

# US Military Transformation and Weapons in Space

*“It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.”*

Charles Darwin

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.

In the following pages, I will string together a series of arguments for the immediate deployment of weapons *in* space. I will also attack the illogic and inconsistency of arguments against space weapons. Space weapons are delineated here as those with the capacity to target and destroy assets in orbit (which may be space or terrestrially based) and any space-based means that has the capacity to engage and destroy targets on the earth, at sea, in the air, as well as space. This definition encompasses the majority of ballistic missile defense (BMD) proposals. The arguments herein apply equally to space-based weapons and BMD.

## **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.

Russell Weigerley has argued that the American way of war was based on an essentially isolationist preference to allow issues beyond its borders to sort themselves out. Only when events spilled out of hand and threatened US interests directly did it feel compelled to intervene and set things right. Only then did it mobilize for war. By the twentieth century, the model had been refined. It was predicated on taking the fight to the enemy's shores, but only after other means of influence had failed and the military option was deemed the only one likely to succeed. And then, when America brought force, it was *overwhelming* force. Long build-ups were anticipated. The American public was made confident in its righteousness. Friendly casualties were to be limited to the extent practical, but damage to the enemy could be maximized. The strategy was suitable in an era when the US homeland was safe from attack, and when its industrial production ensured the stockpiling of innumerable and massive armaments, sending excess supplies to its allies to do the fighting wherever prudent. In these conditions, America could afford to wait for problems to incubate and mature before reacting with colossal expenditure and terrible force. And for the most part, this way of war was effective.

But then came the debacle in Vietnam, where US forces arguably won every battle but lost the war, at home as well as in Southeast Asia. Television had come to war; rampant carnage was available for viewing in every American home. Indiscriminate area bombing was particularly horrific, and would from then on be contemplated only for desperate times, when the very survival of the state was at stake. In wars of lesser urgency, those characterized by international theorists as wars for less than the vital national interest, it would be incumbent on America to win the hearts and minds of not just the domestic audience, but of allies, potential allies, and erstwhile enemies as well. Overwhelming force on a broad scale would be ruled out in advance. Success would be achieved through the employment of high-tech means and weapons: by computers, satellites, and a new class of technological marvels. America's future wars would be less destructive. They would have far fewer casualties, both friendly and enemy. And they would be short.

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 employing stealth technology, and promising new missile interceptors operationally and 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 (most especially

including Blue Force tracking, significantly reducing incidences of fratricide), 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.

### **MILITARY TRANSFORMATION AND WEAPONS IN SPACE**

To make the case fully, an excursus into operational warfare is, unfortunately, quite necessary. I begin by defining the *purpose* of military strategy, which is to manipulate the context of military conflict in order to maximize the advantages of its force structure. Note that it is not to win wars, nor is the purpose of military force "to be used." Such definitions are absurd. It would

mean that at any moment an armed force is not actively engaged in battle, it is not fulfilling its purpose. Any moment that a B-1 is not dropping bombing, for example, it is wasted. Wars so construed would be waged solely for the purpose of making war, complying with Clausewitz's under-appreciated dictum, "war may have its own grammar, but not its own logic." The purpose of aircraft is not to bomb. The purpose of space weapons will not be to lase, or in any other manner engage a target. These are effects of the purpose, as are freedom of movement in and maximization of support from air and space. Although military force is not the only means to obtain such effects, they are the only means available to the military planner.

And this is where criticism leveled at military planners preparing for the use of space weapons continues to astonish. It is not the business of military strategists to dictate to the president that military means should or should not be used in a given place or time. It is the civilian authority's decision to dictate when and where (and to what extent, that is, how much) military force is to be used. It is the military planner's duty to be prepared to use military means when and where instructed. Thus it is the duty of the Air Force to plan for and prepare to use the means in its control (military) to most effectively accomplish the tasks given it, within the limits placed upon it—to include minimizing collateral damage and loss of life.

And so we should not be discussing the correctness of the military's planning to use weapons to engage in operations assigned to it, the essential argument is whether or not the military should be given the responsibility or the assignment. If we decide we do not want weapons in space, then the military should not be given the responsibility of protecting our interests in space. To do otherwise is absurd. Imagine relying on the US Navy to guarantee freedom of the seas for American interests, but ordering it to do so without the use of warships or any other form of martial force—or even the latent threat of such force in reserve! We would be asking the navy to guarantee a vital national interest without employing the only means at its disposal to do so.

When Clausewitz unassailably made the case that war is an extension of politics carried on by other (violent) means, military power was precisely the violent means of which he wrote. Clausewitz did not rule out other forms of power, including what we would recognize today as diplomatic, economic, and informational power, within the purview of war. It is just that within the military sphere, force is the means available. But military force must be subordinate to the political authority, for the "political object—the original motive for the war—will thus determine both the military objective to be reached *and the amount of* [and, it is asserted here, the *type* of military] effort it requires ... War, therefore, is an act of policy. Were it a complete, untrammelled, absolute manifestation of violence ... war would of its own independent will usurp the place of policy the moment it had been brought into being; it would then drive policy out of office and rule by the laws of its own nature."

The widest purpose of strategy is to put oneself in a position of continuing advantage. It is the same regardless of the endeavor or the opponent (to include an uncaring nature). But the logic of

politics and compromise do not work on the battlefield, just as the confrontational logic of battle does not support political or cooperative interaction. The logic of war, allowed to run unfettered, is victory. The logic of politics requires achievement of an advantageous peace. The *maximum* application of violence required in the logic of war is counterproductive to the requirements of sustained peace. Thus, the political authority *limits* all war. The political object is the goal, and war is but one tool of statecraft – and a very dangerous one for the state. With the purpose exposed, Clausewitz then provided guidance and advice in how to use *limited* military power to achieve *unlimited* political objectives leading to peace.

Accordingly, there *must be* an intermediate step between the grammar and logic of battle and that of politics. Military strategy links political logic to war (the logic *of* war), but no link from there to military tactics (the logic *in* war) is discernible without some operational level of transition. Strategy at the level of the state is grand strategy, where all the capacities of the state are tapped to serve the general interest. Military strategists consider all forms of power (for coordination of effort), but only have control military forces, and so make plans to engage them if summoned. Service-level (army, navy, air force) or operational strategists prepare a plan for the forces within their control, but the operational strategist has a purpose different from that of the grand or military strategist. That purpose, I assert, is *to command the medium* in which forces are to operate (for example, the land, sea, or air). This is so desired *effects* of the capacity to operate there (bombing, close air support, rapid resupply, etc., in the case of air power) are possible. When command is not achievable, then the operational strategist must endeavor to *contest* the medium, so as not to give unencumbered use of it to the enemy. Only when command is achieved (or at a minimum contested), broadly or limited in scope, can the effects of military power be employed in the service of the political and military aims.

Tactical victory, according to Clausewitz, is the *military* means by which policy is put into effect. Stringing together tactical victories is a plan of operations, or campaign, a higher level of war than individual battles, and so it is that at the operational level the logic of war begins to intrude on the political objective. By maintaining a pure clarity of *operational purpose*, to control or contest the appropriate medium (which is not the same as the political or overall military aim), the operational strategist tangibly *links* the political intent to the military means. Gaining or contesting command of the medium of battle (land, sea, air, or space) allows the tactical and political aims to remain at odds logically but to converge practically.

I further insist that the *purpose* of space power is *not* the same as for other forms of military power, just as seapower does not have the same *purpose* as land or air power. If purpose were the same for all, then no *theoretical* differentiation would be needed, or useful. All would conform to a general theory of war, and operational differentiation would be arbitrary. We would discern nothing meaningful about the *quality* of military power. This can lead to the utilitarian perspective that *any* means is acceptable if it satisfies the conditions of victory. The only analysis that must be

undertaken is a cost-utility one, which weapon will achieve the desired *combat* effect most efficiently (or effectively). We know intuitively that this is not the case. An F-22 stealth air strike has a *qualitative* difference when it engages its target, as opposed to, say, a cavalry brigade. Both may kill or destroy the target, and the cavalry brigade is undoubtedly less expensive, but the *manner* in which one wages war *always* makes a political statement. In the United States' Operation ALLIED FORCE in Kosovo, for example, the decision not to put ground troops at risk was roundly criticized by political and military commentators who claimed that it rendered the massive air campaign impotent. It was not until the US began to threaten the use of ground forces, they argued, that Milosevic capitulated.

If all forms of military power have the same purpose (the alternative position suggested above, to influence decision-makers or to maximize violence in a particular place at a particular time), then a *qualitative* differentiation of what platform or medium is most effective or efficient in a particular context is theoretically pointless. No differentiation based on the political, cultural, psychological, or other contributions of the various forms of power is necessary. Forms of military power are conceptually no different from tools in a box. The weapon chosen is the one that does the job most efficiently. If the most efficient tool is not available, use the next most functional. If several tools are available that will service the target effectively, then efficiency-value is the only factor to consider in employment. Such a view is perhaps useful at the tactical level, where victory is the only measure of success, but it is insidious at the strategic, for it places no obligation on military planners to perceive the overall military or political end. Planners are assigned a goal (usually quantifiable), given limitations, and directed to achieve it. In this case, operational differentiation is simply an organizational economizer, an arbitrary differentiation based on a preferred hierarchical concept of war making.

If instead, varying forms of military power have different purposes within an overarching politico-military *means* (which is war or the *threat* of war), and these differences are consequential, then knowledge of them is fundamental to sound strategy. In order to isolate such variables, I must make some basic assumptions. First, if land, sea, air, and space power demarcate sub-functions of military power, then they must also *share* a set of similar characteristics that can be bundled and set aside for analysis. Second, they are all manifestations of violent or potentially violent force employed by the state for the overarching purpose of carrying out political policies. The use of these forces, therefore, makes a political statement. Third, there are political ramifications of using military power even for non-military purposes, such as the distribution of humanitarian aid. The fact that military forces are employed instead of civilian ones carries a latent capacity for violence with it. This will affect the political aim.

With these assumptions, we begin to isolate the true purpose of land, sea, air, and space power, and to place them into perspective. Again, the purpose of military power writ large is to provide *an option* for the political decision maker to achieve the political ends of the state. Sub

forms of military power must conform to this higher purpose. Moreover, military power is one *means* of conducting war; it is not the object of it. It is not the target of it. It is not the medium of it. It is also not the platform of war. War or threats of war (potential or latent violence) are therefore policy instruments that the diplomat needs readily available to properly and fully conduct the affairs of state. In theory, then, the manner in which military power supports the political aim is through maximizing—or more precisely, *being prepared* to maximize—violence at the direction of the state.

With the purpose of military *power* to be prepared to provide, and if necessary, to provide *measured* violence in support of the political aim, then the *components* of military power must also serve that purpose. Using medium or platform differences to discriminate and group the military services surely has an economizing value for command, control, and execution, but it innately recognizes a functional differentiation between the *types* of military power. Air forces should be prepared to project violence from and into the air; armies from and on the ground; and navies from and into the water. If military space is to achieve its purpose, it must likewise be prepared to project violence from and into space. Each must further prepare to deny a potential enemy the capacity to freely project violence into or from those areas as the need arises. As such, even in times of peace, military power ensures that the latent or potential violence of military power adds to the security of the state. Note again that their purpose is not to project violence, but be prepared to do so, or in perfect terms, *to be able to do so*. This is the critical discriminator. In order to maximize the projection of violence to or from the medium in support of the political aim, defined as the *exploitation* of the medium, the capacity to operate in the medium must be present *a priori*. Potential command or contestation of the land, sea, air, or space is *required*. The *purpose* of space power, in this schema, is *to command space*. The *function* of space power is to be ready and able to maximize violence at the direction of the political authority, but this is not unique. It is common to all forms of military power.

Command is a situation in which violence can be projected through the medium by friendly forces while denying that capacity to others. Free movement or projection in this case means essentially unhindered by enemy military power. Limitations based on technology, weather, political will, etc., are not included. For some states, functionally useful command of the air may simply be denying the enemy the ability to operate there, for a time or in a specific locale, especially if the capacities of the denying state to operate *in* the air are limited. This is principally true for small states, or states that cannot match the forces of their enemies. A robust ground or sea-based air defense system may give that state the freedom of movement it needs to ensure its defense and protect its territory from bombing, interdiction, and other such exploitation by air and sea power. This bridges the gap between control and *contestation* of the air. The latter occurs when there is an added cost to air operations due to enemy activity.

Traditionally, discrimination between the military services is based on functional differentiation, or some characteristic of the primary medium of operation, not in purpose, and it is

likely that this distinction has become a severely limiting factor in joint or combined force strategy and operations today. But, this is a problem easily resolved. A conceptual shift, while potentially quite useful, will not require a significant change in current training and application. The Army trains and equips itself to win battles on land and to extend violence into the realms of sea and air that infringe on its capacity to do so. It operates in all of the mediums of combat, though primarily on land. And this is as it should be. The Army has a stake in ensuring that no sea borne invasion can threaten territory, and thus sees a need for coastal defense. It also prefers to have the skies above it void of enemy forces, and therefore develops air defense rockets and artillery (flak) to clear the air above it. Because of its desire to exploit the advantages of the air medium in support of its terrestrial goals, the army uses mostly rotary winged aircraft (air cavalry) to rapidly move troops and equipment, and for close air support (CAS) of combat operations. The Navy trains and equips itself to win battles at sea (though increasingly to influence battles deep inland). It likewise has a keen interest in affecting the fringe and other areas that interfere with this function, and so it maintains the Marines for invading and occupying coastal areas for ports and beachheads, and in operating aircraft (naval air) that destroy threatening aircraft and ships at sea. Air Forces must prepare for battles in the air, and be able to destroy weapons that threaten the free movement of aircraft be they on the ground or at sea. The first mission of combat aircraft in modern war is to cripple the enemy's ground-based radar, the key element of its air defense system. The Air Force must also maintain land bases for its aircraft, and the security forces necessary to protect those bases.

As is clear from the preceding paragraph, airpower and air forces are not synonymous, as are not navies and seapower, nor armies and land power. The separate services today tend to represent bureaucratic differentiations based on expediencies of training, budgeting, equipment, and the skills needed to successfully engage the enemy in anticipated combats. If we focus on the medium or platform, however, we tend to see the services and the military powers as interchangeable. Whoever can get to the battle will do so. This not only causes significant rivalry where capabilities overlap, it becomes easy to confuse the purpose of the medium-differentiated military power with the mission of the service that usually applies it.

But if the true purpose of operational military power is *to be able to project measured violence at the discretion of the policy maker*, then the *actual* projection of that violence is an *effect* of the purpose. Further, holding command of the medium means that power may not *have* to be projected from it to achieve the political aims. The opponent may elect not to bring a challenge there. Command of the medium *is in itself* valuable. Deterrence may be the most common outcome or effect of having command of the air or any other medium. The state does not *need* to project violence there if the opponent or potential enemies of the state do not believe they can successfully contest it. Opponents may find other means of engaging the state, but these undoubtedly will be ones that avoid contact with the dominated medium.

This logic is the causal foundation of asymmetric warfare, of course. The problem with such a view is that it suggests power is inefficient if it induces others to find new ways to engage the state. Missile defenses, for example, are routinely cited. If the defense is effective, the likely enemy will simply engage in another manner and in an area in which the state is still vulnerable. To which I reply, good. The threat of missile attack is now over. In the strategic view, one does not decide between a defense against this threat *or* that one. It should be how much of this and how much of that. What are the benefits of a defense here and not there? If the state is protected from missile attack, which was once a serious threat, great. Now what are the other threats?

It follows that if a state has command of the medium, an opposing state may not risk or wish to risk its own forces to challenge it there. The operational *purpose* of military power has thus been achieved, even if the tactical effects of the military forces (which are, among other things, to *destroy* enemy means) have not. This is an inestimable strategic distinction. Combatants, using tactical logic, seek to achieve results: engagement and destruction of the enemy. If tactical function is not filtered en route to military strategy by the operational purpose (which is to achieve command of the medium), the logic of tactical victory can overwhelm the logic of operational and strategic ends. What we end up with is a body-count mentality or measure for success (we are killing more of them than they are of us, therefore we must be winning). In Clausewitzian parlance, the grammar of war overcomes its logic.

When military power supports the political objective, the actual use of violence may not be necessary *or even desirable*. It may be contradictory. In the Cold War, both the United States and Soviet Union constructed enormous nuclear arsenals with the perceived capacity to maximize the application of violence. The *military function* of these arsenals was destructive power, but the *political purpose* behind the development of these weapons was *never to use them*. Not ever. At least, that was the political intent. Military power *had* to conform. But, in order to maximize efficiency the services must maintain their own purposes, conforming to the dictums of applied violence. Paradox inevitably results. In this case, the capacity to deliver nuclear weapons on target using a variety of sophisticated platforms was vital to the overall credibility of the strategy of power balancing. It had to be more than possible to be effective, in crises it had to be likely. Missileers were screened for reliability. Platforms were stubbornly tested. Weapons were maintained on high alert. And because of all that contradictory effort, the *strategic* purpose of the weaponry (never to be used) was achieved. The tactical purpose of these weapons was thankfully never demonstrated. To have actually delivered a nuclear holocaust would not have supported the political or strategic policies of either side.

Command of the medium allows the state to project violence from and to it in support of strategic objectives. This is a condition of continuing advantage, the *goal* of the operational strategist. Without it, the application of force *from* the medium is unreliable, if not impossible, as is defense from such attack. So we see that gaining command of the medium has value in itself, but

that value is wasted if the owner of that control chooses to stand satisfied and *do nothing with it*. Hence, command of the medium while laudable is not, in itself, the operational *end*. It is the purpose of operational strategy but not its *satisfying objective*. To be sure, the state or nation that gains command of space and can hold it will see positive political, economic, and military results by that fact alone, with no amplifying applications needed. Just as Alfred Thayer Mahan insisted that command of the sea was necessary for great power status—for it enhanced trade, national security, technological and industrial advantage, and popular support for the state—so too can one make the case for command of the air and space in the twenty-first century. But operationally, Mahan was too dogmatic. His principle recommendation in war was to seek out and destroy the enemy fleet. His own magisterial theories should have prevented him from coming up with such a conclusion, by recognizing that if the enemy is unable to affect command of the sea (by staying bottled up in port, for example) then it is effectively disarmed. But in a more sophisticated reading of Mahan, unless command of the sea is *actively* exploited, it has no value or meaning. This is why freedom of movement through space, without the command implied by weapons, is ultimately a counter-productive situation.

### **Applying Theory to America's Military Transformation**

In his January 2002 speech on transformation, Secretary Rumsfeld stated that the United States must move toward a more realistic and balanced assessment of its military requirements, and in so doing away from the notion of large occupational forces and toward a greater emphasis on deterrence in critical theaters. Deterrence could be achieved by maintaining the capacity to swiftly defeat aggressors *before* they engage on American soil – in their home states – *backed* by the option for a massive counter-offensive to temporarily occupy an aggressor's capital and replace the regime.

Deputy Defense Secretary Paul D. Wolfowitz followed up in his address to Naval War College graduates in 2003, saying military “transformation means ... more than a mechanical change, [it is] profound change ... in the way we think and the way we organize; it is properly described as a cultural change.” In previous testimony to the United States Senate a year earlier, Wolfowitz explained that transformation first entails a perceptual revolution. The modern military structure must encourage innovation and intelligent risk taking. It must adopt a proactive stance in a brave new world where change is the only constant. *Weapons and procedures must be cultivated that will increase American military capability* while at the same time *changing the way in which war is fought*. Transformation will occur in a series of graduated changes that alter the force structure and equipment with which war is waged, move away from the two Major Theater War (MTW) force-planning construct, and implement a new framework for assessing risk. “In short,” Wolfowitz declared, “our operational emphasis now is on flexibility, speed, and jointness.”

Rumsfeld's and Wolfowitz's comments, if accurate, amount to a classic Revolution in Military Affairs (RMA). The exemplary RMA is the gunpowder revolution that changed not only the form of combat in Europe, but its social and economic fabric as well. The ongoing RMA, if it lives up to the billing, will have equally profound effects. Change is expected in force structure, doctrine, and tactics. Economic and social change, in the latter case, in the *structure of international society*, should be anticipated. I have already described the place of precision and discrimination in the new American way of war. The broader changes of the precision RMA will be the result of a reliance on space weapons as the eventual backbone of American military power.

Innovation in warfare is generally first evident in tactical weapons development. The general trend has been to enhance the lethality of weapons, through increases in accuracy, rates of fire, destructive yield, or a combination of the three. Increase in precision of fire is generally preferable to increases in rate of fire or destructive yield. Both the latter options tend to swell the physical size and production expense of weaponry and the devastation around the target – if nothing else, reducing the value of loot. Precision of fire in weapons themselves generally occurs with advances in technology, the ability to control the direction and path of the weapon en route to the target (be it a soldier, ship, or heavy division) through technology and organizational change. Precision is gained as well with superior intelligence and stealthier movement. Better intelligence provides a reduced target set, further requiring fewer shots and less destructive means. Stealth allows the weapon to get closer to the target before engaging, a reduction in range that benefits accuracy and aids in discrimination. The capacity accurately or precisely to engage a target at distances beyond the range of an opponent's weapons is a standoff capability. Catapults in Medieval sieges and HARM cruise missiles today demonstrate standoff capability.

Revolutions require more than changes in technical nuance, however. The organization of the armed forces and, of necessity, the character of governing must also be deeply affected. The first to comprehensively articulate the association between military organization and government was German social historian Otto Hintze. His observations began with the comment: 'The form and spirit of the states' organization will [be] determined primarily by the necessities of defense.' According to Hintze, relations between state and military organizations are a continuous and adaptive historical process, placed in the context of the positional ordering of the state system—in other words, *the balance of power*.

Others had noted the association, if not so systematically, but precisely *how* military organization determined political form was undetermined. Hintze offered a structural explanation. The military, he stated, is customarily understood to have two primary roles: defense of the state from external threat and defense of the government from internal rebellion. The former role is conducive to liberty and democracy, for it protects and nurtures society. Without a military force to shelter it, democratic society would fall prey to neighboring expansionist authoritarian states. The latter role is obviously not so conducive, as the military becomes a tool of oppression. Hintze

therefore espoused that a military structure dominated by the army is prone to succumbing to the latter role, but one dominated by the navy is not. Hintze argued that this was due to the capacity of outward force protection inherent in boats—vice boots. I have argued elsewhere that it is simply because the navy is not well suited for territorial occupation. For these reasons, nations that have traditionally relied on naval power for state security (e.g. Britain and the United States) developed relatively more democratic and enlightened constitutions than their land-power contemporaries did. Problematic for political idealists, however, is that militarily influenced governing structure was for Hintze *geopolitically* determined. Reliance on a navy is not possible in a land-locked state surrounded by hostile powers. To survive, a strong army is paramount. The good political fortune of Britain and the United States came from their isolated island and continental positions, not from any *conscious* decision to pursue liberal leaning naval over land power.

Force structure, (at least partially) dependent on geopolitical factors, becomes the critical intervening variable determining the general character of government and interstate relations. A military organized for territorial control or expansion must of necessity have occupational capacities or functions. This means the military must have a *police* capacity, an ability to pacify the newly acquired subject population and to defend territory. The liberal determinist capacity of navies resides in the potential for strong outward force projection (equated here to offensive capacity and an extremely limited aptitude for internal policing). Despite some well-known examples of naval power forcing international political concessions, and spearheading successful democratic revolutions, its ability to *coerce* the broader citizenry is historically poor.

This fits with the purpose of naval force, to challenge or command the sea. Battle fleets are extremely feeble tools of internal repression. The purpose of armies is to traverse, take, pacify, and hold territory. This function readily transforms to police control functions, limiting through capacity for direct coercion the public exploration of enhanced liberal democratic development. The argument here is the liberalizing influence historically associated with navies should focus on its traditional organization for *offensive* or external operations, while armies are more often (than navies) organized for defense. When infantries are employed primarily on foreign campaigns, as are those of the US, their democratizing influence is maximized by omission. It is this doctrinal focus on offense over defense, combined with a limited or weak structural capacity for territorial occupation that determines the trajectory toward or away from democracy.

If navy-dominant or army-dominant forces can have such an important and acknowledged role in political development, what is the effect of a state that relies on air forces, or perhaps on space power? The American Air Force, not unlike its Navy, is largely organized for offensive military capability, emphasizing punitive, long-distance strikes and external coercion of enemies, and has a similar innate difficulty occupying territory. In this analogy, air forces should be inherently democratizing, but perhaps not as much as navies. Whereas the navy can project force into coastal areas—deeper inland with naval airpower—and must occupy territory, in ports or in

beach invasions using attached army-like forces (marines), air forces can project power globally (today), but only if they occupy enough territory for airbase and logistical needs. In these locations, at least, navies and air forces have security units for territorial control. Where the navy is limited to coastal and island control (and occasionally major river systems), air forces are not so constrained. Paratroops can be placed in a wide variety of locations, subject only to their ability to be resupplied. One could argue that the ability to cover more territory with aircraft (than with ships) could make an air force-dominant military slightly less democratizing than a naval-dominant one.

Space forces have not yet developed to the level of starship troopers, nor has the pace of weaponization in space allowed for direct ground attacks. Both these capacities are probably just a matter of time—not if, but when, with weaponization far in advance of troop deployments. The vital question here is this: What would the force structure of a space weapons-heavy American military look like, and how would that affect America’s global strategy and the community of states?

### **Structural Challenges of a Space-Heavy Military**

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 for the money that are more beneficial? The fact is, as was described above, funding for weapons does not come directly from school, 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 other weapon systems. In economic terms, funding used for one system that prevents, detracts from, or eliminates funding in another is called the ‘opportunity cost foregone.’ Space weapons must come at the expense of land, air, and sea forces, as well as other potential space applications. Increases in space funding will require 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 an impossible case when the comparison is made on a purely cost-utility basis. The tens (likely hundreds) of billions of dollars needed to develop, test, and deploy a minimal space laser with the capacity to engage a few targets around the world (admittedly in near real-time) is at the cost of 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.

Some programs, however, can be phased out in anticipation of space weapons capabilities in a manner that should not be threatening to champions of traditional war. On the day that kinetic space weapons become operational, the surface combat fleet of every state becomes obsolete. There

may be no easier military target for an all-weather, day-night, global coverage space weapon than a several-billion dollar aircraft carrier. Forward-looking navy planners will quickly see that the future of sea control is in a combination of long-range land-based naval air platforms, deep-sea submarines (impervious to space attack), and an increased need for fast, deadly surface craft capable of boarding and inspecting commercial ships for contraband. Merchant shipping and troop/supply transport requirements will not go away, they may even increase, but the capacity to protect one's own and deny or contest those of an opponent will change dramatically. Indeed, the coast guard will have an expanded role in the new space age as space assets will be unable to board and inspect ships or aircraft carrying weapons, illegal immigrants, or banned substances. They will be able to 'fire a shot across the bow,' however, and hold all such craft at risk until the navy can perform its invaluable and uncontested functions. A truly forward-looking navy planner would begin integrating space weapons capabilities into the traditional functions of surface battle fleets.

The US Air Force and Army must make similar changes in the manner of conducting their traditional duties. This should not be perceived as an anti-navy argument. In fact, the 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 the ability of the US to do all three will wane significantly. At a time 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.

Here is perhaps the most subtle argument for space weaponization and the full realization of a truly *new* American way of war. The United States will not give up its capacity to *influence* decisions and events abroad, and 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, the US must forego its ability to directly *intervene* in other states because its capacity to do so has been diminished.

And this brings us to the anti-space weaponization conundrum. Since the essential argument is not against space weapons *per se*, but against all weapons, the fact that a robust space weapons program by its nature requires reductions in vast amounts of traditional weaponry makes their position less tenable. Indeed, it is not uncommon to see arguments from the Union of Concerned Scientists, representatives of the Stimson Center, and many others suggest that the US would be better off *increasing* its land-, sea-, and air-based forces (particularly in the case of BMD) rather than deploying a few space weapons for the same purposes.

### **Space Weapons and Good Neighbors:**

What kind of force structure should a liberal democratic state maintain, both to ensure its continuing internal liberalism and to promote democracy abroad? I argue in *The Warrior State*

(Routledge, 2005) that such a military should be offensively (outward) oriented and a poor occupier of territory. Space weapons are outward looking by their very nature. They offer no advantage if the target set considered is not global. This means they are also offensive in nature. The defensively organized military *must* establish itself as an occupier of territory. The offensively organized force *can* have that function, but it is not necessary. An offensively organized force that is a poor occupier of territory is in fact the most suitable for participatory or democratic governments (as it is not likely to intervene in domestic politics) and is less threatening to the inter-state environment than one organized for both offensive actions *and* occupation.

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. States employing this offensive/non-occupational doctrinal structure need to maintain a military defensive capacity just sufficient to ensure its offensive capability is secure—not its entire territory. If competing states have adequate punitive deterrent offensive capacity, but neither can efficiently occupy the territory of the other, the inter-state environment should be more stable.

Without the capacity to occupy territory directly, the fears of other states will not diminish if a robust space bombardment capacity is available in preparation or support of a conventional invasion. Here is where the tremendous expense of space weapons inhibits their indiscriminate use, and more importantly shapes the remainder of the US force structure. 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. With such a force structure in place, the world's first liberal democracy is strengthened internally, and the community of states will find itself less threatened.

America *will* maintain the capacity to influence events beyond its borders, with military force if necessary. 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. Weapons in space do not threaten its sovereignty. In this way, *structural context constrains the use of space weapons*, and detracts from the employing state's capacity to exert external control (while maximizing its capacity for external influence). Without sovereignty at risk, fear of a space-dominant American military will subside over time. The US will maintain its hegemony as well as its security, and the world will be less threatened by the specter of a future American empire.

**With Great Power comes Great Responsibility: the Hegemon *Must* Lead**

Opponents of space weapons spend a great deal of time arguing that the US could become an international marauding behemoth with its newfound power, indiscriminately applying force wherever it pleases, upon whims or fancies yet unknown. Such has not been the case to date, after 60 years of dominance at sea and in the air, but never mind the historical evidence. The fear of other states regarding US military power may be misplaced, but it is certainly understandable. In its own process of transformation, the US is moving from intentions-based to capabilities-based analysis of what constitutes a threat to the national interest. If capabilities matter more than objectives to the US, then it should have no difficulty comprehending the reluctance of other states to embrace American military desire to dominate space. Fear of American power by *Americans* is also understandable, and indeed a healthy thing, but is incorrectly drawn from a conceptual misunderstanding of Lord Acton's famous discussion of absolute power and absolute corruption.

Politics and policy are about choosing. Making the *best* choice in any given circumstance is a rather simple task, which is not to say it is easy. Merely select the optimal solution among those available. The problem is, of course, that the best or better alternative in a given situation is rarely obvious. It may not even be discernible. For example, one can only choose from among alternatives that are *known* to exist, or that can be generated. An excellent option might be readily at hand, if only my background or experience permitted me to think of it. I may be prohibited from certain courses of action by physical or imposed limitations from a higher authority. In many cases where the outcome is uncertain, we quickly discover that it may not be *possible* to make a better decision. Especially in political contexts, there simply may be no option that stands above the others. There is often not even a *relatively* good decision available, one that is just a little bit better than the other in the context at hand. In such cases, we must get comfortable with the practice of making a decision that is *good enough*. At worst, we may have to be satisfied with a decision that we can charitably describe as not bad.

We are primarily concerned here with decision-making in and about the context of war, but many generalized observations are directly applicable. Decision-making theory writ large examines how individuals in social organizations use different methods to arrive at conclusions in situations where uncertainty and limited resources are the norm. What we find is somewhat startling. Even where distinct options are available and readily discernible, what we quickly learn is that these situations *rarely* involve a choice between good and evil, or right and wrong. If such were the case, decision-making would be easy. Select good over bad, and correct over wrong, every time. But most policy-related decision situations are concentrated on the margins of morality and rationality, with relatively minor gains or losses at stake. Here one is faced with two or more plans to achieve a laudable goal, say, lower crime rates or a more robust economy. Supporters of each make plausible cases for their proposal. Which will be the most *effective* motivates the rationalists; which will *do the most good* motivates the moralists. If an answer *can* be found to bind these two perceptions of propriety, the decision is once again simple, even if the gains are small. Choose better over good

enough and worse over bad. Though it can be incredibly complex and hard to parse, choose the lesser of two evils, or the better of two goods. The only real predicament in choosing the lesser of two evils is the knowledge that one is still choosing evil, a disagreeable activity but a justifiable one. Unfortunately, most military and policy decisions are made where *several* good alternatives exist, all of which will benefit some people, and hurt others.

*The tragedy is that a choice must be made*, for choosing *not* to choose will have ramifications for which the decision maker must still take responsibility, a situation captured in William Styron's venerable story, "Sophie's Choice," which I paraphrase here. Imagine a situation in which a World War II-era Polish mother, Sophie, who, along with her two small children is being relocated by train to a Nazi concentration camp. Sophie stops to ask the commandant a question. The commandant, a vicious sociopath, decides to take offense, and tells Sophie that she must board the train directly but can take only one of her children with her. The other will be executed on the spot. Sophie insists that she cannot choose between them, and the commandant replies that if Sophie refuses to choose, he will execute *both* children. She tries to rationally assess each child's potential for survival, and on this basis ultimately picks one. The other is shot.

Any option Sophie selected from those presented would destroy at least one child. There may be no rational means with which to make such a choice. There is certainly no moral means. All options appear to be created by the arbitrary whim of a sociopath. Here, by the definition of strategy so far revealed, Sophie is acting as a tactician and the commandant as the strategist. For it is the latter that has manipulated the boundaries of decision-making and perversely increased the number of options, the selection of any of which advances *his* agenda. It matters not at all to him which child is chosen, or that neither is, for the political aim of *his* strategy is degradation and terror of an entire social group. He forces Sophie into a decision that, whatever the outcome, shatters the psyche of the decision maker and isolates the remainder of the population, who now fear doing anything that might be seen as rebellious. Discipline in the group is maintained at the expense of one family. Lamentable as the case is, it shows that strategic thinking is not limited to laudable ends, and more importantly, engaging in a strategic competition trying to maximize tactical means is a losing gambit.

The capacity that some individuals have to make a choice when such dilemmas present themselves, and to never look back, is a type of political corruption. Whether a person is born with the capacity, or acquires it from positions of power is difficult to determine, but it is precisely this insidious malevolence to which Lord Acton referred when he wrote: "Power tends to corrupt and absolute power corrupts absolutely." In our zeal to condemn power and politics, we too often take this epigraphic encapsulation at face value, and associate corruption with immorality. But it is not immorality of which Acton writes—at least on the part of great leaders—but *amorality*, the ability to choose between two evils when a better option is not readily apparent. It is perhaps unfortunate that most people fail to include the very next line of Acton's famous quote: "Great men are almost

always bad men, even when they exercise influence and not authority: still more when you superadd the tendency or the certainty of corruption by authority.” Acton was aiming his moral judgment at historians, those who chose to excuse the actions of great leaders because of the magnitude of their accomplishments or the munificence of their offices; not against those corrupted. In particular, he argued against the tendency to forgive “Pope and King” merely because of their extra-legal status. Moral and historical responsibility, he insisted, must be assigned to those who lead and who make decisions of life and death.

The corruption of which Acton wrote was equivocal, a natural byproduct of leading *well*. The moral corruption of great leaders is evident in their capacity to make amoral choices based on an ability to see the greater good and separate it from the individual misfortune. We can presume, for example, that Acton would have argued that Winston Churchill was indeed a great man. His leadership brought Britain through its gravest hour. But he should not get a pass from historians simply because the bulk of his decisions seem to have worked out, and despite his place at the center of the defense of democratic freedom. The horror and vileness of those wartime decisions should be preserved in stark objectivity. Thus Acton’s pronouncement was not a blanket condemnation, as it is so often misinterpreted, for corruption is the eventual fate of all who gain power. They will unavoidably find themselves in situations where they must face—and make—morally ambiguous choices. Corruption is not a trait to be excused, but it may have to be accepted.

How *could* a person who had not been so corrupted continue to send others on missions that would most certainly lead to their deaths or the death of others, regardless of the greater good that might result? A person who does not become corrupted cannot continue quickly and assuredly to make such decisions, and certainly could not keep from dwelling on the implications. Continuous second-guessing leads to wavering and indecision, and in time-constrained situations is disastrous. Of course, not all who decide with confidence and who never look back on the moral failings of their decisions are destined to be great men and women; indeed, the preponderance may be delusional, if not evil. But the leader who becomes paralyzed into inaction because of the implications thereof—that is, a leader who has not become corrupted enough to make decisions on behalf of others—will fail to lead. That person will not be regarded as great in retrospect. Quandary and ambivalence are the variables that pervade policy decisions. Great leaders and great strategists accept the mantle of corruption, make decisions, and move on.

The United States, or more specifically the individuals who represent it, are the world’s leaders today. They are faced with a choice concerning the future of American military power, and they have chosen transformation. It is not a perfect solution, there are many who will be hurt or disadvantaged. But it is a solution with the world’s longer-term interests at the fore.

## **BAD ANALOGIES: FAULTY CLAIMS AGAINST WEAPONS IN SPACE**

The more powerful voices in the current anti-space weaponization lobby are drawn primarily from anti-nuclear weapons advocates and negotiators of years past, clearly evidenced by the rosters that make up most of these panels. Their achievements were notable, and assuredly positive. But today nuclear arsenals capable of global genocide have been pared to fractions of their previous highs. Their work may not be done, but it is less immediate in its need. Opposition to space weapons, which have nothing of the destructive capabilities of nuclear ones, is too often simply an extension of their success in another area. Looking for meaningful causes to champion, they focus on space weapons because the process, at least, in their production, expense, and deployment appears not dissimilar to that of a bygone nuclear era. The costs are vast, the technical challenges enormous. The military has the lead. Where better to transfer their energies?

I am therefore compelled to address a number of arguments disagreeing with my views, arguments that are well-intentioned but fatally misplaced. 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. The first is a detail-oriented or bottom up approach. The latter is a top-down policy approach. Both approaches are scientifically valid. In the case of space weapons, both have suffered from serious conceptual flaws.

### **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. Yet Kelvin was forced to admit his error just one year later, after the results of Samuel Langley's successful experiments with steam-powered flying machines at Quantico, Virginia, were reported to the press and in scientific journals by observer Alexander Graham Bell. Even so, influential astronomer Simon Newcomb could insist as late as 1902: "Flight by machines heavier than air is unpractical and insignificant, if not utterly impossible."

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."

Physicist Max Planck pointed out: "An important scientific innovation rarely makes its way by gradually winning over and converting its opponents: What does happen is that the opponents gradually die out." 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. *No credible scientist today asserts that space weapons (writ large) are impossible.* 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 (distinct vitriol reserved for the notion of a space laser), 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. An example is a recent RAND study that claimed lasers in space would be unworkable, based on the assumption that no more than five mega-joules of power could be made available due to limitations of space lift capability and current chemical reaction lasers. If the power level could be increased, or nuclear-powered electric lasers are considered, the results might be startlingly different. The meaningful issue hidden from view is *that a particular weapons system or capability cannot be developed and deployed within the planned budget, or with narrowly specified means.* When one relaxes those assumptions, opposition on technical grounds falls away.

There is another, critical flaw in the bottom-up approach to informing policy. 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 unanticipated (perhaps unanticipatable) scientific breakthrough that changes all notions of current capabilities, inevitably arrives? Have we thought out the details enough so that we can say categorically 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?

One last comment on feasibility: perhaps it's just me, but isn't it a tad inconsistent to argue on the one hand that weapons in space are technically infeasible, unbearably expensive, and if deployed would signal the demise of the US as a world power, and on the other insist that should it deploy weapons in space, the rest of the nations of the world would have to act swiftly and decisively against America or be forever trapped in the jaws of empire?

### **Space Weapons *Should* be Deployed:**

I recognize that the opponents of space weapons on technical or budgetary grounds are *not* advocating space weapons in the event their current assumptions or analyses be overcome. Because a thing can be done does not mean it ought to be. Nonetheless, they, too, should prefer policies that anticipate technological developments and the social and cultural changes they entail rather than

follow them. 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. In 1878, Sir William Preece, Chief Engineer of the British Post Office is claimed to have stated: “The Americans have need of the telephone, but we do not. We have plenty of messenger boys.”

### **Technology X:**

Indeed, it is concern for the unanticipated arrival of technology *X* that motivates much of my own concern 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 liberalism should suddenly acquire the means to quickly and cheaply place multiple weapons into orbit? The advantages gained from controlling the high ground of space would accrue to it as surely as 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 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. ■

### **Weapons in Space and Hegemonic War**

And America would respond ... finally. But would another state? I have already pointed out that if America were to weaponize space today, it is unlikely that any other state or group of states would find it rational to counter it in kind. The fact is that should the US develop and deploy weapons in outer space it *would* represent the addition of a potent new military capacity that would assist in extending the 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 still *less* threatening than *any other state* doing so, for two essential reasons.

First, no other state can currently compete with the US in military space. 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 therefore 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.

Second, placement of weapons in space by the United States would be perceived as an attempt at continuing its current military dominance on land, at sea, and in the air. It *would* enhance military power across the board, and would *extend* the current period of American hegemony beyond what it would be without space weaponization. Although there is clear 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 (and I have argued that space weapons are structurally far less likely to be used in such a manner, and is at least less threatening, than an increase in current capabilities), 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 rightly be perceived as an effort to break the land-sea-air dominance of the United States in preparation for a new international order. The action would be a challenge to the *status quo*, not a perpetuation of it. Such an event would be disconcerting to the 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 would enact an immediate counter-space effort. As current hegemon, the US could do no less, save graciously decide to step aside. Because all states are not equal in power or interest, no state other than the US would, or could, publicly proclaim its intent to dominate space without setting off an immediate scramble ... at least for the time being.

### **Absurd Logic of the ‘Hedging Strategy’:**

The last argument has prompted members of the pro-military space and anti-weaponization parties to unite under the so-called *hedging strategy*. Hedging has even been linked to the ‘fast-follower’ strategy now popular with high-tech business gurus. In this, the US continues to spend money on research and development, but not testing or deployment of any kind. Thus, the argument goes, should another state attempt to deploy weapons in space, the US could quickly mobilize to compete. Everyone is happy. The pro-military space advocates of the hedging strategy do so because they calculate it is the best means to maintain funding in the near-term, and anyhow, space war is inevitable so why not stay in the mix. The anti-weaponization advocates see it as a means to buy time. It is difficult to fund a weapon system that is not showing results, and after years of noticing an absence of space war between superpowers, funding will be cut from all budgets.

The strategy is thus the greatest hope for advantage of two sides with diametrically opposed aims, but it is not true compromise, the situation where both sides forego some of their aims so that others can be met. It is instead the forwarding of a competition that appears unwinnable to a later time, when the odds will have changed to favor one side or the other. It is a postponement of competition, not a resolution of it. It is therefore fatally flawed in its employ as either anchor for *or*

bulwark against the possibility of an arms race. As has been argued, should the US attempt to weaponize space today, no other state could counter it. No space arms race would unfold. To *wait* until another state is capable of deploying space weapons—and one would have to assume such a state would postpone its attempt until it could launch a considerable force into orbit—a space race is all but guaranteed! And not only is the hedging strategy particularly susceptible to the technology *X* argument above, it argues *for* a reactive posture from the United States. Hoping that either weapons will or will not come is a poor substitute for strategy.

In a previous work, I outlined an argument for seizure of low-earth orbit as the geopolitically determined dominant ground in the near future of warfare. The advantage of occupying the top of the gravity well is such that once ensconced, a state willing to defend its position cannot be outflanked. Attempts to dislodge it would be extremely expensive and would require enormous will on the part of an opponent. The US would have the will in such a situation, but perhaps not the funds or the capability.

### **Opportunity Costs Foregone—Good Riddance!**

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 refrain but a powerful one. Space weapons in particular will be very, very expensive. Are there not a thousand more beneficial uses for the money? The fact is, as was described above, funding for weapons does not come directly from school, 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.

The incongruence is evident in typical arguments against space weaponization, including the neo-Luddite position that they would provide no new or unique capability. The billions spent on space weapons could just as easily provide thousands of new jet aircraft, or a dozen heavy divisions. And if that isn't enough, simply use America's arsenal of intercontinental ballistic missiles, armed with conventional explosives, for time-sensitive precision attack.

Such a position enhances my earlier assertion that the weapon of choice has a distinct meaning, a political message if you will. As for the latter, a salvo of incoming ICBMs that may or may not have nuclear warheads is vastly more threatening than would be a set of kinetic 2-meter rods capable of penetrating hardened bunkers. Would not a complement of ten heavy tank divisions and the means to deploy them worldwide be more threatening to the sovereignty of another state than thousands of Brilliant Pebbles-like autonomous missile defense satellites? Moreover, the *levee-en-masse* implicitly advocated in these arguments would *demand* that more individuals die, on both sides, as low-tech war is a generally bloody affair.

In fact, space weaponization is critical to the process of transformation well under way, a process that cannot be reversed. Once America has demonstrated the capacity to strike precisely, it cannot go back to area bombing and massive collateral damage unless it is engaged in a war of

national survival. And if there are future technology, economic, and 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.

## CONCLUSIONS

A pantheon of scientific and ideological camps, each taking a piece of the debate and souring it to their own tastes, leads arguments against space weapons. Those opposing space weaponization would have us believe that they are, at essence, preventing another costly and ultimately ineffective military toy. But the issue of weapons in space is in truth but one element that we focus on in a larger argument about the direction of America's national security strategy. What do we want the future to look like? What strategy should America follow to get us there? Wait and see is not a good strategy, and it is especially corrosive if it is adopted by the world leader.

Lord Acton informed us that power is corrupting—but the corruption to which he referred was not evil. It was not immoral. It was necessary. The US is in a position that it must make decisions for the good of the international community, and there is no best option. No matter which choice is made regarding space weaponization, 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. In this it has a great advantage, the moral ambiguity of its people. There is no question that corrupted power held by others is a dangerous thing, but only Americans would be so concerned of corrupted power held by themselves. They fear what they may 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 the 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 undeniable 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.

It is always easier to pick at an established theory or policy than to generate an alternative, more so to find one that will receive *less* opposition than the extant one. To be sure, the devil *is* in the details, but chipping away at the details is hardly visionary. It is not strategic. And this is the vital point upon which the debate over weapons in space should pivot: *How* would the unilateral

deployment of weapons in space effect the future welfare of the United States and the world. We must *learn* from history, to be sure. But history is not tyranny. Today's context is not the same as yesterday, and too forced an analogy makes small-minded hobgoblins of us all. The world has changed dramatically since prohibitions against space weapons were first placed into international law, from there into the public consciousness. No longer are wary superpowers, weakened with global and domestic political expenditures, vying to prevent the other from achieving the advantages of space dominance. Today the US is the world leader, and it has an obligation to lead.