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Astrostrategy: Power, Policy, and Applications

> War is not a mere act of policy, but a true political instrument, a continuation of political activity by other means.
>
> Carl von Clausewitz[1]

That the world is undergoing fundamental change in the aftermath of the Cold War has become almost axiomatic. Policymakers search for a new paradigm that will guide them through the tumult of the new era. They are inundated with possible courses of action from academics with piles of fresh data and pundits with the gift of perfect hindsight. The result has been a loss of initiative by all the remaining great powers, and the one remaining superpower. They choose inaction not because there is too little information available, but because there is too much. The world system is in turmoil, and there appears to be no authoritative solution on the horizon. Conferences are held and committees are formed. More data are generated, and still there is no scheme to gather it all in. There is no formula to make sense of it. In space, the void of policy and strategy is as desolate as the cosmos.

When indecision and inaction result from such a jumbled mass of conflicting opinions, Michael Doyle avers, the most fruitful means of making sense of the cacophony is to 'reexamine the time-tested classics of ways of war and peace'.[2] He professes the continuing relevance of the three dominant world views of the twentieth century – realism, liberalism, and socialism – and argues persuasively that they maintain their validity in the twenty-first. Colin Gray is more adamant in his insistence that 'there are elements common to war and strategy in all periods, in all geographies, and with all technologies'.[3] Gray cautions, however, that just because strategy has consistent and universal historical patterns, it does not make the application of policy in new terrain and with new technologies simple or easy. Space policy and strategy is a case in point, with many attempting to codify a vision and few, if any, achieving a semblance of authority. That a return to the classics is warranted in such situations, and a return to the enduring concepts of strategy and doctrine

desirable when attempting to clear a path through the rubble of broken conjectures, is ardently accepted here. To be sure, this text has endeavored to describe and clarify the place of foundational geopolitical and realist theories that inform and guide its model, and to make a case that space power and strategy are logical heirs to a consistent line of political thought.

Strategy, grand strategy in particular, is not simply the efficient military application of force. Since grand strategy is ultimately political in nature, that is to say the ends of national strategy are inextricably political, yet the means or dimensions of strategy are not limited. Edward Luttwak describes grand strategy as the 'highest level of final results',[4] and includes not just the outcome of tactical and operational battles (the 'interactions of the lower, military levels'), but the 'formal exchanges of diplomacy, the public communications of propaganda, secret operations, [intelligence], and all economic transactions of more than private significance'.[5] Here the military dimension is but one to consider, and within the military dimension, subdimensions cannot be neglected. Clausewitz posited five elements of military strategy: moral, physical, mathematical, geographical, and statistical.[6] Gray provides us with no fewer than 17 elements of strategy, grouped into three broad categories; People and Politics, Preparation for War, and War Proper.[7] Astropolitics requires that at least six dimensions are considered and accounted for when forming and applying policy:

(1) *Society and culture*: The astropolitical society must be farsighted and enthusiastic for space exploration and conquest. It must be prepared to forgo expenditures on social programs and various personal commodities to channel maximum funds into the national space program. It must be imbued with national esprit. It must be industrious to use Mahan's concept, and fascinated with new technologies and the acquisition thereof. It must revere science and the study of technology. It must be tolerant, not only to accept the potentially paradigm-shifting revelations of scientific exploration at this magnitude of effort, but to be able to accept competing alternatives to scientific standards so that an academic marketplace of ideas can flourish. It must have a sense of adventure, or at least have a sector of society willing to undertake the tremendous risk involved in space exploration and to make heroes of those who do. The society must consider space conquest a moral imperative, necessary to the survival of the human race, and must also perceive themselves as best equipped to dominate in this arena so as to bring the best ethical and moral values of the Earth into new realms. If the society does not already incorporate these sentiments and attributes, it is up to the government to inculcate and nurture them.

(2) *Political environment*: The astropolitical state must be efficiently organized for massive public technology projects (e.g., self-sustaining space station). Perhaps counterintuitively, this means liberal democratic and capitalist in character. The centrally planned economies of the twentieth century showed

a fearsome ability to marshal resources and to coerce their populations into the sacrifices necessary to construct national space programs, but they were unable to sustain them at the highest levels. Related to the first dimension, and now part of the strong state/weak state literature, governments that rely on force or perceptions of efficiency for governing legitimacy (essentially authoritarian models) must expend tremendous amounts of political and monetary resources in maintaining social order (police power) or economic competence (planned production through micro-management). In the former instance, the authoritarian state gains its legitimacy by its ability to project force, that is, to protect its citizens from both internal (criminal activity) and external (foreign militaries) harm. If it cannot monitor and control its population, or cannot protect that population from foreign adventurism, it cannot justify outward expansion. In the latter case, the centrally planned economy must outperform the decentralized counterexample of the free market. Neither requirement is likely to be met in the astropolitical future. The liberal democratic state, on the contrary, receives its legitimacy from the will of the people. It should not need to expend excessive funds on social control. If its people are imbued with an astropolitical vision, they will support tremendous space program expenses without the need for the state to waste resources in forcing compliance. As to the economy, Marx recognized that free-market capitalism is the most efficient producer of wealth, and the historical record shows the folly of attempting to compete with it using other means and models. A free people committed to space exploration will generate the wealth necessary to sustain a long-term vision for space dominance.

(3) *Physical environment*: The terrain of space and the terrestrial basing requirements of space support operations have already been discussed in Chapter 3, and need no further elaboration here. The physical requirements of the spacefaring state itself are also of interest, however. The state should be large enough in physical terms to incorporate a broad natural and industrial resource base and have the sites needed for terrestrial space support. It should also be large enough in terms of population so as to support the extreme expense, through taxes, of space domination efforts, and to continually renew the large number of inventive and high-technology positions required in support of space operations.

(4) *Military and technology*: Because of the risk involved, military personnel have always been at the forefront of space exploration. The military should be organized and trained in such a way that personnel have maximum initiative to deal with a multitude of contingencies and unanticipated events, within the framework of a state-determined strategy and policy. The vast distance and communications lag inherent in space travel will require brazen ingenuity and formidable courage. In order to maximize efficiency, the potential space-dominant state must integrate all its armed forces, and use the advantages of space control to maximum effect. The state must be preoccupied with

technology innovation. It must be the world leader in new applications and technologies. Included in this dimension is the requirement for centers of higher learning (for technological innovation) and military science (for strategy and tactics). The state must be prepared to fund massive scientific projects (of the order of the Manhattan Project, e.g. super-conducting super collider).

(5) *Economic base*: The industry of the state must be robust, high-tech, and adaptive to ongoing innovation. New applications for space resources and space explorations products are imperative. Government assistance in research and technology, and the free distribution of those results to civilian industry, is vital. Civilianized or commercial space industry is paramount. When the government acts as a discriminating monopolist, allocating resources by deciding authoritatively which companies shall produce what goods, it can marshal extraordinary financial clout in the effort but the market can better determine the most cost-effective and highest quality providers of space products through the mechanism of free and decentralized entrepreneurship. Logistics and supply lines must be identified, monitored, secured and controlled where vulnerable. Anticipation to future needs, given the lag in innovation and production, is paramount. The state should be prepared to reinforce areas of successful strategic production with subsidies and the release of classified technology, if needs be, but within the free-market paradigm should loathe interceding unless market failure is evident. Entrepreneurship is as vital to the state wishing to dominate space as it was to the early domination of the seas by Britain.

(6) *Theory and doctrine*: Strategy is more than just military maneuver and tactics. Theory and doctrine are more than just operational plans. They are the means for organizing knowledge, the lens through which we perceive the world around us, through which we evaluate and make sense of the infinite database of reality. Space theory and doctrine must encompass and coordinate all of the dimensions just listed. The number of categories or dimensions is not as important as the concept that all relevant variables are accounted for. Gray finds 17 dimensions, a number likely to be revised and changed, but his effort to integrate all pertinent concepts is impressive. A plan of coordinated advance is necessary along all dimensions of the spectra in order for strategy to succeed. A force of the highest trained and best-equipped soldiers will be trapped and decimated if their logistics chain is ignored. The most fervent space power proponent as head of state is unlikely to succeed in the liberal democratic state if she/he cannot shape a complementary consensus among the population. Yet theory and doctrine do more than just coordinate and illuminate. The difference between theory or doctrine-driven strategy and, say, technology-driven strategy is profound. The first integrates new technology into a coherent vision; the latter abandons foresight and follows the apparatus wherever it leads. One is proactive, the other reactive. One wins, the other

loses. When one accepts the authority of technology (or economics, or any other dimension) over strategy, the analogy is to the child who receives a hammer for a gift. Suddenly, a world of nails appears, and they all need pounding.

STRATEGIES FOR OUTER SPACE

The paucity of coherent space strategies, under this definition, is surprising. An interest in space domination is evident from at least 1946 with the first government-sponsored RAND Corporation Study concerning a *Preliminary Design for an Experimental World Circling Spaceship.*[8] To date, only James Oberg's *Space Power Theory*, a comprehensive effort commissioned by the United States Space Command, approaches the requirements laid out above.[9] In between and now beyond, only a few fragmentary expositions of reasoned space strategy are to be found.

In 1961, Dandridge Cole undertook a poll of 423 leaders of the astronautic community, asking their opinion of his 'Panama Hypothesis[:] that there are strategic areas in space which may someday be as important to space transportation as the Panama Canal is to ocean transportation.'[10] According to Cole, roughly 80 percent answered in the affirmative. Cole advocated human colonization of asteroids, or planetoids, those 'three-dimensional islands of the new three-dimensional sea', as stepping stones to outer space conquest.[11] At least six factors influenced his focus on these celestial bodies: (1) as a source of new knowledge about the origin of the solar system and possibly life itself; (2) as a potential threat, asteroids or meteors could be deflected from a collision course with Earth; (3) as way stations for fueling interplanetary expeditions; (4) as raw materials for Earth industry; (5) if hollowed out, as desirable protected locations for colonies; and (6) again if hollowed out and then propeled, as massive space ships capable of sending sustainable human colonies to populate the planets of other stars.[12] His vision was remarkable, but targeted to younger audiences of space enthusiasts. It did not make significant strategic inroads. At the same time, Cole's exhortations were falling on the wrong ears, the United States and Soviet Union were in the midst of declaring all of space unpossessable, making his primary arguments moot. The general sentiment led to the first of the two primary schools of space power theory: space as strategic *sanctuary* and space as the ultimate *high ground.*

Compatible with the view that space is the province of all humankind, and that its riches belong to all the peoples of Earth, is the notion that space is a sanctuary from the evils of this planet. Why spread the disease of war and violence to the cosmos? Indeed, from this perspective space may be the only hope for the future of humanity. As we destroy our planet through nuclear or political abuse and environmental misuse, space as a pristine frontier looms ever more valuable as the last, best refuge of humanity. And it could work. Antarctica

has been collectively held as an international common for over 40 years (though its resource potential has barely been tapped). The same model could and should apply to space, say the space sanctuary proponents. The argument is an old one. Alton Frye wrote in 1963:

> There is a strong American consensus in support of the basic elements of national space policy. The world will be a much safer place if we can succeed in maintaining space as a sanctuary for purely peaceful activities. [But] how do we keep the arms race from spreading to this new arena? Presently the United States hopes to accomplish this noble purpose by a declared policy of abstaining from developing space weapons. While pressing for international agreement on the peaceful use of space, we promise the Soviets that we will refrain from orbiting weapons of mass destruction so long as they do not station such devices in space.[13]

Yet even Frye recognized that despite the noble intentions of his argument, space had been militarized already, and weaponization of the realm was moving apace. David Zeigler provides a subtler and more powerful argument.[14] His space as strategic sanctuary thesis argues that the militarization of space actually detracts from the security of states that pursue it. Whereas a space militarization policy may have been consistent with Cold War strategies, it may not be at all appropriate in a post-Cold War world. Although the sanctuary argument, 'in the strictest sense, [claims] space is a sanctuary when it is completely unthreatened by terrestrial or space-based weapons', Zeigler, too, admits this is problematic.[15] Space is already militarized, and there seems to be little or no chance it could be demilitarized perfectly in the near future. So Zeigler suggests a more flexible and useful claim is that space is a sanctuary 'so long as nations truly intended never to use space weapons', a condition he claims exists precariously today.[16] Initially, the United States and the world embraced the space as sanctuary policy because of the extraordinary vulnerability of their fragile but immensely useful on-orbit assets. Blatant arming of space or the creation of new and effective anti-satellite (ASAT) capabilities would only serve to induce other states to match or surpass US capability, and would threaten its most expensive and vital military support link. Additionally, the deterrent logic of MAD might be abrogated in the deployment of space-to-ground weapons in the future. The 30–35 minute warning of an ICBM attack, and at least several-minute warning of Medium- and Short-Range Ballistic Missile (MRBM; SRBM) attack were deemed necessary for calculated national responses. Nuclear bombardment from space-based platforms would bypass satellite and ground radar monitoring systems thus providing no effective warning time, and the potential for surprise attack would have been increased. In practice, however, Zeigler must conclude the fragile basis for his point. The world's spacefaring nations *had* been publicly employing the sanctuary argument even as they cautiously and covertly developed

space weaponization policies. The intent to use weapons was always publicly denied, but privately reserved as a viable option.

Still, in the current post-Cold War environment, Zeigler maintains that the need for space sanctuary is greater than ever before. First, states increasingly deploy and rely on space systems for battlefield support, so just the threat of losing those systems makes states less secure overall. If states were monitoring terrestrial crises with satellites, any attempt to deprive them of that information (through jamming, laser 'blinding', or direct ASAT attack) could be interpreted as preparation for imminent hostilities. States so deprived might feel compelled to launch a first strike. Second, it is unwise and premature to invest heavily in space weapons when so many pressing battlefield hardware and personnel requirements go unfilled. All of the services have seen cuts in budgets that affect readiness and morale. Space weapons are costly and, in Zeigler's view, grossly overrated. In addition, space weapons are simply not as cost-effective as passive countermeasures against enemy space capabilities. Third, the United States' 'physical security, economic well-being, and democratic expansion depend on the quality of American international relations', and any attempt to weaponize space would be 'unacceptably provocative', leading to 'global instability'.[17] Ultimately, Zeigler's argument rests on the conviction that military space power has been overstated, and that existing US conventional capabilities are more than adequate for its security needs (if properly funded) even with the loss of space-based support. The claim is not convincing.

Space as the ultimate high ground is the more prevalent view, and as a counter to the space sanctuary argument it stems from the notion that the weaponization of space is inevitable. So long as the fight is surely coming, one ought to stake out and maintain the best defensive positions and be prepared for any contingency. In 1997, then Commander-in-Chief of US Space Command General Joseph Ashy declared that the United States was becoming so dependent on space systems for its armed forces that it had (perhaps unwittingly) created an enormous incentive for future enemies to target them. The United States, Ashy said, 'must be prepared to defend these systems':[18]

> It's politically sensitive, but it's going to happen ... we're going to fight in space. We're going to fight *from* space and we're going to fight *into* space ... That's why the US has development programs in directed energy and hit-to-kill mechanisms. We'll expand into these two missions – space control and space force application – because they will become increasingly important. We will engage terrestrial targets someday – ships, airplanes, land targets – from space. We will engage targets in space, from space.[19]

Given the situation described by General Ashy, and the linked realities that Russia's massive co-orbital ASAT facilities are still operational and that the US has tended to concentrate its capabilities into a few multi-mission satellites

(as opposed to the old Soviet model of relying on multiply redundant single-mission ones), it is conceivable that even a limited functional ASAT capability could do extraordinary damage to US military preparedness. The high-ground perspective is not just a counter to the sanctuary argument, however. It has an independent history based on the tactical imperative of seizing the dominant terrain of the battlefield. The high ground offers the side that holds it commanding overviews, fields of fire, and defensive position. In this view, space is the 'ultimate high-ground' for the terrestrial battlefield.[20]

The 1991 Gulf War served as the coming-out party for space support. No less an authority than Arthur C. Clarke dubbed it 'the world's first satellite war'.[21] Without question, the now-critical functions of outer space assets were featured throughout that conflict. From early warning and detection of missile and force movements to target planning and battle damage assessment, space-based intelligence gathering assets proved themselves legitimate combat force multipliers. In Kosovo and Serbia, as the century gave way to a new millennium, space assets were even more effective. The most surprising and enduring contributions evident in the expanded military role of outer-space technology, however, may have come from the previously underappreciated value of navigation, communications, and commercial imaging and weather prediction satellites.[22] With these performances, space warfare has emerged from its embryonic stage and is now fully in its infancy. In the post-Cold War era, downsizing of traditional military forces continues, access to customary forward basing is increasingly withdrawn, high-technology Command, Control, Communications and Intelligence (C^3I), and mission support is integrated into routine operating procedures, and reliance on intelligence forecasting for optimal troop deployments is emphasized. In this transitional environment, employment of space systems for all levels of inter-state conflict is likely to increase significantly. The merit of space capability was so apparent that despite substantial reductions in US Department of Defense (DoD) procurement budgets following the Gulf War, investments in space-based capabilities significantly increased:

> The result is that investment in space systems is taking an increasingly larger share of a shrinking total DoD investment budget; in fiscal year 1993, space investment will exceed fifteen percent of total investment, a doubling of the share since fiscal year 1986. For comparison purposes, the space investment budget now exceeds total investment in the Army by 20 percent, whereas in fiscal year 1986 it was less than half.[23]

At the same time, counter-pressures for limiting or reducing military and military-support activities in space remain viable. The end of the Cold War has dampened the various services' enthusiasm for pressing for expensive new space theater of operations, as new funding made available for space will likely be drawn from existing conventional force structure. With a new era of

extended peace potentially at hand, at least in the realm of superpower rivalry, popular support for the militarization of outer space is equivocal. Long-standing efforts at confirming space as the common heritage of mankind and a sanctuary have been renewed. Calls to abandon space expenditures and instead demands for increased domestic spending on terrestrial infrastructure and quality of life are made, as critics of national space programs incorrectly view money spent on military and civilian space projects to be worse than wasted. In this milieu, where does the national strategy of the United States now stand?

ASSESSING CURRENT US SPACE STRATEGY

The United States is the dominant power in space, and so its policies will impact on all other spacefaring states. Given the mutual incompatibility of a common heritage perspective and a space control agenda, it is unlikely that the policy will remain coherent. A review is warranted to verify the dictums of astropolitics are in place and to evaluate the efficacy, or lack thereof, of its guidelines.

After summarily dismissing, then abolishing, the previous administration's National Space Council (coordinator of the commercial, civilian, and military space programs of the United States), and allowing the space enterprise to languish for over two years, President Clinton belatedly attempted to articulate a wide-ranging national position. His 1995 declaration of space policy identified five overarching goals.[24] In order, they are to: (a) enhance knowledge of the Earth, the solar system and the universe through human and robotic exploration; (b) strengthen and maintain the national security of the United States; (c) enhance the economic competitiveness, and scientific and technical capabilities of the United States; (d) encourage state, local and private-sector investment in, and use of, space technologies; and (e) promote international cooperation to further US domestic, national security, and foreign policies. The dimensions of this policy appear at first to conform to a notion of grand strategy as defined above, but closer examination shows the policy has little value for guidance. It appears to be no more than a somewhat organized collection of existing *ad hoc* national space policy declarations of the previous decade. Not surprisingly, curious and patently paradoxical statements abound, for example: 'The United States rejects any claims to sovereignty by any nation over outer space or celestial bodies, or any portion thereof, [yet p]urposeful interference with space systems shall be viewed as an infringement on sovereign rights.'[25] Within this and the following mandate, the various military services have attempted to carve out a mission for space:

> Improving our ability to support military operations worldwide, monitor and respond to strategic military threats, and monitor arms control and non-proliferation agreements and activities are key priorities for national security space activities. [N]ational security space activities shall contribute to US national security by: (a) providing support for the United States' inherent right of self-defense and our defense commitments to allies and friends; (b) deterring, warning, and if necessary, defending against enemy attack; (c) assuring that hostile forces cannot prevent our own use of space; (d) countering, if necessary, space systems and services used for hostile purposes; (e) enhancing operations of U.S. and allied forces; (f) ensuring our ability to conduct military and intelligence space-related activities; (g) satisfying military and intelligence requirements during peace and crisis as well as through all levels of conflict; (h) supporting the activities of national policymakers, the intelligence community, the National Command Authorities, combatant commanders and the military services, other federal officials, and continuity of government operations.

Of course, any imaginable policy or strategy could be knit together from these woolly parameters. The armed services have all cautiously advanced proposals to further their parochial interests while complying with what they perceive to be the general sentiments of the White House. The Joint Chiefs of Staff have provided a general and complementary guideline for near-term policy called 'Joint Vision 2020'.[26] As in previous incarnations, the focus remains on warfighting, with four operational concepts; dominant maneuver, precision engagement, focused logistics, and 'full spectrum' dominance. What purports to be new is a jargon- and acronym-laced list of fuzzy catch phrases like 'focus on multinational and interagency interoperability', and 'MOOTW' (Military Operations Other Than War). Where the text is intelligible, 'Joint Vision 2020' reads like a recruiting pamphlet ('The US military today is a force of superbly trained men and women who are ready to deliver victory for our Nation') or an acceptance speech ('The overall goal of the transformation described in this document is the creation of a force that is dominant across the full spectrum of military operations – persuasive in peace, decisive in war, preeminent in any form of conflict').[27] It uses patriotic rhetoric to bring acceptance of its subdued but primary goals, including the willingness to fight for and in space.

For its part, the United States Space Command released its 1998 'Long Range Plan'. In keeping with the President's mandate and in compliance with Joint Vision 2020 expectations, the plan is based on the primary assumption that the protection of military and civilian/commercial space assets is in the vital national interest. Space power is currently a force multiplier on the battlefield, aver the authors; commercial space expenditures and revenues will

increase at 20 percent or more annually; rivals including commercial and military adversaries will emerge to challenge US space superiority. To prevent the increasing US reliance on space assets becoming a future liability, Space Command is the logical focal point to coordinate military space operations. Within that self-described mandate, 'Our Long Range Plan identifies required capabilities, Concepts of Operation, new organizations and partnerships to achieve these operational concepts.' These operational concepts include the notion of: (1) Space Control, that is, guaranteed access to space and the ability to deny enemies' access to; (2) Global Engagement, which requires worldwide satellite indications and warning monitoring (intelligence) and ballistic and cruise missile defense; (3) Full Force Integration, the conceptual and operational integration of conventional and space forces to the point that 'air, land, and sea [c]ommanders exploit space assets as intuitively as their more traditional assets'; and (4) Global Partnership, the strengthening of military space capabilities through incorporating or 'leveraging' commercial, other US agency, and allied national assets to the fullest.[28] The vision is a critical link on the path to a complete strategy for space, but Space Command is still not sure of its footing. That Oberg's *Space Power Theory* – paid for, published and officially released by Space Command – has the front-page caveat that the 'opinions, conclusions and recommendations expressed or implied are those solely of the author' and 'do not necessarily represent the views of US Space Command, the Department of Defense, or any other US Government Agency', is a not too clever way of hedging its bets with the Executive Office.

The US Air Force, attempting to become the leader in space force applications, identifies its plans to meet future requirements with the paired 'Global Engagement' and 'New World Vistas' policy statements. The latter is a technology-driven attempt to maximize cost-utility in a shrinking budget ('Affordability restrictions demand caution at this point'[29]), and therefore has dubious utility for grand strategy and useful policy planning. One point that is vigorously asserted, however, is that the 'future force will include a mix of weapons, both space- and groundbased, able to shoot photon- and kinetic-energy munitions against enemy space and ground assets'.[30] The Army and Navy, too, have jumped on the bandwagon. The Army is leading efforts for ground-based, aerospace defenses. As an extension of traditional air defense capabilities, the MIRACL laser and planned ground-based anti-missile interceptor are undergoing testing for anti-satellite operations.

Clearly, current US space strategy is focused on technological capabilities, and to a lesser extent on developing military and commercial capabilities. Given ambiguous and weak leadership from the top, strategy is perhaps naturally timid, hedging, elusive, evasive, and contradictory. When vision is not provided, followers will focus on the concrete: current and future technology and systems applications.[31] What space power can and could do

becomes the essence of thinking about strategy, when it should be limited to operations and tactics. These elements are not to be panned, they are critical to fighting and winning war, but they are not the equivalent of strategy. To turn the analysis around, what one can say about the current US space strategy is that it most certainly is not decisive, guiding, or illuminating. In a word, it is not *strategic.*

AN *ASTROPOLITIK* POLICY FOR THE UNITED STATES

Astropolitik gets its moniker from the old, now completely discredited German school of *Geopolitik.* It is meant to be a constant reminder of the inherent flaws of letting the cultural dimension (specifically hypernationalism) drive grand strategy. One should also be struck by the affinity with the doctrine of *Realpolitik.* This most extreme of the political realist theories makes no attempt to hide its ruthless concentration on the national interest and the cold, calculating central role of raw power in politics. It is widely criticized by those who do not have power, widely employed by those who do. Such is the case today that in space, at the very least, the United States can adopt any policy it wishes and the attitudes and reactions of the domestic public and of other states can do little to challenge it. So powerful is the United States that should it accept the harsh *Realpolitik* doctrine in space that the military services appear to be proposing, and given a proper explanation for employing it, there may in fact be little if any opposition to a *fait accompli* of total US domination in space.

What follows is the framework of the *Astropolitik* grand strategy. It is not the only strategy available to the United States, nor is there any effort to deny the existence of a superior strategy. It is simply the logical output of an *Astropolitik* analysis. No attempt will be made to create an unconvincing argument that the United States has a right to domination in space, or that other states through their enmity are forcing their hand. Such simply would not be true. Only a brief attempt will be made to argue that, in this case, might does make right. The persuasiveness of the case will be based on the self-interest of the state, and stability of the system. It is a policy and a case lifted directly from words of the Athenians in Thucydides' infamous 'Melian Dialogue', perhaps the most precise and enduring statement of *Realpolitik* ever made.[32]

Just as the Athenians could argue that Melian neutrality was more damaging to their interests than outright hostility, *Astropolitik* declares that the lack of a hostile space power at the present is more damaging to US space interests than having aggressive, competing military space programs with which to cope (an argument specifically constructed in Chapter 4). In a parallel line of reasoning, the Athenians believed the toleration of a weak neutral close to the borders of its empire was a sign of weakness in themselves. It could induce

current allies to switch to neutrality, depriving them of needed revenues (via tribute). The lack of an enemy in space is most assuredly causing complacency in the United States, stunting the expansion of its space capabilities, and further causing our allies (in Europe and Japan specifically, but in Israel most notoriously) to develop their own potentially conflicting military space capacities because they cannot be sure of US commitments in the future. The United States does have one significant edge over the Athenians in that it can advance a broad moral argument for space domination. Athens was fashioning a coercive empire of dependent states, the United States is not. The US form of liberal democracy, unlike Athenian mob democracy, is conducted within the rule of law. It is admirable and socially encompassing. If any one state should dominate space, it ought be one with a constitutive political principle that government should be responsible and responsive to its people, tolerant and accepting of their views, and willing to extend legal and political equality to all. In other words, the United States should seize control of outer space and become the shepherd (or perhaps watchdog) for all who would venture there, for if any one state must do so, it is the most likely to establish a benign hegemony.

The *Astropolitik* plan could be emplaced quickly and easily, with just three critical steps. First, the United States should declare that it is withdrawing from the current space regime and announce that it is establishing a principle of free-market sovereignty in space (along the guidelines articulated in Chapter 5). Propaganda touting the prospects of a new golden age of space exploration should be crafted and released, and the economic advantages and spin-off technology from space efforts highlighted, to build popular support for the plan.

Second, by using its current and near-term capacities, the United States should endeavor at once to seize military control of low-Earth orbit. From that high ground vantage, near the top of the Earth's gravity well, space-based laser or kinetic energy weapons could prevent any other state from deploying assets there, and could most effectively engage and destroy terrestrial enemy ASAT facilities. Other states should still be able to enter space relatively freely for the purpose of engaging in commerce, in keeping with the principles of the new regime. Just as in the sea dominance eras of the Athenians and British before them, the military space forces of the United States would have to create and maintain a safe operating environment (from pirates and other interlopers, perhaps from debris) to enhance trade and exploration. Only those spacecraft that provide advance notice of their mission and flight plan would be permitted in space, however. The military control of low-Earth orbit would be for all practical purposes a police blockade of all current spaceports, monitoring and controlling all traffic both in and out.

Third, a national space coordination agency should be established to define, separate, and coordinate the efforts of commercial, civilian, and military space projects. This agency would also define critical needs and deficiencies, eliminate

non-productive overlap, take over the propaganda functions iterated in step one above, and merge the various armed services space programs and policies where practical. It may be determined that in this environment a separate space force, coequal with army, navy and air forces, be established, but it is not deemed vital at this time. As part of the propaganda effort, manned space efforts will need to be accelerated. This is the one counter to the efficiency argument of the new agency, but it is necessary. Humans in space fire the imagination, cull extraordinary popular support, and, while expensive, Oberg makes the subtle argument that humans 'have and will continue to possess a keener ability to sense, evaluate, and adapt to unexpected phenomena than machinery'.[33] A complementary commercial space technology agency could be subordinated or separated from the coordination agency, to assist in the development of space exploitation programs at national universities and colleges, fund and guide commercial technology research, and generate wealth maximization and other economic strategies for space resources and manufacturing.

That is all it should take. These three steps would be enough to begin the conceptual transition to an *Astropolitik* regime and ensure that the United States remains at the forefront of space power for the foreseeable future. The details would be sorted out in time, but the strategy clearly meets the elementary requirements previously articulated, from social and cultural to theory and doctrine. It places as guardian of space the most benign state that has ever attempted hegemony over the greater part of the world. It harnesses the natural impulses of states and society to seek out and find the vast riches of space as yet unidentified but universally surmised to be out there while providing a revenue-generating reserve for states unable to venture out. It is bold, decisive, guiding, and, at least from the hegemon's point of view, morally just.

The moral argument has many levels, and stems from both the high-ground and the modified-sanctuary theses (accepted here) that the weaponization of space is inevitable. The operational level contradiction is quite simply that it is unconscionable to assign to the military services the task of controlling space, and then deny them the best means with which to do it. To the military, it is the equivalent of sending a soldier into combat without a rifle. At the strategic level it thwarts the gloomier predictions of the awful result of space weaponization by preempting the process. Most theorists who lament the coming inevitability of space militarization do so on some variation of the notion that once one state puts weapons into space, other states will rush to do the same, creating a space-weapons race that has no productive purpose and only a violent end. Other assumptions are generally along the line that conflict and bloody war must eventually reach the cosmos, and delaying or holding off that eventuality is the best we can hope for. By seizing the initiative and securing low-Earth orbit now, while the United States is unchallenged in space, both those assumptions are revealed as faulty. The ability to shoot down from space any attempt by another nation to place military assets in

space, or to readily engage and destroy terrestrial ASAT capacity, makes the possibility of large-scale space war and or military space races less likely, not more. Why would a state expend the effort to compete in space with a power that has the extraordinary advantage of holding securely the highest ground at the top of the gravity well? So long as the controlling state demonstrates a capacity *and a will* to use force to defend its position, in effect expending a small amount of violence as needed to prevent a greater conflagration in the future, the likelihood of either scenario seems remote. To be sure, if the United States were willing to deploy and use a military space force that maintained effective control of space, and did so in a way that was perceived as tough, non-arbitrary, and efficient, other states would quickly realize that they had no need to develop space military forces. It would serve to discourage competing states from fielding opposing systems much 'in the same fashion that the Global Positioning System (GPS) succeeded in forestalling the fielding of rival navigation and timing systems'.[34] In time, US control of low-Earth orbit could be viewed as a global asset and a public good.

To make the last point clearer, a brief excursus on one of the more contentious policy debates of the day – ballistic missile defense or BMD – is offered for consideration. The 'most likely' area in which the United States might 'act unilaterally' to put a space-based weapons system in place is in the area of BMD.[35] The debate over *where* the next generation BMD system is best placed is certainly not over, and a space-based system at this time is not the front runner for deployment. But the advantages of a system that could eliminate the threat of accidental, rogue state, or terrorist launches of nuclear missiles is so compelling that it is highly likely to be attempted regardless of opposition efforts.

The widely held belief that the Reagan military build-up of the 1980s (in truth begun by President Carter in the last year of his administration), and in particular the energy and monies spent on the Strategic Defense Initiative (SDI or 'Star Wars') was at least partially, if not primarily responsible for the breakup of the Soviet Union and the end of the Cold War, is a popular tenet of the US right in justifying military expenditures. If you want peace, prepare for war, goes the old adage. Partisans of the American left vigorously denounce the notion that Reagan in general and SDI in particular had anything at all to do with the end of the Cold War. Frances Fitzgerald's response is typical.[36] Reagan, she claims, was simply not capable of formulating such a far-reaching policy. His belief in a laser-based protective shield around the US was pure fantasy. While the *Astropolitik* perspective is highly sympathetic to the claim that military confrontation, particularly the threat of SDI, was indeed the straw that broke the Soviet camel's back, it is not necessary to dwell on that contentious issue to make the moral case for a new space-based missile defense system, but the legacy of such a system must be briefly described.

The 1972 Anti-Ballistic Missile (ABM) Treaty placed strict constraints on

the ability of the two superpowers to defend themselves from missile attack. The logic was simple, if morally perverse. The deployment of an effective ABM defense would eliminate the threat of guaranteed retaliation, the vaunted 'second strike' capability that would deter any state from attempting a crippling 'first strike'. The necessity of *mutual and assured* destruction was the dominant principle in the precarious balance of terror that would supposedly ensure world peace. Still, neither side wished to eliminate completely their ability to research and test ABM capability. By treaty then, two ABM sites were allowed each side. One surrounding and protecting the national capital composed of no more than 100 missiles, and another smaller site for research and development.

The fact that the Soviet Union (and now Russia) deployed and maintained, into at least three generations, an ABM screen around Moscow, while the Americans quickly abandoned efforts to protect Washington, highlights the moral nature of the two governments. Congress and the President quickly realized that releasing massive funds for the protection of lawmakers in Washington, while spending not a dime or an iota of effort to defend any other city, was a reelection nightmare. Moreover, it did nothing to detract from the prospects of nuclear war. If the leaders of the state are (at least partially) protected from nuclear attack, would they be more or less willing to initiate actions or employ diplomatic tactics that could lead to war? The answer clearly appeared to be toward the more precarious side of the equation. For these two reasons, that the government was not more deserving of protection than the people, and that such protection increased (*vice* decreased) the likelihood of nuclear war, the Americans never deployed an operational, Treaty-allowed ABM system. The official US argument was that it was just not cost-effective to deploy a system of no more than 100 protecting anti-missiles, since all the Soviets had to do was overwhelm that defensive capacity with 101 missiles. The Soviet leadership, by contrast, had no qualms about protecting themselves from limited nuclear attack, regardless of the expense.

At some point, the student of nuclear war politics will ask, what of today? If a missile were launched, accidentally or on purpose, what would be the result? The answer, bluntly stated, is that it would hit and destroy its target. There remains today no means to protect the citizens of this or any country (excepting the city of Moscow) from nuclear devastation. From this perspective, on 23 March 1983, President Reagan offered to the nation a plan:

> If the Soviet Union will join with us in our effort to achieve major arms reduction, we will have succeeded in stabilizing the nuclear balance. Nevertheless, it will still be necessary to rely on the specter of mutual retaliation, on mutual threat. And that's a sad commentary on the human condition. Wouldn't it be better to save lives than to avenge

> them? Are we not capable of demonstrating our peaceful intentions by applying all our abilities and our ingenuity to achieving a truly lasting stability? I think we are. Indeed, we must.[37]

Immediately opposition was apparent. The core of negative views centered on two general arguments: the United States *cannot* deploy SDI, and it *should not* deploy SDI. The first argument is technical, the second normative. It is extraordinarily interesting to note that the bulk of the published technical opposition came from journalists and non-scientists, while the scientists tended to argue publicly that SDI was morally flawed. At any rate, the pared down technology argument was that the President's ambitions were too complex. The possibility of a perfect nuclear shield could never be realized, regardless of the amount of research effort and expense applied. As with the previous example of the ABM Treaty, the Soviets could simply overwhelm whatever capacity the United States could deploy. The normative or moral arguments were more dispersed. The most compelling at the time was that if the United States could develop a nuclear shield capacity, the Soviets would have to attack before the shield could be deployed, or lose forever their ability to wage nuclear war on the United States. The other prominent moral argument was that the vast amounts of money being spent on space defense could be better used on domestic programs like public education, highway and transportation upgrades, and the like. Besides, the protesters argued, the mutual deterrence of the balance of terror was apparently working, why fix something that wasn't broken.

The first argument, that the technology to deploy a missile defense shield will never be developed, is defeated by analogy. History is replete with scientific advances over the popular howlings that a thing can't be done ('man will never fly', comes to mind). The ingenuity of the scientific community accepts such dares willingly. The real technical question is not can the task be done, but can the task be done for the amount of money available? Thirty-five to three hundred billion dollars, the original cost estimates, are in retrospect far too low. Three to five trillion dollars, however, might just turn the trick.

The second, which contains two primary embedded contentions, argument is also flawed. The first contention, that fielding SDI would *compel* the Soviets to attack the United States in advance of operational deployment is astonishing. It presupposes that the United States, once safe from the Soviet nuclear threat, would be ready and willing, indeed anxious to devastate the Soviet state with a rain of nuclear bombardment. No other assumption could cause the Soviets to attack the United States prior to the deployment of SDI but still at a time the United States could launch a devastating retaliatory strike. Put bluntly, in order to believe the Soviets would be forced to attack peremptorily, one must assume that mutual assured destruction of both sides was preferable to the *inevitable* destruction of just the Soviet side by the Americans.

In the manner of a backhanded compliment, the preceding logic supports the notion that the only reason World War III did not occur is because of the massive nuclear retaliation threat maintained by the two superpowers. It suggests that both sides (or in this case, the US side only) were so obsessed with destroying the other forever that without the risk of mutual extinction they surely would have done so. If one side showed the tiniest weakness, had either ever been vulnerable, the other was ready and willing to use its nuclear arsenal. This notion of course belies the historical record. From 1945 to 1951, the United States had atomic then nuclear monopoly, and until at least 1963 it had a large advantage in nuclear weaponry, yet chose not to use it.

The latter of the embedded contentions is also problematic. It presupposes that spending on space weapons and technology will take away from the quality of life on Earth. Aside from the banal statement that the quality of life is minimized by death, forgoing a defensive system to put increased funds into infrastructure also assumes that the funds for SDI research would have been made available instead for expenditures preferred by the opponents of the program. This is unlikely, as the state would simply shift the appropriations to more conventional areas of the military budget. Even if the death of a program gave an unexpected windfall of public funds, again unlikely since most of the proposed money was for future budgets, there is no guarantee that monies saved would not go back to the public in the form of lower taxes. It also assumes there is no productive benefit to the state from research and development in space weapons applications. To the contrary, the US and world economies have already benefited greatly in the miniaturization and computing technologies developed for the SDI/BMD programs. Military space programs, not the least of which is a robust space launch capacity, are the backbone of many civilian space operations, and the resultant economic advantages of telecommunications, navigation, earth-sensing, and weather satellites are obvious. The spin-off technology and follow-on economic effects of space research and development are abundant, and must be factored into the cost calculations of the state.

Nonetheless, the complaints of the nay-sayers were heard. The United States was unwilling to spend the massive amounts of money necessary to develop an imperfect shield for missile defense. With the end of the Cold War, the old deterrence arguments fell apart, but so did the impetus for deployment. By the second half of the Bush presidency, however, new threats emerged to challenge BMD planners. The prospect of having to deal with a limited or accidental missile launch increased in relative importance. In the wake of rapid Russian military devolution especially, the security of ballistic missiles was threatened, and even the locations of nuclear missiles and materials were sometimes in doubt. Would the Russians, hard pressed for convertible currency, sell technology, warheads, and missiles to other states or perhaps terrorist organizations? 'Rogue' states like Iraq and North Korea were known to be

working on limited ballistic missile and nuclear warhead programs. The primary threat to the world in this new environment was less global conflagration from massive strikes, but localized devastation from limited ones. SDI no longer had to protect the United States and its allies from thousands of nuclear missiles, but now from just dozens. The technical arguments against SDI with this new mission vanished.

The pro-deployment moral argument, that there ought be some protection against limited strikes, carried the day. The SDI's prototype Brilliant Pebbles/ Brilliant Eyes ABM architecture was downgraded from a nuclear shield to a partial, global defense mechanism. The scheme would place a network of independent sensors and kinetic kill batteries in space. If an unannounced or unplanned launch occurred anywhere in the world, it would be detected and evaluated (by the specific characteristics of its heat signature). If a threat, targeting data would be passed to the orbiting launch platform, and a tiny aerospace projectile would be sent down the Earth's gravity well to engage the missile. With this design, from 24 to 100 simultaneous launches of missile weapons anywhere in the world could be detected, engaged, and destroyed.

By 1990, the plan was changed to a simpler, single-shot hit-to-kill kinetic engagement interceptor, with on-board sensors. Advances in miniaturization and computer speed meant that these autonomous weapons could be mass-produced and would weigh less than 20 kgs each. These Brilliant Pebbles would be scattered about low-Earth orbit and could function independently. The expenses of the modified Brilliant Pebbles remained high, possibly up to $300 billion. With the 1992 changeover to the Clinton administration, the plan was scrapped. Clinton, a vigorous opponent of SDI before claiming office, was won over by proponents of the need to maintain at least research and development funding for BMD, and quietly submitted budgets that would allow minimal research requirements to be met. By 1996 Congress was passing authorization bills for new defense systems over the objections of President Clinton. With North Korea and Israel demonstrating medium-range ballistic missile (MRBM) potential, and Iraq, Iran, and Libya (among others) thought to be developing similar capacities, and Pakistan detonating a nuclear device, Clinton and Congress in 1999 authorized the development of a light, mobile, ground-based BMD system to thwart very limited nuclear attacks against specific targets. The concept is generally known as Theater Missile Defense (TMD).

A ground based anti-missile system to defeat incoming ballistic missiles is much less expensive than a space-based one, but vastly inferior. First because of the limited range of the interceptor, it must be assigned to a point target or area to be effective. A TMD battery in New York could not defend an attack on Los Angeles. A space-based system would have global presence. Wherever the threat occurred, the system would be ready to intercept. Surprise missile attack would be impossible. Second, because the TMD engages the incoming

missile, collateral damage will occur in or near the defense point. As an illustration, the Patriot missile (model for the current TMD light BMD system) defense of US positions in Saudi Arabia during Desert Storm engaged Iraqi SCUDs in the unpowered, down side of the ballistic arc. In one instance, a Patriot missile successfully engaged a SCUD missile, knocking it off course. The rocket body landed on a barracks causing heavy casualties; perhaps more than if the rocket with its warhead had hit its intended target. In a nuclear warhead scenario, even if the warhead is rendered inoperable, radioactive material could be spread over a significant region in the defending state's territory. Damage from chemical or biological weapons could also be severe, even with a successful engagement. A space-based system would engage the target in the boost phase of flight; meaning that whatever state launched the missile would likely suffer the collateral damage of its destruction. Another advantage to boost phase targeting is that missiles with multiple warheads will not have separated, maximizing the defensive effect and minimizing the defensive problem of multiple independent re-entry vehicles (MIRVs). Third, and tied in closely with the second factor, TMD systems will engage targets that are spiraling down the gravity well while they must propel themselves up the well. Space-based systems will do so traveling down, the energy and maneuver advantages of which have already been described, to attack slower-moving and hence more vulnerable targets.

Without question, from military applications and strategic perspectives, space-based BMD systems are superior to terrestrial (ground, sea, or air) based ones. They also have exceptional political advantages. *Any* BMD system will receive criticism from potential adversaries, as is evident with the routine vocal opposition that comes from Russia and China to any proposed US TMD system. Because of criticism and retaliatory threats made by the opposing states, domestic and allied support has been hesitant and unsure. If the state is willing to deploy BMD anyway, by using a space-based system instead of a ground-based one it should be able to gradually regain widespread popular support. One of the advantages of the mobile TMD system, say its advocates, is that it could be dispatched to threatened areas as needed. True enough, but imagine the problems associated with some possible deployments – to Israel, say, or to Taiwan. As much as the United States would insist that the deployment was for defensive purposes only, it would be a clear and possibly inflammatory sign of preference for one side over the other. A space-based system would forever be on alert, and would avoid the political problems of terrestrial basing altogether. The United States would not have to deploy physically to the threatened territory to be able to intercept and destroy hostile missile activity – regardless of the side that launched first. US impartiality could be asserted and maintained. Retaliations, too, could be controlled. While a US TMD battery in Israel could conceivably shoot down an incoming ballistic missile from Iraq, what would prevent the Israelis from shooting back in anger? The

United States would need to deploy the system in both states. Eventually, they would have to be deployed in all states, and any hope of countering the space-based system with a fiscal restraint argument would be lost. Moreover, the human operators of the TMD battery would be at risk. Their capture or casualties in their ranks could force the United States to get directly involved in the conflict. Knowing this, they could be particularly desirable targets for either side. In other instances, the United States might not have the time to deploy a TMD battery to a hostile theater, or may be politically unable to do so. The case of an Indian–Pakistan or an Iraq–Iran exchange comes readily to mind.

In all these described circumstances, with a space-based BMD system the United States could effectively uphold the principle that aggression is wrong in international politics, as first stated in George Bush's post-Gulf War declaration of a New World Order. The United States could stop the launching of missiles at any state from any state or substate actor, without taking sides or further inflaming the issue. If it were willing to do so, and would act decisively and non-arbitrarily to prevent any hostile aggression from crossing national borders, the US-owned and operated space-based BMD system could be seen as a global asset. The world would be free of the fear of missile-based nuclear war. As a critical element of an overall *Astropolitik* strategy, it has tremendous political advantage and virtually no political liability.

The moral superiority of the realist argument is revealed in this context. By following the three-part *Astropolitik* strategy – immediately renouncing the OST and acting to structure a property-based free-market regime in its place; deploying a space-based BMD system which would eliminate missile-borne threats and guarantee domination of space; and establishing a proper, cabinet or ministry level space coordination agency to encourage space efforts and promote popular support for space exploration – a dominant liberal democracy like the United States can usher in a new era of peace and prosperity.

NOTES

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