

US Military Transformation and Weapons in Space

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Introduction

No nation relies on space more than the United States—none is even close—and its reliance grows daily. For both its civilian welfare and military security, a widespread loss of space capabilities would prove disastrous. America's economy, and along with it the world's, would collapse. Its military would be obliged to hunker down in defensive crouch while it prepared to withdraw from dozens of then- untenable foreign deployments. For the good of its civilian population, and for itself, the United States military—in particular the United States Air Force—is charged with protecting space capabilities from harm and ensuring reliable space operations for the foreseeable future. As a martial organization, the Air Force naturally looks to military means in achievement of its assigned ends. And so it should.

A New American Way of War

The United States has embarked on a revolutionary military transformation designed to extend its dominance in military engagements. Space capabilities are the lynchpin of this transformation, enabling a level of precision, stealth, command and control, intelligence gathering, speed, maneuverability, flexibility, and *lethality* heretofore unknown. This twenty-first century way of war promises to give the United States a capacity to use force to influence events around the world in a timely, effective, and sustainable manner. And this is a good thing, a *true* transformation from conflicts past.

That the process of transformation was well underway became evident in 1991, when the world's fourth largest military was defeated in just ten days of ground combat. Unfathomably complicated battle equipment, sleek new aircraft, and promising new missile interceptors publicly debuted. Arthur C. Clarke went so far as to dub Operation DESERT STORM (ODS) the world's first space war, as none of the accomplishments of America's new look military would have been possible without support from space. Twelve years later, in Operation IRAQI FREEDOM (OIF), assertions as to the central role of space power could no longer be denied. America's military had transitioned from *space supported* to a fully *space enabled* force, with astonishingly positive results. Indeed, most of the nation's current space power functions were successfully exercised in OIF, including space lift, command and control, intelligence including rapid battle damage assessment, timing and navigation, and meteorological support.

The tremendous growth in space reliance from OSD to OIF is evident in the raw numbers. Despite engaging with a 60 percent smaller force (fewer than 200,000 personnel v. over 500,000), satellite communications usage increased four-fold, from 200 to 800 Mbps (Megabits per second) capacity. Newly possible operational concepts such as *reach back* (intelligence analysts in the United States sending information directly to frontline units) and *reach forward* (rear-deployed commanders able to direct battlefield operations in real time) reconfigured the tactical concept of war. The value of Predator and Global Hawk Unmanned Aerial Vehicles (UAVs), completely reliant on satellite communications and navigation for their operation, was confirmed. Special Forces units, paradoxically tethered to satellite support and yet practically unfettered in their silent movements because of them, ranged throughout Iraq in independent operations that were extremely disruptive.

But the paramount effect of space-enabled warfare was in the area of combat efficiency. Space assets allowed all weather, day-night precision munitions to provide the bulk of America's striking power. Strikes from standoff platforms, including Vietnam-Era B-52s, allowed maximum target devastation with extraordinarily low death and collateral devastation. In ODS, 90 percent of munitions used were unguided. Of the ten percent that were guided, none was GPS capable. By OIF, 70 percent were precision guided, more than half of those from GPS satellites. In ODS, fewer than five percent of aircraft were GPS-equipped. By OIF, *all* were. During ODS, GPS proved so valuable to the army that it procured and rushed into theater over 4,500 commercial receivers to augment the meager 800 military-band ones it could deploy from stockpiles, an average of one per company (about 200 personnel). By OIF, each army squad (6-10 soldiers) had *at least* one military GPS receiver.

With such demonstrated utility and reliance, there is no question the US must guarantee space access if it is to be successful in future conflicts. Its military has stepped well over the threshold of a new way of war. It is simply not possible to go back to the violently spasmodic mode of combat typical of pre-space intervention. The United States is now highly discriminating in the projection of violence, parsimonious in the intended breadth of its destruction. For the positive process of transformation to continue, however, space weapons must enter the combat inventory of the United States.

Why Not Space Weapons?

There are essentially two classes of arguments in opposition to the weaponization of space; 1) that it *cannot* be done, and 2) that it *should not* be done.

Space Weapons Are Possible

Arguments in the first category spill the most ink in opposition, but are relatively easy to dispose of, especially the more radical variants. History is littered with prophecies of technical and scientific inadequacy, such as Lord Kelvin's famous retort, 'Heavier-than-air flying machines are impossible.' Kelvin, a leading physicist and then president of the Royal Society, made this boast in 1895, and no less an inventor than Thomas Edison concurred. The possibility of spaceflight prompted even more gloomy pessimism. A *New York Times* editorial in 1921 (an opinion it has since retracted), excoriated Robert Goddard for his silly notions of rocket-propelled space exploration. 'Goddard does not know the relation between action and reaction and the need to have something better than a vacuum against which to react. He seems to lack the basic knowledge ladled out daily in high schools.' Compounding its error in judgment, in 1936, the *Times* stated flatly, "A rocket will never be able to leave the Earth's atmosphere."

We have learned much, it would seem, or else bluntly negative scientific opinion on space weapons has been weeded out over time. Less encompassing arguments are now the rule. As the debate moved completely away from the impossibility of weapons and wars in space to more subtle and scientifically sustainable arguments that a *particular* space weapon is not feasible, mountains of mathematical formulae are piled high in an effort, one by one, simply to bury the concept. But these limitations on specific systems are less due to theoretical analysis than to *assumptions* about future funding and available technology. The real objection, too often hidden from view, is that a *particular* weapons system or capability cannot be developed and deployed *within the planned budget*, or *within narrowly specified means*. When one relaxes those assumptions, opposition on technical grounds falls away.

The devil may very well be in the details, but if one's stance opposing an *entire class* of weapons is premised upon analyses that show *particular* weapons will not work ... what happens when a fresh concept or new technology cannot be disproved? If one bases policy decisions on discrediting the particulars of proposed operations, what happens when technology X, the unexpected (perhaps unforeseeable) scientific breakthrough that changes all notions of current capabilities, inevitably arrives? Have we thought out the details enough we can say categorically that no technology will allow for a viable space weapons capability? If so, then the argument is pat; no counter is possible. But, if there are technologies or conditions that *could* allow for the successful weaponization of space, then ought we not argue the policy details first, lest we be swept away by a course of action that merely chases the technology wherever it may go?

Space Weapons *Should* be Deployed:

The opponents of space weapons on technical or budgetary grounds are *not* advocating space weapons in the event their current assumptions or analyses are swept aside. Because a thing can be done does not mean it ought to be. Of course, prescience is imperfect. Technologies will be found that were not or could not be foretold, and the foolish policymaker eschews adapting to it until its utility is beyond a doubt.

Indeed, it is concern for the unanticipated arrival of technology X that initially motivates my own preference for a policy advocating immediate deployment of space weapons. So long as America is the state most likely to acquire a breakthrough technology in this area, my concern is limited to the problem of letting technology take us where it will. But what if an enemy of democratic liberalism should suddenly acquire the means to place quickly and cheaply multiple weapons into orbit? The advantages gained from controlling the high ground of space would accrue to it as surely as to any liberal state, and the concomitant loss of military power from the denial of space to our already-dependent military force could cause the immediate demise of the extant international system. The longer the US dithers on its responsibilities, the more likely a potential opponent could seize low-earth orbit before America could respond. ■

And America would respond ... finally. But would another state? If America were to weaponize space today, it is unlikely that any other state or group of states would find it rational to counter in kind. The entry cost to provide the infrastructure necessary is too high; hundreds of billions of dollars, at minimum. The years of investment it would take to achieve a *minimal* counter-force capability—essentially from scratch—would provide more than ample time for the US to entrench itself in space, and readily counter preliminary efforts to displace it. The tremendous effort in time and resources would be worse than wasted. Most states, if not all, would opt *not* to counter US deployments in kind. They *might* oppose US interests with asymmetric balancing, depending on how aggressively America uses its new power, but the likelihood of a hemorrhaging arms race

in space should the US deploy weapons there—at least for the next few years—is extremely remote.

This rationality does not dispute the fact that US deployment of weapons in outer space *would* represent the addition of a potent new military capacity, one that would assist in extending the current period of American hegemony well into the future. This would clearly be threatening, and America must expect severe condemnation and increased competition in peripheral areas. But such an outcome is *less* threatening than *any other state* doing so.

Placement of weapons in space by the United States would be perceived correctly as an attempt at continuing American hegemony. Although there is obvious opposition to the current international balance of power, the *status quo*, there is also a sense that it is at least tolerable to the majority of states. A continuation of it is thus minimally acceptable, even to states working towards its demise. So long as the US does not employ its power arbitrarily, the situation would be bearable initially and grudgingly accepted over time.

On the other hand, an attempt by *any other state* to dominate space would be part of an effort to break the land-sea-air dominance of the United States in preparation for a new international order, with the weaponizing state at the top. The action would be a challenge to the *status quo*, not a perpetuation of it. Such an event would be disconcerting to nations that accept the current international order (including the venerable institutions of trade, finance, and law that operate within it) and *intolerable* to the US. As leader of the current system, the US could do no less than engage in a perhaps ruinous space arms race, save graciously decide to step aside.

There is another, perhaps far more compelling reason that space weaponization will in time be less threatening to the international system than without it. One of the more cacophonous refrains against weapons procurement of *any* kind is that the money needed to purchase them is better spent elsewhere. It is a simple cliché but a powerful one. Space weapons in particular will be very, very expensive. Are there not a thousand uses that are more beneficial for the money? But funding for weapons does not come directly from education, or housing, or transportation budgets. It comes from military budgets. And so the question should not be directed at particular weapons, but at *all* weapons.

Immediately we see that the impact on the budget of significant increases in space weapons will be decreases in funding for combat aircraft, the surface battle fleet, and ground forces. This creates a dilemma for both pro and anti-space weaponization camps. Space advocates must sell their ideas to fellow pro-weapons groups by making the case that the advantages they provide outweigh the capabilities foregone. This is a mighty task. The tens (likely hundreds) of billions of dollars needed to develop, test, and deploy a minimal space weapons system with the capacity to engage a few targets around the world could displace a half a dozen or more aircraft carrier battle groups, entire aircraft procurement programs (such as the F-22), and several heavy armored divisions. This is a tough sell for supporters of a strong military.

It is an even more difficult dilemma for those who oppose weapons in general, and space weapons in particular. Ramifications for the most critical current function of the army, navy, and marines are profound—pacification, occupation, and control of foreign territory. With the downsizing of traditional weapons to accommodate heightened space expenditures, the ability of the US to do all three will wane significantly. At a time when many are calling for *increased* capability to pacify and police foreign lands, in light of the no-end-in-sight occupation of Iraq and Afghanistan, space weapons proponents must advocate *reduction* of these capabilities in favor of a system that will have no direct potential to do so

Hence, the argument that the unilateral deployment of space weapons will precipitate a disastrous arms race is misplaced. To be sure, space weapons are offensive by their very nature. They deter violence by the omnipresent threat of precise, measured, and unstoppable retaliation. They offer no advantage if the target set considered is not global. But they also offer no advantage in the mission of territorial occupation. As such, they are far less threatening to the international environment than any combination of weapons employed in their stead. A state employing offensive deterrence through space-weapons can punish a transgressor state, but is in a poor position to *challenge its sovereignty*. The transgressor state is less likely to succumb to the security dilemma if it perceives its national survival is not at risk. Moreover, the tremendous expense of space weapons inhibits their indiscriminate use. Over time, the world of sovereign states will recognize that the US does not threaten self-determination internally, though it challenges any attempts to intervene militarily in the politics of others, and has severely restricted its own capacity to do so.

America *will* maintain the capacity to *influence* decisions and events beyond its borders, with military force if necessary. The operational deployment of space weapons would increase that capacity by providing for nearly instantaneous force projection worldwide. This force would be precise, unstoppable, and deadly. At the same time, the US must forego some of its ability to *intervene* directly in other states because its capacity to do so will have been diminished in the budgetary trade-offs required.

Transformation of the American military assures that the *intentions* of current and future leaders will have but a minor role to play in international affairs. The limited requirement for collateral damage, need for precision to allay the low volume of fire, and tremendous cost of space weapons will guarantee they are used only for high value, time sensitive targets. Whether or not the United States *desires* to be a good neighbor is not necessary to an opposing state's calculation of survival. Without sovereignty at risk, fear of a space-dominant American military will subside. The US will maintain its position of hegemony as well as its security, and the world will not be threatened by the specter of a future American empire.

Seizing the initiative and securing low-Earth orbit now, while the US is unchallenged in space, would do much to stabilize the international system and prevent an arms race in space. From low-Earth orbit (LEO), the enhanced ability to deny any attempt by another nation to place military assets in space, or to readily engage and destroy terrestrial ASAT capacity, makes the possibility of large scale space war and or military space races *less* likely, not more. Why would a state expend the effort to compete in space with a superpower that has the extraordinary advantage of holding securely the highest ground at the top of the gravity well? So long as the controlling state demonstrates a capacity *and a will* to use force to defend its position, in effect expending a small amount of violence as needed to prevent a greater conflagration in the future, the likelihood of a future war in space is remote.

Moreover, if the US were willing to deploy and use a military space force that maintained effective control of space, and did so in a way that was perceived as tough, non-arbitrary, and efficient, such an action would serve to discourage competing states from fielding opposing systems. Should the US use its advantage to police the heavens (assuming the entire cost on its own), and allow unhindered peaceful use of space by any and all nations for economic and scientific development, over time its control of LEO could be viewed as a global asset and a public good. Much in the manner that the British maintained control of the high seas, enforcing international norms of innocent passage and property rights, the US could prepare outer space for a long-overdue burst of economic expansion.

Conclusions:

Space weaponization is a critical and necessary component in the process of transformation well under way, a process that cannot be reversed. Once America demonstrated the capacity to strike precisely, it could only go back to the kind of indiscriminant targeting and heavy collateral damage that characterized pre-space warfare if it were engaged in a war of national survival. And if there are future technological, economic, and perhaps social benefits to be derived from developing and deploying weapons, they will certainly not come from increasing the stock of current systems. They will only come, if at all, from the development of new, highly complex and scientifically heuristic space, stealth, precision, and information systems.

As leader of the international community, the United States finds itself in the unenviable position that it must make decisions for the good of all. On the issue of space weaponization, there appears no one best option. No matter the choice selected, there are those who will benefit and those who will suffer. The tragedy of American power is that it *must* make a choice, and the worst choice is to do nothing. And yet, in the process of choosing, it has a great advantage—the moral ambiguity of its people regarding the use of power. There is no question that corrupted power is a dangerous thing, but perhaps only Americans are so concerned with the possibility that they themselves will be corrupted. They fear what they could become. No other state has such potential for self-restraint. It is this introspection, this self-angst that makes America the best choice to lead the world today and tomorrow. It is not perfect, but perhaps it is perfectible.

Perhaps the most important insight to come from a discussion of transformation in war is the notion that space weapons, along with the parallel development of information, precision, and stealth capabilities, presents in our era a true revolution in military affairs. As such, these technologies and capabilities will propel the world into an uncertain New Age. For better or worse, the future can be denied only by a spasm of nuclear nihilism. The states that move forward against the fears of the many, and harness these new technologies to a forward-looking strategy of cooperative advantage for all, have the potential to initiate humanities' first *global* golden age. The very nature of space requires that the ultimate use of it must be both encompassing *and* incorporating, but the nature of international relations and the lessons of history dictate that it begin with the vision and will of a few acting in the benefit of all.