

Why Space Power?

Michel-Alexandre Cardin
International Space University
France

Abstract

Space power will probably become a reality in the very near future. In this paper, we present futuristic events that may arise from such military initiative. We also raise issues and questions related to possible impacts of space power on future human societies and peaceful uses of space. We also question the benefit and relevancy of space power at a time where problems such as terrorism, climate change, and distribution of resources seem to be predominant.

Introduction

Space weapons have been part of the space defense programs of the United States of America and former USSR/Russia since the beginning of the space age in the 1950s.¹ Originally, both countries invested massively in anti-satellite (ASAT) technologies. They however soon recognized that these weapons were not in either state's best interest, especially with regards to surveillance of arms control agreements and national security issues. For that reason, the last forty years have seen both the United States and Soviet Union/Russia slowing down the development of space weapons. This was done in each country respectively through a series of congressional bans and voluntary moratoria on ASAT testing.

A recent report of the Commission to Assess United States National Security Space Management and Organization, chaired by Donald Rumsfeld in January 2001, may revive the interest of the Bush administration in ASAT programs.² The report stressed notions of defensive space operations and endorsed the concept of "space control", which enables a nation to deny satel-

lite threats and access to space to hostile groups or countries. It also called for the urgent development of new ASAT technologies.

In this paper, we address issues related to the development of space weapons from the perspective of their possible impact on future human societies and peaceful uses of space. To this end we present a set of future events that could result from such military initiative, and raise a non-exhaustive set of questions and issues related to it.

The paper is organized as follows. Section 2 gives a brief overview of the main activities in the area of space weaponization. It defines what a space weapon is and describes various types of space weapons as well as the rationale and motivation for their development. Section 3 presents future events resulting from space weaponization. To this end a series of news reports in various countries are presented. The purpose of this method is to show eventual situations that could arise from this military use of space. Section 4 concludes with a series of questions and issues related to the necessity and impact of space weapons upon future generations and peaceful uses of space.

Background

What is a Space Weapon?

Finding the proper definition of a weapon is a difficult task. A knife, depending on the environment and its intended use, can either be considered as a simple tool, or as a very dangerous arm. In this paper, a space weapon is defined as such through its intended purpose and use. It is a space system that can be either used for defensive and force application purposes.

Space Militarization vs. Weaponization

The concept of space weaponization is fundamentally different from space militarization. One can consider, for instance, that space has already been militarized. Space militarization consists in sending assets into space to allow, through positioning, targeting, and tracking, the conduction and coordination of a battle. The first Persian Gulf War is known in that respect as the first "space war". Operations in Afghanistan, and the more recent operation Iraqi Freedom are also known as such type of wars. On the other hand, space weaponization is often referred to as the capability of directing a physical battle from and into space. This is done through the use of defensive and offensive space weapons.

The Rationale for Space Weaponization

There are multiple reasons why a country would want to weaponize space. The primary reason, as quoted by Lt. Clinton R. Clark from the U.S. Air Force,³ "would be to protect space systems representing true 'national interests'." National security and international commerce would certainly top the list of interests to protect with defensive space weapons. Having your national interests thus protected by defensive space weapons could provide a nation with additional political leverage in international relationships.⁴ Space power can also be useful for space control,⁴ which incorporates denying access to space to hostile groups or nations. Another evolutionary argument is that since every environment (land, ocean, air) has become an arena of combat in human's history,

it is inevitable that space will become just such a battlefield.⁵

Types of Space Weapons

As far as publicly available information is concerned, space weapons can be separated into two different classes.⁶ Most of the weapons of both classes can be used for defensive and force application purposes. They are designed and can be used for targets located either in space or on Earth. The first class is made of directed energy weapons (DEW). Examples of DEWs are lasers, radio frequency, and particle beam weapons. The second class is made of direct impact weapons (DIW). Examples of DIWs can be kinetic energy and co-orbital weapons (e.g., inert rods launched from orbit, missiles, etc.), space mines, common aero vehicles (vehicle launched from orbit that can slowly decelerate and dispense ammunitions near the surface of the Earth), micro-satellites, as well as satellite degradation and disabling device.

A Space Defense System

As mentioned above, there is a great probability that weapons will be launched into space in the near future. The scenario below presents futuristic excerpts from media news in countries where deployment of space weapons might occur. This scenario does not aim at predicting the future but rather to present a series of possible events that could arise from space weaponization.

February 1st, 2005. The Washington Post:

The newly re-elected president George W. Bush announced today the beginning of the largest military program ever conceived. Officials mentioned after the announcement that the new space defense program is designed to protect American people from the lone terrorist to the global peer competitor. It is also developed to defend existing space assets considered as vital to national security. Non-official sources stated that this program emerges as a response to the growing Chinese space defense program, and will require considerable increases in the annual budget of the U.S. military. The deployment should be completed and operational in 10 to 15 years from now.⁷

February 3rd, 2005. The Washington Post:

Immediate response to the U.S. space defense program: President Vladimir Putin said yesterday evening in an allocution that Russia would never accept one state to govern alone and grant privileges of outer space to other nations. Invoking the protection of their own space assets and national security issues, Mr. Putin stated that Russia would immediately deploy space armaments, and resuscitate defense programs dating from the post cold-war era.⁸ Although initially opposed to the deployment of weapons into space along with the government of China, Mr. Putin criticized the Bush administration, mentioning that it had severely underestimated Russia's military capabilities in its decision.

March 1st, 2005. Al Jazeera News Network:

Reporters confirm that the video tape found two weeks ago has indeed been created by Mohamed bin Laden, one of the sons of the most famous terrorists of all times. This video captures activities in mujahideen training camps, probably in Afghanistan.

March 10th, 2005. The Globe and Mail:

In order to fill technological and financial gaps with respect to the U.S. space defense program, governments of Russia and China announced today a long-term plan to cooperate in the development of a new generation of ASAT systems. Officials justified the decision through a mutual desire to protect existing space assets and ensure security of both countries.

May 9th, 2005. CNN News Report:

After more than two months of indecision, representatives of the European Union finally presented to the public a plan to cooperate into the deployment of a U.S.-led space defense system. Officials however clearly specified that Europe would retain full control and independence of their military equipment for strategic reasons. Later on in the afternoon, governments of India and Pakistan also reported an agreement to combine efforts in the creation and development of a joint space defense system. This event happens about two years after a long period of tension between the two countries with regards to their respective nuclear

programs and diverging interests over the region of Jammu and Kashmir.

September 10th, 2005. Le Devoir:

U.S. demand for an eventual participation of Japan in a global space defense system has been refused. Prime Minister Junichiro Koizumi declined the invitation, invoking a desire to limit Japanese military budgets to the boundaries defined nearly fifty years ago. Non-official sources stated that Japan does not wish to be involved in what they consider to be a "new cold war". They have however agreed to send a group of scientists to the United States to help in technological progresses.

April 2nd, 2007. CNN News Report:

More than two years after the beginning of what is now commonly called the space war, U.S. Department of Defense announced that it has successfully tested the first "kinetic-kill" space weapon. The military systems of the new Space Force were able to destroy a target at the Maehyang-Ri training site in South Korea⁹ by launching a "guided rod" from orbit. Thousands of people have gathered in Seoul to protest against the new role assigned to the military base.

May 3rd, 2007. CNN News Report:

Our reporters were informed in the last hour that Chinese military, assisted by Russian specialists, successfully tested a new generation of ASAT weapons. Anonymous sources stated that the missile is similar to the new generation of Air-Launched Miniature Vehicle (ALMV) currently being developed by the U.S. Space Force. Spying activities from the Russian and Chinese governments are not excluded.

October 23rd, 2007. National Post:

U.S. Attorney General J. Ashcroft warned citizens of the United States and Canada that potential attacks might occur within the next few days on North American targets. Officials from the U.S. Department of Homeland Security motivated the warning by stating a sudden increase in transatlantic communications between suspected terrorist cells on both sides of the ocean. Security levels have been increased to orange (high), one level below the highest possible one.

January 27th, 2008. USA Today:

The 40th edition of the SuperBowl will remain in the memories of the nation for all times. Today, we mourn the lost of thousands of American fellows who perished yesterday in what is now considered the largest terrorist attack in the history of the United States. The exact number of casualties has not yet been established. It has been confirmed twelve hours ago that members of the Al-Qaeda network have organized the attack, accomplished by one sole kamikaze. In its last year at the White House, outraged President Bush stated in the most aggressive words that those responsible for such action would be pursued and punished until justice is done.

March 25th, 2008. CNN Weather Report:

For most eastern coastal states and provinces of the United States and Canada, we forecast for today and tomorrow a low of -18°F (-25°C) and a high of 2°F (-15°C).

July 2nd, 2009. Moskovskii Komsomolets:

President A. Fedorov warned the nation today about the necessity to train our families and children about the safety and emergency techniques dating from the cold-war era. It was mentioned that due to increasing activity in space defense systems at a global level, any outcome is to be expected. The President was insisting on the prevention aspects of such measures. He was however unable to calm the obvious disturbance created by his warning.

February 26th, 2012. CNN Weather Report:

The last four winters are the coldest ones to be observed since the last two centuries on the eastern coast of North America. Western European countries are affected by similar problems. Scientists around the world are still debating about the origins of this peculiar climatic change, but thermohaline circulation is apparently the most influential factor to be involved.

December 1st, 2016. North American Horizons:

Three months after the suicide attacks in a shopping center in suburban Chicago, the streets of Washington D.C. are once again invaded by hundreds of thousands of protesters. People strongly expressed their dissatisfaction with regards to what they now call the

"space waste". Reporters mentioned that people are upset and distressed about the inefficiency of what has been promised nearly 10 years ago as the "new era of national security". We quote here Chicago resident John Ailey: "They've invested trillions of our money in what they promised to be the most efficient defense system. Now we count our victims of terrorism by thousands every four or five years... What happened here? Why can't we live safe and peacefully anymore? We feel the real issues haven't been addressed for ages in this country!" Officials from the U.S. Department of Defense did not comment today's events.

October 13th, 2018 (1021 EST). USA Top Highlights:

ESA Headquarter, Paris - Communication with the European space shuttle Solaris has been interrupted for the last 45 minutes. Radio signals have suddenly been cut off after penetration of the vehicle in low Earth orbit. More details will be provided within the next two hours.

October 13th, 2018 (1203 EST). USA Top Highlights:

ESA Headquarter, Paris - Preliminary information shows that the European space shuttle Solaris has been destroyed by an Indian/Pakistani ASAT system. The vehicle was mistakenly struck during ascension into low Earth orbit, killing all six crewmembers.

October 13th, 2018 (2234 CEST). Paris Flash News:

Governments of India and Pakistan present apologies to the families of the six crewmembers accidentally killed in the ES-22 mission of the European space shuttle Solaris. Unofficial sources stated that the accident is due to a lack of communication and coordination between the many space defense system operators around the planet. Complexity of military operations resulted in a misidentification of the European shuttle as a hostile de-orbiting satellite. Mission ES-22 was related to the study of the effects of microgravity on infant bodies. French infant-astronaut Denis Fichaud, 6 years old, is among the casualties. ESA's response to Indian/Pakistani apologies is still awaited.

July 17th, 2035. Paris Flash News:

A recent report shows that the GNP of most western countries has been depleted by more than 25% since the last three decades. Scientists and business professionals seem to agree that the thermohaline circulation, which is responsible for the abrupt change in climate observed about twenty years ago,¹⁰ is the greatest actor in the difficulties encountered by most Western economies. Cuts have been reported in most national budgets, especially in the defense and technology development sectors.

January 1st, 2050. Pan-Asian Holographia Network:

U.S. President Ann L. Jamieson offered its apologies to the citizens of Australia and Oceania. About 5 months after a similar accident in the South American city Brasilia, an unidentified projectile appeared in the sky at about 4am (AEDT) and destroyed a large inhabited area close to the city of Melbourne. At present time, the number of victims has not been established, but preliminary data only report a few injuries. Anonymous sources among the administration of the former superpower have mentioned that old "relics" from the space war might have caused the accident. Some sources stated that military cuts have forced de-orbitation of old space defense systems into the ocean since the last five years. Such actions are similar to those taken for U.S. Skylab and USSR/Russia Mir station at the end of the 20th/beginning of the 21st century.^{11,12,13} A failure in the auto-destruction system of the old military device prior to re-entry in the atmosphere is the most likely cause for the accident.

March 21st, 2050. Pan-Asian Holographia Network:

Rumors among the media circle mentioned the possibility of a great event for tomorrow at the General Assembly of the United Nations. Most of the representatives of the main space powers across the world have arrived tonight in the city. Everything seems to indicate that an extraordinary session of the Assembly is currently under preparation.

April 9th, 2050. Pan-Asian Holographia Network:

Today is probably one of the greatest days in the history of the space age. Peoples all

around the world are united for the event that will consecrate space as a peaceful sanctuary for all times. The intensity of the event is reminiscent of the first Moonwalk of the American astronaut Neil Armstrong 81 years ago. The General Assembly of the United Nations has agreed on a draft for what is to become the very first Space Weapon treaty. All countries of the world, including the main space powers, have already confirmed their intention to ratify the final version of the treaty without conditions. The first Space Weapon treaty bans the presence of any kind of weapon, instrument, or spacecraft that could potentially be used for military purposes in space and from space. As a complement to the Outer Space Treaty that entered into force in 1967, the convention recognizes the common interest of mankind in the progress of the exploration and use of outer space for peaceful purposes.¹⁴ The treaty dedicates space as a "symbol demonstrating the will and capability of humans to cooperate in peace under mutual respect and understanding," for all generations to come.

What is the Future of Space?

The scenario outlined in the previous section may appear obvious for some readers, while rather chilling and probably unrealistic to some others. However, nobody can guarantee that it may never happen. Also, one must not forget that the possible events presented here have not yet occurred. One of your relative's futures may be directly linked some day to space power, whether it is bad or good. As alternative futures, there are possibilities that space weapons might save your life and the ones of others by dissuading a terrorist action or by preventing an open war between two economically strong countries. Space weapons might even be useful one day to protect our planet from a collision with a near-Earth asteroid.^{15,16} For other interesting alternative futures that may arise if space is not weaponized, the reader is referred to the ones presented by S.P. Worden and J.E. Shaw from the US Air Force Space Command Center.¹⁷

Moreover, there is a possibility that no action will be taken by any space-faring nation after one country's initiative to deploy space weapon systems. This must, however, not distract the reader from alternative futures that are even more unpredictable and that may impact just as well space-faring nations' economies and ability to maintain space assets. In that respect, events linked to the environment and climatic change, as depicted in the above scenario, have to be considered seriously. It is our responsibility, citizens of all nations, to decide whether space power is necessary or not.

Finally, this paper is not specifically addressed to decision-makers who often have to decide at high levels of responsibility and technicality, nor the military. It also does not aim at discussing whether space weapons are technologically feasible or not. This paper is rather addressed to those who put decision-makers into power, to those who vote for the political leaders who will decide whether space power is required in the future. These people must not forget that they are responsible for their own lives and the ones of the generations to come. They are also responsible for evaluating the need for space power based on their personal values and experiences.

We would like at this point to raise the following questions and issues regarding the future of space power. We wish to ask readers, from the space dreamer to the space military, to consider them according to their personal beliefs.

About National Security

From the viewpoint of national security, we wish to demand if the futures depicted above are the ones we desire for our children and for us. Is it possible or not to envision a world that can sustain itself politically without involving space power? Can pro-active diplomacy be helpful in any ways to prevent any eventual confrontations that would derive from space weaponization? Is it realistic to believe that one day such confrontation may even arise? Also, one can seriously question the fact that space defense systems are going to provide security "from the lone terrorist to the global peer com-

petitor," as stated by S. P. Worden and J. E. Shaw from the US Air Force Space Command Center in their work on space power.¹⁸ Especially when one considers that current threats are more to be expected nowadays from the lone terrorist than from any hostile international superpower. Is it worth in this case investing trillions of dollars and endure a possible arm race to see if space power can really offer protection at all scales? Are there any other areas where efforts can be invested to provide such security?

About International Policy and Diplomacy

It is a matter of fact that the main economical powers of the planet already have enough political and military leverage to make sure that any state complies with their demands. Is space power really necessary in addition to an already clear economical and political hegemony from most space-faring nations? Is it instead required to demonstrate military power beyond challenge through space?¹⁹ Is space power a visionary initiative, or is it a shortsighted and troublesome project, considering the many possible unpredictable events (climatic, political, economical, etc.) that may arise after its realization?

About Science and Peaceful Uses of Space

From a scientific and economical point of view, space weapons might seriously jeopardize and endanger the scientific developments, commercial and peaceful uses of space. Space battles might also contribute in worsening the problems related to space debris, making space excursions even more dangerous.²⁰ Is it desirable to put that area of human knowledge at risk? Should we protect space and leave it as it was for the last forty years, so it can still be used for peaceful scientific and communication purposes, or should we not? The need to protect space assets as mentioned by Lt. C. R. Clark in Section 2 is certainly debatable at best. Is it however worth enough to endanger every

other areas of space exploration? It is also possible that space power might one day lead to the protection of the human race from any collision with a near-Earth object. Do we want this to be just a technical spin-off from a military project, where we will have to deal with the political consequences it may raise, or do we want this to occur from a concerted, and agreed civilian effort to protect our planet?

About our Lessons from the Past

On another mindset, considering the new threats of climatic change, and eventually abrupt climate change, one can sincerely wonder if today's war-faring nations will have strong enough economies in twenty-five or even a hundred years to support and maintain their military assets into space. There is a finite probability that such initiative may turn into catastrophes, as presented in Section 3. Would we wish our leaders to take the historical opportunity of humans into space to change our past history and avoid transforming space into just another battlefield, or do we wish to follow our predecessors who have transformed every terrestrial media in such a way? Would we want them to be responsible and considerate of the possible consequences of their decisions before we have to deal with their effects?

In Section 3, we propose that another arm race will likely emerge after one country's decision to weaponize space. Following our lessons from the Cold War, a global treaty on space weapons will probably emerge at the end of such arm race, if at least two countries or coalitions are able to offer sufficient competition. Hence, would it be realistic and convenient to create and ratify today the first treaty on Space Weapons, as depicted in the scenario, or would it not? Could it possibly avoid years of political confrontations and insecurity if such treaty is to be ratified in any cases?

Conclusion

In this paper, we have briefly presented the history of ASAT programs, the various types of space weapons, as well as the main motiva-

tions for launching them into space. We have presented possible future events resulting from their deployment into space. We have also questioned the benefit for future societies and peaceful uses of space from such military initiative.

We do not assume that deploying space weapons, without the current political context, could lead to such events. We believe that their deployment, in a time where the world is broken into multiple civilizations and cultures,²¹ could certainly result in such multi-polar events. We have also voluntarily restricted the scope of our topic to space power, realizing that other issues below the atmosphere can certainly contribute in destabilizing the current fragile political climate on the planet. Needless is to say that problems related to terrorism, climate change, and distribution of resources require other solutions that are not necessarily related to space power. For this, we require a long-term vision from our political leaders. We believe that avoiding space power can however help them in preventing a worldwide political conflict that would worsen issues linked to these problems. It may also protect space for the nations who wish to benefit from it in a peaceful manner. There is a definite possibility that space power may lead to a totally, perhaps peaceful future for space. This will however only be confirmed in the years to come.

It is often argued in the military world that war and competition are part of human beings, and that because of this they shall always be present through the future of mankind. We would like to mention that there are also multiple historical events that show how humans have been able to cooperate peacefully under mutual respect. The International Space Station is just one example, and the treaty on Antarctica is another one. For this reason, we would like to protect outer space from becoming just another trivial battlefield. We hope it remains for all times an example of human cooperation and peace, so that future generations and historians can one day refer to it as the "space exception".

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Correspondence

University of Toronto Institute for Aerospace Studies
4925 Dufferin Street,
Toronto, Ontario,
Canada.
M3H 5T6
macardin@hotmail.com

International Space University
Strasbourg Central Campus
Parc d'Innovation
1 rue Jean-Dominique Cassini
67400 Illkirch-Graffenstaden
France

Notes

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