

PUTTING CURRENT SPACE MILITARIZATION AND WEAPONIZATION DYNAMICS IN PERSPECTIVE: AN APPROACH TO SPACE SECURITY

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Self-interest drives all humanity. It drives commerce, science, technology and other forms of human advancement, as well as conflicts over resources, interests, opinions and so on. Military force structures are primarily extensions of these dynamics and are generally reflective of agendas to further as well as secure one's own areas of interest. These dynamics have ensured that humanity has never been peacefully united. Hence the chances of peaceful coexistence in outer space are also remote, unless the compulsions of common interest overwhelm those of individual interest (or technological advancements reduce the need for warfare over such). With regard to outer space, the compulsions of common interest are building up with every passing day; the utility of outer space becomes increasingly global rather than national. On an optimistic note, the dynamics of common interest have traditionally been instrumental in balancing aspirations as well as in furthering reasonable compromises and solutions.

And yet, it would be too ambitious to assume that these compulsions of common utility would soon lay to rest the multitude of problems related to issues of outer space security, arms racing in outer space and so forth. It would be some time before such a situation could be arrived at and hence, in the meantime, it is imperative to explore the options now available and attempt to obtain solutions to problems within the confines of the prevailing dynamics of space militarization and weaponization. It goes without saying that any approach to space security necessitates an exploration and generic comprehension of the military's established and known perceptions on the utility of outer space, since it is this that finally drives the militarization and weaponization.

GENERAL MILITARY PERCEPTIONS ON USE OF OUTER SPACE

Most military doctrines place extraordinary emphasis on acquisition of the "high ground" for military advantage and it is these doctrinal precepts

which drive the quest to go higher and higher for the delivery of ordnance and terrestrial observation. The allure of the high ground makes humankind go beyond horses and elephants to aircraft and spacecraft in the quest for military advantage. Outer space enables a more efficient and safer means for observation or delivering ordnance. As a corollary, as the military advantages of outer space become more promising and increasingly apparent, perceptions that it is a realm worth fighting over also gain currency.

Broadly, as in the case of legislative endeavours wherein legal precedents form a basis for conceiving new laws, operational doctrines also attempt to draw analogous parallels from existing doctrine to formulate the means for gainful military utilization. Military doctrines related to airpower characterized the best means of gainfully employing the high ground. Thus, in spite of technological, environmental and other differences, prevailing military space employment doctrines primarily build upon airpower doctrines (see Table 1). It is fairly well known that these perceptions are largely those of the US Air Force and the rest of the militaries across the globe generally follow the same with minor variations to suit national requirements and capabilities. Following the collapse of the Soviet Union, the United States is the remaining global role model and the operational validation of these concepts during the Gulf War, and every conflict the United States has been involved in thereafter, have only enabled these perceptions to be widely accepted and established.

Table 1. Military perceptions regarding the utility of outer space

Role	Typical airpower mission	Contemporary space mission
Control of environment	Counter air missions	Counter space missions
Applying combat power	Air-based force application	Space-based force application
Multiplying combat power	Airborne combat support	Space-based terrestrial combat support or force enhancement
Sustaining combat force	Support operations	Space support operations

The doctrinal premises and perceptions shown in Table 1 have largely been driving the militarization and weaponization of outer space. This is not a phenomenon of the new millennium, but rather has been the case since the dawn of the space age. For example, almost a decade prior to Sputnik, the German V-2 rockets transited through the lower fringes of outer space to deliver ordnance. By the mid-1950s both the Soviet Union and the United States were engrossed in developing their respective space delivery and, at a lesser pace, space observation platforms. While one would like to believe otherwise, the initial perception of the utility of outer space was in terms of military rather than civilian use.

As a matter of fact, within four years of the 1957 launch of Sputnik I, almost the entire range of capabilities afforded by outer space for conventional military force enhancement were in place. And within the first few years, measures to deny these capabilities and to destroy satellites were in place. This was in addition to developments in ballistic missiles, as well as measures to counter them. Thus, within the first decade of the space age, space-based military missions for ordnance delivery (force application), conventional military force enhancement/multiplication (force enhancement), and control of the environment (space control) were already possible.¹

The Outer Space Treaty (OST) came at a time when the nuclear superpowers were actively pursuing their agendas of military advancement by utilizing outer space. More importantly, in civilian terms, not much utility or involvement was foreseen. It was perhaps in keeping with the realities of that age that the OST made certain allowances for military uses of outer space. These were exploited then, are exploited now and will continue to be so until a balanced agreement on the military utilization of outer space is arrived at for the greater common good of all humanity. The prevailing reality is that the allure of outer space is irresistible for militaries across the world and this is not likely to undergo drastic change in the near future.

The point is, certain military allowances will have to be made and others will have to be forsaken in view of the greater common good. It will be essential to try to identify workable parameters and push these for a technical and legislative approach to space security. A middle path which allows for the pursuit of certain military capabilities, ensures the interests and aspirations of most countries, and at the same time does not indiscriminately endanger all humanity would need to be explored and developed as a sustainable approach to space security. To arrive at such a middle path, it will be

essential to discuss what constitutes an arms race in outer space. Based on this, it would be possible to pursue avenues to contain the impending weaponization of outer space.

WHAT CONSTITUTES AN ARMS RACE IN OUTER SPACE

From a historical perspective, even prior to Sputnik, the world community, including the Soviet Union and the United States, overwhelmingly favoured the use of outer space for peaceful purposes (at least publicly). The first UN resolutions on outer space, which included the phrase “peaceful purposes”, were reflective of this. The initial and widespread interpretation of the term in relation to outer space was “non-military”. However, soon after the launch of its early satellites, the United States began changing its position, claiming instead that the term meant “non-aggressive”. The Soviets initially held on to the first interpretation, but eventually accepted the newer. By this time both had satellites in orbit performing military tasks, and the term soon became understood globally as “non-aggressive”. The term continues to lack a precise authoritative definition and hence is open to interpretation.

The interpretation continues to expand according to state interests and practice.² The prevailing interpretation is that objects in outer space which have “no direct destructive” capability are not considered as weapons and thus satellites providing military force enhancement are legitimate. Civil satellites as well do this in terms of communication, observation and so forth. As a consequence, non-military satellites have been employed for force enhancement, a variety of states pursue the acquisition of such capabilities, and reverting back to an absolute “non-military” interpretation is not feasible. Most states have great interest in developing such capabilities; none are known to have contested this interpretation.

Most legal attempts to restrict the weaponization of outer space have addressed the placement of destructive capabilities in outer space (specifically weapons of mass destruction), the application of military force from outer space or the use of outer space for war-fighting. Such are circumvented by developing space weaponry which cannot be classified as weapons of mass destruction, yet is equally or perhaps more potent. Global weaponization concerns have heightened following the United States’ withdrawal from the Anti-Ballistic Missile Treaty, as well as its development of a range of

space war-fighting technologies, such as air-launched anti-satellite (ASAT) missiles, air- and space-based lasers and hypervelocity rod bundles.

It is here that technical and legal approaches would have to be reviewed and further pursued; at least an attempt to maintain the current state affairs must be made. On a more optimistic note, most states aim to use outer space for the protection of their assets, as well as conventional military force enhancement, and not for military force application from outer space or for space-based war-fighting.

FINDING AN APPROACH TO PREVENT WEAPONIZATION

There are no easy solutions to the problem of weaponization of outer space. The Conference on Disarmament has been deadlocked since 1998 and yet much has occurred since then to merit a renewed attempt to resolve the issue. Since then, a variety of states have launched satellites for dedicated military use or have leased capabilities from civil or commercial satellites. Going back to the military's doctrinal precepts, the number of states interested in missions of space-based force enhancement has increased as never before. More significantly, military, civil and commercial space activities have become so strongly intertwined that it is difficult to distinguish and discriminate. Thus, unlike in the Cold War era, target discrimination is now much more complex and difficult.

At the same time, with China's recent ASAT test, the realization that space weaponization would be grossly detrimental to the common good has raised concerns as never before. Unlike the 1960s and 1970s, when ASAT concerns were of decisive interest to two opposing states and of academic interest to most other parties, the situation today has changed drastically, with the number and the variety of stakeholders in outer space having multiplied greatly. Space security issues have become more democratized, affecting a larger number of states as well as non-state actors.

On the other hand, the era of microsattellites has arrived, which are more dispensable and easily replenishable than larger types. The point being made is that in the near future it would no longer make much military sense for states to destroy each others' satellites during crises or conflicts. Not only will ASAT-evasion and -survivability measures have matured, but the complexities of discrimination would multiply and, even considering a

hypothetical scenario wherein a satellite is destroyed, other military assets would provide enough redundancy to make destroying satellites pointless. In the present and near future, the possibility of non-state actors posing a threat to space-based assets is remote. Nevertheless, it will be essential to guard against complacency and measures would need to be undertaken to pre-empt the dangers and secure against such possibilities well ahead of time. Along with broader changes in geo-politics, security and technology, the dynamics of space security have undergone tremendous change. The challenges are more diverse and significant, but so are the opportunities. Levels of global concern are much higher, and a larger number and variety of interested parties must endeavour to find solutions to the issue of weaponization.

LOOKING FOR SOLUTIONS WITHIN DYNAMICS OF COUNTER SPACE OPERATIONS

Nevertheless, it would be too ambitious to assume that states with considerable interests could be dissuaded from attempting to exercise control over the realm of outer space. It is therefore essential to explore a middle path within this military mission so as to enable an achievement of military aspirations without compromising the common interest of humankind. Narrowing down to specifics,

Offensive counterspace operations involve the use of lethal or nonlethal means to neutralize an adversary's space systems or the information they provide. ... [O]ffensive counterspace operations are designed to achieve five major purposes:

- Deception—manipulate, distort or falsify information
- Disruption—temporary impairment of utility
- Denial—temporary elimination of utility
- Degradation—permanent impairment of utility
- Destruction—permanent elimination of utility.³

Of these five "Ds", military force structures aimed at the first four are already in place in some cases. States do have overt and covert capabilities for achieving the first four goals and a most desirable situation (yet unattainable during the last four decades) would be the total elimination of such missions. The dynamics of human self-interest preclude the possibility of any such proscription, especially if the experiences of the last five decades are taken as any indication. The fifth, which relates to permanent elimination, is the

most damaging to the common good and is also the least sensible in military terms; hence, such missions could be targeted for prohibition. Unlike aircraft and ships, the resulting debris from the destruction of a space-based asset would become an indiscriminate threat. Secondly, as pointed out earlier, the dynamics of redundancy will soon make the permanent elimination of capabilities near impossible. The reduction of capabilities in most cases would be of a temporary nature only. Unmanned vehicles, balloons and other aircraft would enable gaps to be filled in little time. The point is, if achieving the first four D's can make a system unusable, then going for a mutually damaging destructive strike would not make much military sense. Hence, if states could be prevailed upon to abstain from the latter on account of the physical, military, as well as other, challenges, and if technological and legislative approaches could be undertaken for permanent elimination of destructive missions, at least the emergent threat of an ASAT race in outer space could be contained.

BALLISTIC BROUHAHA

The next major problem relates to ballistic missile defence (BMD). Historically, BMD has always been a fantastic, albeit not very workable, concept. It has never been very convincing and if the operational military experiences of the recent past are any indication, the concept appears even more militarily incredible now than ever before. Apart from the usual challenges of target detection, discrimination and destruction due to multiple vehicles, decoys and so forth, the components of a BMD system (for example sensors and data links) are quite fragile and could be targeted in order to degrade of the entire BMD apparatus. For example, ASAT weapons of the type China recently tested may not be effective against incoming missiles, but they can certainly temporarily degrade the components of the BMD system. Attempts to target space-based sensors and tracking systems, which effectively are the spine of the BMD, could theoretically be undertaken, though the worth and effectiveness of this approach would be highly suspect. Apart from the other challenges, keeping the BMD "umbrella" securely in place would itself be a great challenge, as demonstrated by the recent Chinese ASAT test and the unstoppable barrage of Katyusha rockets during the Hezbollah-Israel conflict. No known effective defences against terrain-hugging cruise and other kinds of long-range missiles presently exist. The classic BMD umbrella concept continues to be enormously desirable, but whether it is presently (or even in the near future) viable and vital to national defence is a moot question, notwithstanding the attention given to the subject. By extension,

the possibility of confining these endeavours to the atmosphere, rather than extending them into space, could be explored.

LOOKING FOR SOLUTIONS IN FORCE APPLICATION MISSIONS

The above mission relates to creating assets for the application of military force from outer space. While enormously logical and appealing in military terms, in physical terms it is extraordinarily challenging. Fantastic visions have been put forth, monetary allocations made and yet use of these is enormously suspect. Left open to technical or economic audit, these visions might not be truly convincing and hence perhaps are cloaked in secrecy. Missions of space-based force application are characterized by enormous scientific, economic and legislative challenges. As of now, these have not gainfully matured and are already controversial. The point is, these visions and technologies have been “emerging” for decades and are yet to debut in any credible manner wherein extraordinary decisive military advantage accrues. Thus, time and opportunities do exist in the present for studied, deliberate attempts to try and hold the clock and even push back programmes in this area.

CONCLUSION

It goes without saying that there are no easy solutions and approaches to the issue of disarmament in outer space. Approaches to exploit new opportunities and mitigate challenges would need to be undertaken. A comprehensive solution has not been forthcoming in the last five decades and hence it would be too ambitious to expect one within the next five years. Nonetheless, the compulsions of human self-interest demand solutions for the fulfilment of military, commercial and civilian goals. The quest for solutions is therefore bound to continue and solutions not entirely satisfying and yet agreeable could be arrived at and it would be in the common interest of all to strive for this.

Notes

- ¹ As a matter of fact, projects aimed at denying the realm of space were contemplated ever since it became possible to insert objects into outer space. For example, the US Project Argus in 1958 was aimed at

creating an artificial radiation belt around near-earth by detonating a nuclear device in space. The Soviets also followed suit and conducted nuclear blasts in outer space in 1962. However, the passage of the Limited Nuclear Test Ban Treaty in 1963, made such detonations in outer space unlawful and simple verification measures made them easily detectable

² Whereas the results of the attempts in interpretation remain unfinished to this day as per the 1969 *Vienna Convention on the Law of Treaties*, the words in a treaty must be interpreted in accordance with their ordinary meaning. In general the term peaceful is defined as disposed or inclined to peace; aiming at or making for peace; friendly, amicable, pacific. It is obvious that this description cannot be applied to any current or past military use of outer space.

³ For details, see Space Commission Threat Annex, p. 5, available at <www.globalsecurity.org/space/library/report/2001/nssmo/article05.pdf>.