveiled the new 3m-resolution Radarsat 2. The State Department fully anticipated that Canada would bow to its wishes and hold Radarsat 2 to a 5m standard.”⁴⁰ While some might consider the U.S. course of action simply good business, it is important to note that the imagery expertise these contractors acquired was as a consequence of billions of dollars spent by the U.S. government on proprietary imagery systems during the Cold War. Because these were government developed and paid for, their use by private contractors could be considered an unfair government subsidy.

This hint of anti-competitive behaviour extends to other areas as well. Until recently, the method of launching satellites into orbit has also been the subject to U.S. government sanctions in an apparent bid to preserve its market share. As Jane’s International Defense Review notes: “[i]n fact, the rest of the world’s boosters are so competitive, that at the very time the USA argued for unrestricted trade in the North American Free Trade Agreement debate, they were restricting other nations’ overseas sales of space boosters.”⁴¹

The LRP also lays out USSPACECOM’s view of the future in this regard. Noting the need to partner with industry and allies to reduce the costs of space exploration, the LRP

³⁹ Sweetman 30.

⁴⁰ “US Military Space Programmes in 1998” 23.

⁴¹ “US Military Space Programmes in 1998” 26.

pronounces that: “USCINCSpace’s ability to ‘shape the space environment’ from a position of authority and expertise will *play a major role in retaining U.S. superiority in military space operations and technology* [emphasis added]. In keeping with the National Security Strategy, the DoD and USCINCSpace must ensure we retain the right (and capability) to act unilaterally in support of national interests.”⁴² The issue to be weighed by non-US companies and governments is whether a perceived loss of technological superiority to an ally will be considered important to the U.S. national interest, and what action USSPACECOM might take in such a circumstance.

In order to act in space, a military force must have the capability to exert its will there. While no military force is currently equipped or trained for extensive operations in space, the LRP proposes that the U.S. become the first (and perhaps only) military ready for battle in this environment. Of particular note are the four pillars of that plan: Control of Space; Global Engagement; Full Force Integration; and Global Partnerships.⁴³ In the LRP, the Control of Space is defined as: “the ability to ensure un-interrupted (sic) access to space for U.S. forces and our allies, freedom of operations within the space medium and an ability to deny others the use of space, if required.”⁴⁴ Global Engagement is defined as: “the combination of global surveillance of the Earth (see anything, anytime), world-wide missile defense, and the potential to apply force from space.”⁴⁵ Full Force Integration is defined as a process that; “seamlessly joins space derived information and space forces with information and forces from the land, sea and air.”⁴⁶

⁴² Long Range Plan 102.

⁴³ Long Range Plan 11.

⁴⁴ Long Range Plan 11.

⁴⁵ Long Range Plan 12.

⁴⁶ Long Range Plan 12.

The fourth pillar, Global Partnerships, will: “augment the military’s space capabilities by leveraging civil, commercial, and international space systems.”⁴⁷

Put together, the plan envisages the creation of fleets of space fighters and tugs. It also includes a Space Operations Centre that will act as the single point of contact for all military space operations, controlling space forces and resolving conflicts with agencies, allies and industry. Specialised computers called Battle Managers will collect, review and coordinate the flow of intelligence information. Various national and theatre ballistic missile defence systems will protect the U.S. and selected allies against attack, while other offensive systems take the fight to the designated enemy. Several U.S. defence programs currently support this vision for the future. The feature program is managed by the Ballistic Missile Defense Organization, which is: “responsible for managing, directing, and executing the Ballistic Missile Defense (BMD) Program. The program focuses on three areas: Theatre Missile Defense (TMD), National Missile Defense (NMD), and advanced ballistic missile defense technologies.”⁴⁸ New weapon systems associated with these programs include a Mid Infrared Advanced Chemical Laser (MIRACL). This laser, mounted on a 5.1-inch naval gun turret, will soon be tested from the White Sands Missile Range in the U.S. against a defunct U.S. satellite. In addition, Boeing has been contracted to integrate a laser with an Infra-Red Search and Track (IRST) system on a converted 747-400F freighter to create an airborne anti-missile laser gunship. This program has advanced to the point of scheduling flight-weight tests in April 1999 and a shoot-down test of a ballistic missile in flight in 2002.⁴⁹

⁴⁷ Long Range Plan 13.

⁴⁸ Department of Defense, United States of America, “Ballistic Missile Defense Programs,” Internet URL: <http://www.acq.osd.mil/bmdo/bmdolink/html/programs.html> 1.

⁴⁹ Mark Farmer and Frank Vizard, “Sabers of Light,” Popular Science September 1998: 69-70.

U.S. research has led to the design of a new series of 'hit-to-kill interceptors' for use as endo-atmospheric and exo-atmospheric kinetic kill vehicles. About the size of a coffee can and weighing as little as 10 kilograms, these projectiles include seeker, processor, guidance and propulsion systems.⁵⁰ The work on the Theatre Missile Defense Program features two systems: the Theatre High-Altitude Area Defense (THAAD) missile program, and the U.S. Navy's Navy Theatre Wide (NTW) naval area defence system.⁵¹ Collectively these programs represent a tremendous potential for military capability and readiness in the 2002 to 2010 timeframe. Even if only half of these programs continue, there can be little doubt that by 2010 the U.S. military will be prepared for space conflict. Certainly, these programs will demonstrate an intent to control space, if allowed.

In the US, public support for Space Control seems to be currently lacking. In his article for the Carnegie Endowment for International Peace, Joseph Cirincione describes how the leadership of the Republican Party, notably Senate majority leader Robert Dole and House speaker Newt Gingrich tried to create public support for an enhanced space control regime. The article attributes the attempt to a group of conservative activists with roots in the Reagan years, singling out the Heritage Foundation and the Centre for Security Policy in particular. According to Cirincione, these groups convinced the Republican leaders that missile defence was a winning campaign strategy against President Clinton's Democratic platform. As a result, the Republicans introduced the *Defend America Act* in 1996: "mandating deployment by 2003 of a nationwide

⁵⁰ William R. Graham, Testimony before the Senate Committee on Armed Services 24 March 1998, "FY99 Defense Budget: Ballistic Missile Defense," Federal Document Clearing House, Inc, 1998.

⁵¹ Greg Seigle, "US work to fix THAAD problems enters overdrive," *Jane's Defense Weekly* 14 October 1998: 4.

system of satellites, radars and missile interceptors.”⁵² In Cirincione’s opinion, the Republicans created a strategy of bringing the issue before the public, and missile defence became a theme for conservative print and broadcast pundits. Despite the support of the Wall Street Journal, three former secretaries of defense, a nuclear scientist, former CIA Director James Woosey and many others, the Republicans failed to orchestrate public support for the issue. Cirincione attributes this to a number of factors including a lack of public anxiety over the issue, and a public awareness campaign launched by non-government organizations under the banner of “Coalition to Reduce Nuclear Dangers.” The Defend America Act failed because: “[e]ven though most people thought America already had a missile defense system, when told that it did not, they were much more concerned about threats from terrorists than about nuclear missile attacks.”⁵³

What currently seems to limit both the USSPACECOM Long Range Plan and the attempts to construct an ABM system is the small amount of space law that currently exists. Just as the law of the sea evolved to limit the potential for accidental conflict, there has been an attempt to create space law to govern nations' activities in space. Interestingly, "[t]he evolution of space law began with the U.S. president Dwight D. Eisenhower's introduction of the concept into the United Nations in 1957, in connection with disarmament negotiations.⁵⁴ By 1967 space law had advanced to the point that an Outer Space Treaty was written and signed by 63 nations in the U.N. This treaty established the principles that: exploration and use of outer space including the moon and other celestial bodies are to be carried out for the benefit and interests of all countries; outer space shall be free for exploration and use by all states without

⁵² Joseph Cirincione, “Why the Right Lost the Missile Defense Debate,” Foreign Policy, 2 March 1997: non-paginated Internet document.

⁵³ Cirincione non-paginated.

⁵⁴ "Space Law" Britannica Online.

discrimination; weapons of mass destruction may not be placed in orbit; and military facilities weapons tests and manoeuvres are forbidden.⁵⁵ Other treaties cover issues of liability for damage done by space objects, the rescue of astronauts and the return of space objects as well as the registration of satellites that are launched. There is also the 1972 Treaty on Anti-Ballistic Missile Systems between the United States and the Soviet Union that limits each side to one ABM site with 100 interceptor missiles each. The U.S. system was deactivated in 1976 but the Soviet system was upgraded in the 1980s.⁵⁶

Although he defeated the *Defend America Act*, President Clinton has agreed to a '3 + 3' missile defence program under which his administration will: "develop within three years (by 2000) a system that could be deployed in an additional three years (by 2003) if a threat emerges. If in 2000 no such threat is deemed to exist, development will continue. That way, an up-to-date system will always be three years from deployment. President Clinton thus far has prevailed: he vetoed the fiscal 1996 defense authorization bill in large part because the bill's insistence on missile defense would, he said, put the United States 'on a collision course with the ABM Treaty.' Since this year's missile-defense legislation still mandates deployment by 2003, President Clinton is expected to veto it if it is passed. It would appear that the leader of the United States, like the public of that country, is not yet willing to embrace an aggressive space control policy. It is important to remember, however, that President Clinton has allowed the work on the ground and airborne lasers, as well the development of the prototype space fighter, to continue.

⁵⁵ United Nations, "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies (1967)," [Outer Space Treaty], dated 10 October 1967.

⁵⁶ "The Technology of War: Modern Weapons and Weapon Systems: Rockets and Missile Systems: Strategic Missiles: Ballistic Missiles: Ballistic Missile Defense," Britannica Online, Internet Site: <http://www.eb.com:180/cgi-bin/g?DocF=macro/5006/58/75.html>.

The Anti-Ballistic Missile (ABM) Treaty that the U.S. signed with Russia in New York in September 1997 has been one of the hallmarks of President Clinton's Administration. Clearly designed to prevent future U.S. development of Anti-Ballistic Missiles, despite the strong desire of the Republican Party to do so (as witnessed by their Defend America Act legislation,) the treaty has yet to be ratified by both countries. This treaty is the subject of considerable debate within the U.S. government, since it reinforces the provisions of the 1972 ABM Treaty. It also negates the argument that the 1972 Treaty no longer is valid because it is between the U.S. and the Soviet Union, a government that no longer exists.

As discussed earlier in this paper, the U.S. military is not currently prepared to conduct conflict in space, however if the initiatives expressed in USSPACECOM's Long Range Plan mature according to the blueprint in that document, it is clear that the U.S. will possess a formidable array of weapons, with which to conduct Control of Space operations. While the U.S. public appears to have decided that it is not prepared to support the Ballistic Missile Defence aspects of the control of space, this could change in future if there is a perceived pressing threat to the United States. As more of the public becomes dependent upon products that rely on a space segment, that sense of threat could noticeably increase. Finally, in the United States, the leadership is either renewed or changed every four years (or earlier) and the current leader's decision to reject the Ballistic Missile Defence control of space segment is therefore subject to change in literally a heartbeat.

The USSPACECOM's Long Range Plan calls for space weapon platforms is a clear violation of both the 1992 ABM Treaty and the more recent draft ABM Treaty signed (but not ratified) by the U.S. and Russia. As Ambassador David Smith noted in testimony before the U.S. Congress Subcommittee on Strategic Forces: "[o]ne U.S. program, Space Based Laser,

would be preemptively (sic) prohibited, as would anything else that can intercept a theatre ballistic missile from space.” In fact, according to Ambassador Smith; “the ABM Treaty as it stands today will block even the most modest National Missile Defense.”⁵⁷

USSPACECOM recognizes this fact. In a section of the plan entitled “Out of Our Lane (Policies, Treaties and Agreements),” the LRP specifically calls for a review of the ABM Treaty and changes that will allow Ballistic Missile Defence.”⁵⁸ In an interview, the former CINC SPACECOM expressed the opinion that the U.S. military could not assume that space would be preserved for exclusively peaceful purposes and that the Long Range Plan would provide a commander with a way in which to respond to foreign aggression against American satellites.⁵⁹ Others do not see the Long Range Plan as simply a retaliatory program that responds to aggression. After visiting National Security Day at the U.S. Space Foundation’s Space Symposium, Loring Wirbel wrote in the Engineering Times that: “[t]he United States now claims for itself the sole right to determine uses of space by all nations, and is arguing for the sole right to monitor the global use of imaging and listening satellites from space. The Space Command has asked that space now be declared its own geographical ‘area of responsibility’ and that planetary space be managed solely by the U.S. military. This flies in the face of the 1967 Outer Space Treaty.”⁶⁰

It is reasonable to assume that the U.S. will prepare itself for power projection in space because it will feel compelled to protect the safety of its vital space assets. As the LRP notes:

⁵⁷ David J. Smith, Testimony before the Subcommittee on Strategic Forces, Committee on Armed Services, United States Senate, 24 March 1998.

⁵⁸ Long Range Plan 138.

⁵⁹ Robert Burns, “Military Says Space is ‘Ultimate High Ground’,” Rocky Mountain News, 13 May 1997.

⁶⁰ Loring Wirbel, “Design: Full-spectrum dominance,” Electronic Engineering Times, 14 April 1997, 54.

“[p]rotecting the U.S. interests in space is critical to our economic, informational, and military welfare. Although the notion of space as a sanctuary appears seductive to many, our increasing reliance on space systems, and information derived from space, creates a *center of gravity* potential adversaries clearly understand.”⁶¹ Any attempt to coerce the U.S. into not preparing for conflict in space is unlikely to succeed indefinitely. At some point in the future the economic, military and personality issues will combine to move the U.S. into militarising space. In any case, with the collapse of the Soviet Union, there is no country capable of exerting the necessary military leverage to make coercion effective. Forcing either a friend or an enemy to follow a particular course of action is rarely a wise choice in any case, since it is difficult to maintain the necessary level of pressure to sustain unwilling compliance. A far better strategy than coercion would be to gain the U.S.’ willing compliance.

The U.S. is pursuing its program of space dominance and control in order to protect its space assets and deny future enemies the use of their space assets. If the U.S. cannot achieve these goals within the bounds of space treaties then it may act unilaterally and ignore the treaties in order to protect its vital national interest, in the same way that nations have ignored other treaties in past. An alternative to this, however, may be to exploit the current system of using the U.N. to authorise the use of force, against a nation in space. The current system of using U.N. resolutions, backed by force, to embargo nations or even authorise the use of force, as has occurred in the Gulf, Haiti and Bosnia, could be applied to space. In short, it could be possible to create space law in the U.N. that would authorise a nation, specifically the U.S., to act like a global space cop when necessary, but censure the unilateral use of force. Good space law could provide some fair “rules of the space road” that might reduce the need for nations to resort to

⁶¹ Long Range Plan 33.

force in the first place. While these measures would not absolutely prevent nations or groups from using force in space, it would serve to provide a legal framework for the controlled use of force in space and the opportunity for the world's nations to collectively censure unsanctioned force. It would also put in place a legal foundation for future multi-national control of space, should other nations join the U.S. as space powers. Such law could provide the mechanism for sharing the responsibilities for policing space in an agreed manner.

A ROLE FOR THE UNITED NATIONS

The U.N. already has a structure capable of addressing these issues. The United Nations has a Committee on Peaceful Uses of Outer Space that concluded its forty-first session in Vienna on 12 June 1998. The expressed aim of that conference was to: “promote the utilization of space technology and its application to assist in solving global or regional problems in the twenty-first century.”⁶² This committee has been the world's lead agency in the creation of space law and could serve as the vehicle for managing these important issues.

Malta has proposed an interesting concept within the United Nations. Its suggestion is that the Trusteeship Council, originally established to oversee the independence of the Trust Territories administered by former colonial powers, takes over responsibility for the “global commons.” The global commons are those areas considered to be humanity's common heritage and include the sea, the sea-bed, and space.⁶³ Threats to commerce in space could then be

⁶² M2 PressWIRE, “UN: Committee on Peaceful Uses of Outer Space concludes forty-first session,” M2 Communications, Ltd, 15 June 1998.

⁶³ Jayal Dayal, “United Nations: U.N. May Lose Its Only Body of Trust,” Inter Press Service English News Wire, 24 Nov 1995.

addressed through the Trusteeship Council, which could, perhaps in concert with the Security Council, authorise various measures, up to and including force, to resolve complaints.

Arguably, the best course of action for all nations is to bind the U.S. to Space Law that supports not just its own interests, but also those of the smaller nations of the world. It could be possible, and highly desirable, to make the U.S. the protector of the rights conveyed under this Space Law in a manner similar to the way that NATO relied on the U.S. to defend Western Europe after the World War II. Through its NATO participation the United States has established that it is prepared to take on such a role in concert with allies. It was in this role of protector that the U.S. used the UN Security Council resolutions to assemble a coalition to remove Iraq from Kuwait. It may be argued that the U.S. tends to exercise this role of protector only when its own interests are threatened. It can be equally argued that it will do so in any case and that it is far better to have the U.S. actions tempered by a coalition, rather than left unfettered by the need for consensus building.

SUMMARY AND CONCLUSIONS

From the launch of the first Sputnik into orbit, space has grown tremendously in economic and military importance. That growth appears certain to continue into the foreseeable future, creating new economic opportunities across a host of applications. Global communications and commerce may become inextricably wedded to space platforms in order to conduct their business. At the same time, the U.S. and other militaries have become reliant on the advantage that the view from this new high ground gives, a view that they may be unwilling to share with an adversary. Reliance on this advantage has also created vulnerabilities that must be defended.

USSPACECOM is preparing to provide that defence to the U.S. and its allies through an ambitious program of U.S. dominated space control. Many elements of that program have been funded and testing is about to begin on ground and airborne anti-satellite lasers, while new anti-ballistic missile programs vie for funding among the branches of the U.S. government. If allowed to continue, one or more of the programs underway or proposed in USSPACECOM's Long Range Plan will violate the 1967 Outer Space Treaty which is designed to prevent weapons from being stationed or tested in space. This in turn will mean that the U.S. will be in a position to act as the sole gatekeeper of space, potentially to the detriment of other nations.

The U.S. will likely continue its programs to control space because it perceives a need to defend itself. Rather than make a possibly unsuccessful attempt to prevent this from occurring, the U.N. could use its Committee on Peaceful Uses of Outer Space to accelerate the creation of space law. Such law could protect the rights of all nations in space, while providing a mechanism for the airing of legitimate complaints of unfair space practices. In addition, to assuage U.S. concerns of defending its space assets, space law could provide for the use of force in space, but only after the world community has had the opportunity to review the situation and then authorise such use of force. While not ideal, this would be preferable to having a single nation unilaterally control space.

In this way, perhaps, it will be possible to maintain the Outer Space Treaty's promise to keep space as an unfenced global commons, to be used for the benefit of all nations.

ANNOTATED LIST OF WORKS CITED

Bender, Bryan. "US resolution to protect satellite imagery of Israel." Jane's Defense Weekly 2 September 1998. This article covers a recent U.S. government decision to restrict civilian companies in the U.S. from distributing some satellite images.

Blainey, Geoffrey. The Causes of War. London: The MacMillan Press Ltd, 1973. The author of this book professes to have studied all of the wars since 1700 in this book but the analysis he provides is difficult to extract.

Blevis, B.C. "Space Technology." The Canadian Encyclopedia. 1998 ed. An excellent reference, this and the other articles in the Canadian Encyclopedia provide a uniquely Canadian slant on topical issues.

Burns, Robert. "Military Says Space is 'Ultimate High Ground'." Rocky Mountain News 13 May 1997. Burns covers some of the issues raised in the USSPACECOM Long Range Plan, including quotes from interviews with several subject matter experts.

Cirincione, Joseph. "Why the Right Lost the Missile Defense Debate." The Carnegie Endowment for International Peace, 2 March 1997. Clearly a vested interest article, Cirincione nevertheless does a good job of laying out the political agenda that went into and followed the Republican attempt to embarrass the Clinton Administration on Ballistic Missile Defense.

Covault, Craig. "Secret Relay, Lacrosse NRO Spacecraft Revealed." Aviation Week & Space Technology 23 March 1998. This somewhat technical article covers aspects of a previously top secret satellite program.

Darragh, Ian, Godby E.A., and Ryerson, R.A. "Remote Sensing." The Canadian Encyclopedia. 1998 ed. This is yet another good example of the Canadian coverage that this Encyclopedia provides.

Dayal, Jayal. "United Nations: U.N. May Lose Its Only Body of Trust." Inter Press Service English News Wire, 24 Nov 1995. A marginally interesting article covering the UN Trusteeship Council.

Ellery, Reginald S. "Frustration and Aggression in Relation to War." Paths to Peace. Ed. Victor H. Wallace. London: Cambridge UP, 1958. One of several articles in this book, the author delves into the issues of why the disenfranchised go to war.

Emery, Frederick E. "Economic Conflicts in Relation to War." Paths to Peace. Ed. Victor H. Wallace. London: Cambridge UP, 1958. Another essay in an interesting book, the author explores the economic reasons for warfare.

Evans, John V. "New Satellites for Personal Communications." Scientific American April 1998. This article covers the new series of Low Earth Orbit satellites that will provide surface to satellite communications services starting in 1998.

Farmer, Mark and Vizard, Frank. "Sabers of Light." Popular Science. September 1998. This article would be easy to dismiss as a work of fantasy, if not supported by other recent news

releases and magazine articles. The article specifically covers surface and airborne anti-satellite lasers as well as “space fighters.”

Graham, William R. Testimony before the Senate Committee on Armed Services 24 March 1998. “FY99 Defense Budget: Ballistic Missile Defense.” Federal Document Clearing House, Inc, 1998. Congressional testimony that covers the issue of BMD over the decades.

Gronlund, Lisbeth and Wright, David. “Missile Defence: The Sequel.” Vol. 100 Technology Review 15 May 1997. A very interesting article that debunks the Republican push for a missile system of ABM defence.

M2 PressWIRE. “UN: Committee on Peaceful Uses of Outer Space concludes forty-first session.” M2 Communications, Ltd, 15 June 1998. A standard issue press release following the conclusion of the 41st session of the Committee, is captures the highlights of what was probably the committee’s final communiqué.

McCoubrey, D.J., et al. Space Indoctrination Handbook. 5th ed. Winnipeg: Canadian Forces School of Aerospace Studies, August 1996. A very useful primer on space, this booklet covers the gamut of space related topics.

McLean, Alasdair. Western European Military Space Policy. Aldershot: Dartmouth Publishing Company Limited, 1992. Interesting primarily because of the lack of information in English on European space programs, this book makes a useful counterpoint to the publications that exclusively cover the U.S. space programs.

Norton, Henry Kittredge. Back of War. New York: Doubleday, Doran & Co., 1928. Written as it was between the First and Second World Wars, this book’s descriptions of unfair trade practices and events that the author attributes as the roots of conflict can’t help but force comparisons to current events.

Seigle, Greg. “US work to fix THAAD problems enters overdrive.” Jane’s Defense Weekly 14 October 1998. The author reviews the difficulties of the U.S. Theatre High-Altitude Area Defense missile system program.

Shonfeld, Eric. “The Space Business Heats Up There is a New Breed of Entrepreneurs Who Think of Space Less as a Scientific Frontier Than as a Place to Make Money.” Fortune 24 November 1997. Shonfeld provides a review of some of the latest business venture planned for space in the coming years.

Sweetman, Bill. “Spy satellites: the next leap forward.” Jane’s International Defense Review 1 (1997). Clearly not a fan of the current U.S. satellite program, Sweetman covers the whole range of U.S. satellite imagery policy.

“Telesat to Help Build, Operate New African Satellite Network.” Business Wire 01-13-1998. This news release describes how Telesat Canada recently was awarded a substantial contract to build and operate the New African Satellite Network. Canadian stock market watchers might be especially interested.

- United Nations, Administrative Committee on Coordination. "ACC Statement on Universal Access to Basic Communication and Information Services." Internet URL: <http://www.itu.int/acc/rtc/acc-rep.html>. This site covers the work that the International Telecommunications Union is completing for the UN in regards to writing a kind of charter of rights for world-wide access to communications, and by extension, information.
- United States Air Force. Space Handbook A War Fighters Guide to Space. 2 vols. Maxwell Air Force Base: Air UP, December 1993. Vol. 1. An interesting glimpse into what will become U.S. space doctrine in a few years after the issues covered in this pamphlet have time to mature and be tested.
- United States of America, Department of Defense. "Ballistic Missile Defense Programs." Internet URL: <http://www.acq.osd.mil/bmdo/bmdolink/html/programs.html>. This URL will take the Internet surfer to the Ballistic Missile Defense Program site which describes the BMD program and offers links to related sites.
- United States Space Command. Long Range Plan. Peterson AFB: USSPACECOM Director of Plans, March 1998. For non-Americans this is perhaps one of the most frightening documents to emerge in some time. The booklet is the blueprint for how USSPACECOM intends to become the virtual ruler of space.
- US Military Space Programmes in 1998." Jane's Defense Weekly 26 August 1998. Written by some of Jane's authors who are not huge fans of the U.S. space program, this article covers several topical issues in that program.
- Wirbel, Loring. "Design: Full-spectrum dominance." Electronic Engineering Times 14 April 1997. Clearly not happy with USSPACECOM's Long Range Plan, Wirbel provides his view of both the plan and what he heard at a U.S. Space Foundation Space Symposium held in April 1997.