



# Rules of the Road

## Responsible Use of Weapons in Space

— BY EVERETT CARL DOLMAN

The world economy is so intrinsically linked to support from space that should a major outage of satellite capacity occur, financial and trade markets could collapse. A recession spanning the globe would ensue, and security tensions would exacerbate. The increasingly chaotic international environment would be further destabilized by the disastrous incapacitation of U.S. military power. Without the assuredness of space-based surveillance, communications, and navigation support, American and allied military forces would be ordered to hunker down in defensive crouch while preparing to withdraw from dozens of then-untenable foreign deployments.

Such a scenario is not only possible—given the growing investment and reliance on space as a national power enabler—it is increasingly plausible. An attack against low-Earth orbit from a medium range ballistic missile adapted for detonation in space could cause inestimable harm to the national interests of developed and developing states alike. Without a space-based defense against such events, the world as we know it exists on borrowed time.

### Enabling Rules of the Road

With great power comes great responsibility. The United States Air Force has been charged with ensuring access to space and space support for all states in times of peace and crisis, and when called upon to deny that access to its enemies in times of war. As a martial organization, the Air Force naturally looks to military means in achievement of its assigned ends.

But weapons alone are not the decisive or exclusive means for ensuring peace. Only when used in conjunction with common expectations of behavior, such as in support of domestic laws or international agreements can they be effective for this purpose. In the international realm, this is because the intentions of potentially hostile actors must be constrained by a

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calculation of self-interest and potential risk for violating norms and rules. The deterrent value of *si vis pacem, para bellum* is moot if understanding is not common.

Laws, too, are so constrained. As guides for behavior or shaping common expectations, rules of thumb or traditional practices can be very useful. But when used to prevent a class of activities, especially criminal or hostile ones, rules are too fragile by themselves. Unless the ability to enforce the latter is evident—to find, apprehend, assess, and, if guilty, punish those who violate them, such agreements on correct behavior are no more likely to work than when the mice infamously agreed to bell the cat.

For example, Declaration I of the 1899 Hague Peace Conference banned the use

of balloons for combat purposes, specifically the launching of projectiles or bombs. With proof of powered flight coming just four years later, an extension to the agreement was negotiated and accepted in 1907 that banned the use of *any* means of aerial combat, existing or planned. With war declared in August of 1914, the prohibitions were void, and it was obvious that they had little or no effect on pre-war development of combat aircraft.

There are currently a number of rules-of-the-road agreements proposed, foremost among them sponsored by the European Union, China, and the U.S.-based Stimson Center, that offer compelling logic for establishing a framework for cooperation in space by limiting specific activities or capabilities. Unless these agreements are brokered fairly among and accepted by *all* space-faring states, however, and they don't include unverifiable and unenforceable bans on weapons, an important and extremely beneficial international accord may be missed.

Common to all the suggested approaches is for signatories to avoid adding debris to the increasingly cluttered common orbits in near-earth space. This is an eminently agreeable issue, as debris in space limits all users, regardless of who is responsible for it. No space-faring or space-reliant state should see disadvantage in limiting kinetic destruction of satellites, nuclear detonations in space, or other such mutually undesirable effects. Where these approaches are less workable is in their efforts to concomitantly limit the deployment and use of weapons in space. Due to the risk entailed should any state violate the rule, and the very real problem of defining just what constitutes a space weapon, unless some mechanism for proper enforcement *in* space is encumbered, these much needed treaties are problematic.

Unlike the Hague conventions of 1899 and 1907, which proved utterly unrealistic with the onset of conflict, the parallel Geneva Conventions limiting the use of non-discriminating weapons and requiring humane treatment of prisoners and noncombatants have been relatively robust and effective. This is because there is an advantage to abiding by these agreements *even when an opponent or other signatory does not*. On the battlefield, the side that is known to give food, shelter, and medical aid to surrendering forces is less likely to encounter an opponent willing to fight to the death than the side known for mistreatment of its prisoners. As beneficial as these conventions have been, they have not stopped war or even reduced the number of conflicts. They have simply shaped the conduct of violence.

Ideally, an international agreement creating a multi-national space force capable of protecting the fragile environment beyond Earth's atmosphere from hostile attack will someday be reached. Until then, the United States or some other space power may find it necessary to develop and

field a space-based defensive capability against missiles, rockets, and directed energy emanations that would enter into orbit with hostile intent. Such a development is not necessarily welcome, but neither should it be condemned out of hand.

### Why Not Space Weapons?

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

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 a personage 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 standard. As the debate moved 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 scientific evidence 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, political context, 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 narrowly disproved? 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 that 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?

Those who argue that space weapons *should not* be deployed generally do so on the grounds that they are too expensive or are potentially destabilizing.



To be sure, a space weapons program would be *very* expensive—tens if not hundreds of billions of dollars. But this money will not come from funds set aside for schools or roads or humanitarian assistance. Federal budgets are not so fungible. Peace dividends fail to materialize. The money for space weapons would come from existing and projected defense expenditures, and this means fewer tanks and soldiers, ships and sailors, aircraft and airmen. Herein is the trade-off in creating what would amount to a space-heavy military force structure. The state would continue to maintain its capacity to intervene in affairs abroad, with violence if deemed necessary, but now with precise and measured doses of very accurate, very deadly violence anywhere on the earth, in a very, very short time. But it would not be bulk violence. This is still the purview of traditional land, sea, and air forces. The state would trade the capacity to intervene quickly and precisely for the ability to do so massively, with lots of collateral damage.

Ramifications for the most critical *current* function of America's armed forces are profound—pacification, occupation, and control of foreign territory. With the downsizing of traditional weapons to accommodate heightened space expenditures, the ability of the U.S. to do all three will wane significantly. At a time when many are calling for *increased* capability to pacify and police foreign lands, space weapons proponents must advocate *reduction* of these capabilities in favor of a system that will have no direct potential to do so. It will be a hard sell.

It will not be any easier for those who consider defensive capabilities reasonable, but offensive capabilities abhorrent. Space weapons are inherently offensive. They defend by attempting to destroy the incoming threat. They deter violence by the omnipresent promise of precise, measured, and unstoppable retaliation. Systemically, they offer no advantage if the target set considered is not global. But as they offer no advantage in the mission of territorial occupation, they are far less threatening than any combination of terrestrial weapons employed in their stead. A state employing offensive deterrence through space-weapons can punish a transgressor, but is in

a poor position to *challenge its sovereignty*. Such states are less likely to succumb to the security dilemma if they perceive their national survival is not at risk. What is more threatening, a half dozen lasers deployed in space or, for about the same price, six divisions of ground troops massed on the border? Moreover, the tremendous expense of space weapons inhibits their indiscriminate use. Over time, the world of sovereign states will recognize that space power 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.

Perhaps the largest collection of arguments against the weaponization of space is that it would force a crippling space arms race. Especially if the United States were to act first, responsible nations would be compelled to respond in kind, and a space arms race *must* ensue. So long as the United States refrains, other states will also. The logic escapes me.

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. Because of its demonstrated utility and reliance, there is no question the United States must *guarantee* space access if it is to be successful in future conflicts. It is simply not possible to go back to the violently spasmodic mode of combat typical of pre-space American 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. Indeed, America's reliance on space today is so heavy that any nation desiring an asymmetric military advantage would be hard-pressed not to consider attacking its currently undefended space assets. This is particularly true for states or organizations that are vastly less reliant on space for their economic or military needs.

I have argued elsewhere, primarily in my book *Astropolitik*, that any state with the means and political will to quickly place a small network of weapons in low-Earth

orbit capable of engaging missiles or rockets in their boost phase would effectively gain control of the global high ground and all of the tactical advantages that have historically accrued to the controller of the battlespace's most

advantageous position. The longer America and the international community dither on their responsibility to protect space from states or organizations that would attack on-orbit assets, the longer the window of opportunity for a potential overthrow of the current international system stays open, and the *more likely* a debilitating arms race will emerge.

If America or some U.S.-included international consortium were to place weapons in space today, it is unlikely that any other state or group of states would find it rational to counter *in kind*. America's space infrastructure, particularly its military space potential, is enormous. The entry cost to generate an equivalent capacity necessary to counter its lead *in* space is too high; hundreds of billions of dollars, at minimum. Without question, states not party to the new weapons regime would object, and try to oppose its actions—but they would do so asymmetrically.

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Diplomatic condemnation, economic embargo, and probably conventional arms increases can be expected. If the new regime was shown over time not to be a potent new kind of coercive tool, used non-arbitrarily only to enforce treaties and laws in and for outer space, the capacities to police space would be seen as no more detrimental to international peace than the U.S. military's parallel activities for the world's common areas—the open oceans and non-territorial airspace. Even more so space commerce would be able to thrive. Just as its military limits the activities of brigands and pirates, ensures that disputed regions are not closed to commerce, intervenes to stem the flow of human trafficking, drugs, and illicit arms, business is *more* likely to be safe and reliable. On the other hand, without any enforcement mechanism in space, in ten to fifteen years perhaps, peer competitors could emerge that would be more than willing to challenge the currently dominant space powers. If you desire a space arms race, do nothing, it will come.

This is because America *must* respond to another state's attempt to seize control of outer space. Its position of hegemonic power is based on its potential to control the sea and air, to mobilize quickly and move from place to place faster than an opponent, and these capabilities are predicated on continuing support from space. A threat to that support would correctly be viewed as an attempt to overturn the current international order, to replace American hegemony with a new global leader.

## Conclusions

America *will* maintain the capacity to influence decisions and events beyond its borders, with military force if necessary. It will not be bound by treaties that deny such ability. For the most part, America uses its hegemonic power to maintain global stability, ensure free commerce, lessen human suffering, and oppose aggression. The operational deployment of space weapons would increase these capacities by providing for nearly instantaneous force projection worldwide. This force would be precise, unstoppable, and deadly. At the same time, the United States 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.

Seizing the initiative and securing low-Earth orbit now, while the United States and its allies are unchallenged in space, would do much to stabilize the international system and prevent an arms race *in* space. If peace desiring states could come to an international agreement in which a multinational space force would be capable of maintaining effective order in space, participate in the reduction of debris in orbit, promote commerce, 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 they use this advantage to police the heavens (assuming the entire cost), and allow unhindered peaceful use of space by any and all nations for economic and scientific development, over

time their control of low-Earth orbit could be viewed as a global asset and a public good.

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. ■

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