

# What are Possible Conflict Termination Criteria that Define Winning the Next Space War

Paul S. Szymanski

**Abstract**—The importance of outer space satellites and their supporting systems cannot be overstated. Their use in the civil, commercial and military worlds to provide communications, weather, navigation, timing, warning and Earth resources monitoring provides major advantages to those who employ the information generated by these systems. However, due to the global reach of these space systems, advantages are provided to both friendly and adversary militaries. Beginning with the use of space systems to support military operations during the Arab-Israeli conflicts, and in Desert Storm, both major and minor players are considering how denial of space capabilities to their adversaries will be a force multiplier on terrestrial battlefields.

As with most military planning, we fight the last wars that we understand well. That is probably the biggest problem outer space warfighters have in conceptualizing how a future conflict might play out. We just have not had that much experience in true space warfare. This makes it very difficult to predict how such combat will actually occur. Much as the concepts of air power were being developed in the 1920's-30's, the true power of space warfare is currently not well understood. To help solve these strategic issues, the author, based on his 46 years' experience in missile and space warfare, has determined possible criteria that would define "winning" or at least "terminating" the next space war. This is a difficult area to study because traditional terrestrial criteria for peace may involve returning territory, Prisoners of War, and economic restitution, but these do not necessarily apply to space warfare. This briefing will discuss these possible termination criteria, which are so important to define before any military space operations commence, or any military space war goals are defined (in accordance with Joint Publication 5-0, "Joint Operation Planning").

**Keywords** — Space military warfare theory, space military doctrine, space policy, how to fight and win the next space war, doctrine, strategies, tactics, space weapons, battle management, Space Domain Awareness (SDA), Space Situational Awareness (SSA), Space Resilience.

## I. INTRODUCTION

The future of outer space warfare is rapidly approaching. There is significant buildup of space warfare capabilities by some major countries who rely on space systems for their defense or perceive that their potential adversaries depend too much on space capabilities to conduct terrestrial warfare. Because of the lack of significant experience by countries in this new military domain, it is difficult to fully understand what the best doctrine, strategies and tactics are to win the next space war. Based on the author's study of military history for the past 50 years, and his direct involvement with space warfare programs for the past 43 years, he has developed general rules by which the next space war will be conducted.

Due to the large distances (tens of thousands of kilometers) between the Earth and military satellites, it is difficult to track and fully image these systems to assess their abilities as potential threats to national security. In addition, very few countries possess the world-wide space surveillance assets to track movements of suspicious space objects that may be

maneuvering towards critical national assets. Even for those few countries that possess significant space sensor systems, it is very difficult to continuously track satellites that initiate their maneuvers in areas with no sensor coverage (such as Antarctica). A recent computer simulation by the author showed that 95% of possible space attacks could be completed within 24 hours, which is before any reactions on the ground can be contemplated, approved or completed. A conclusion of this simulation is that, due to the remoteness of space, countries that take actions against an adversary's satellites can do so under a cloud of secrecy, without the general population of the World becoming aware of these aggressive actions. Thus, space warfare adds new, and more subtle rungs on the conflict escalation ladder, where countries can express intent and resolve to their adversaries without necessarily inducing terrestrial conflict.

## II. POSSIBLE SPACE CONFLICT TERMINATION CRITERIA

The below is a partial list. See [Space Operational Art and Design \(SOAD\)](#) for a complete list.

1. *The balance of power in space between Red and Blue is sufficient to deter Red from any near-future space attacks for the next 10 years:*

Deterrence is always better than complete destruction of all military space capabilities. Especially since it is too difficult to find all adversary offensive capabilities in space.

2. *Red will and ability to continue fighting in space has been severely restricted:*

The definition and assessment of Red willingness to continue space attacks will be difficult to determine. This is particularly true due to the obscurity of space events. It is difficult to know with precision and certainty that satellite outages are attributable to adversary attacks, or natural phenomena. More than likely, small pin-prick attacks may still occur that test satellite defenses and response times, much like Cold-War airplane incursions in adversary territory tested air defenses.

3. *Red on-orbit military space assets supporting current conflict region (AOR) delta-v maneuvering capability reduced by 50%*

One of the major factors in space wars is satellite maneuverability. More than likely, quick military actions in space can only be accomplished by assets in the immediate target region or AOR. This makes orbital refueling depots and maintenance re-fueling satellites critical assets for space superiority.

4. *Red on-orbit ASAT (anti-satellite) capabilities reduced to 10% remainder (capabilities de-orbited):*

Possibly hard to verify, but at least shows the right adversary attitude if known ASAT's are eliminated.

5. *90% of Red space assets have been visited by Blue inspector satellites and verified in compliance:*

At least known adversary space assets can be directly viewed by allied inspector satellites. This may take too much fuel and resources for allied nations to conduct, and hidden adversary ASAT's will always be of concern.

6. *Red provides war reparations for Blue and Gray space systems degraded / destroyed:*

Reparations would include both space-based and terrestrial-based systems destroyed by adversary actions during the conflict. Blue may be reluctant to admit damage to hidden space assets, or reveal vulnerabilities of critical assets. These reparations can include Red assets handed over to Blue control, such as communications satellites that can be maneuvered to new, blue-optimized, orbital slots.

7. *Red develops program to clean up space debris caused by their military actions:*

Red may contract with commercial concerns to remove orbital debris in prime orbits, cause by Red military actions, or mistakes.

8. *Red surrenders some of their internationally-assigned geosynchronous orbital position slots:*

These orbital locations over key Earth regions are assigned by international bodies, and their loss would be a major blow to the losing side. This may also cause conflicts further down the road that enable adversaries to reclaim their lost "territory," much like territorial conflicts on Earth.

9. *Red deactivates / de-orbits all on-orbit space mines:*

De-orbiting is best for verification of loss of these assets. One can never be sure that a space weapon has been "deactivated." De-orbiting only really works for low Earth orbits, and is not practical for geosynchronous orbits. Sending a satellite into a graveyard geosynchronous orbit does not verify its deactivation, and may only be in sleeper mode, while allowing this potential asset to drift to new targets.

10. *Red does not approach any Blue critical satellites within 100 meters:*

This may be problematic, as many satellites and general space junk naturally orbit close to other satellites. It is also an issue on how will this be enforced. Does this allow the offended party to "shoot down" the offending satellite?

11. *Red does not initiate any new missile launch development programs for 5 years:*

Probably easier to verify with overhead space assets than verify whether an object already in space is an ASAT.

12. *Red required to place tracking beacons on all future launched satellites. Blue establishes declaratory policy to immediately neutralize any Red satellites without these tracking beacons for the next 10 years:*

An interesting concept for space traffic control and warning of potential ASAT's.

13. *Red national leader publicly declares his country will no longer pursue space weapon development programs:*

Useful, but not terribly verifiable.

14. *Blue and Allied forces achieve absolute control and authority over the orbital space near its satellites, including the ability to maintain freedom of action in, from, and to space, sufficient to sustain mission assurance and deny the same to the adversary and its Red allies during the terrestrial conflict. Space superiority may be localized in time and space, over the immediate AOR, or it may be broad and enduring:*

The definition of achieving space superiority, even for a small orbital space, awaits further doctrinal development. The vastness of space allows potential adversaries to create many surprise attacks on space forces that are lulled into thinking they have localized supremacy. Those that win many military battles learn less than those who are the losers of these very same battles.

15. *Blue and Allied space resources are positioned in key jump-off orbital locations (in accordance with future Blue space COA's), have sufficient fuel reserves, have on-board batteries fully charged, and appear to have avoided Red and their allies' space surveillance sensors detection:*

This is certainly an ideal that may be difficult to define or achieve.

### III. CONCLUSION

The future of outer space warfare is upon us, but the theory, doctrine, strategies and tactics are uncertain. A quote from Leon Trotsky is appropriate here: "*You may not be interested in war ... but war is interested in you.*" Whether you believe in outer space warfare, or are desperately trying to prevent it, conflicts in space will happen nevertheless, as space is way too important to remain a sanctuary while major military conflicts are raging on Earth. Space remains way too important to the ultimate outcome of the terrestrial battlefield and may indeed cause fewer casualties than extended conflicts on the ground.

Most importantly, before any major military conflict is initiated on the Earth, a smart adversary would position his space assets at key jumping-off points in space to better enable surprise attacks. If countries invest in Space Situational Awareness (SSA) sensor networks (RADAR and optical) on the ground and in space, then they can be pre-warned of impending space attacks, and then are presented with the opportunity to confront the adversary at the United Nations, and possibly prevent the ensuing terrestrial conflict.

I will leave you now with two more quotes:

1. General George S. Patton: "*If everyone is thinking alike, then somebody isn't thinking;*"
2. General Hugh Trenchard: "*The great captains are those who think out new methods and then put them into execution. Anybody can always use the old method.*"



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