

Silent Kingmaker

The Need for a Unified Wartime Contracting Strategy

By JONATHAN PAN

ISAF

International support—financial, political, and military—is kingmaker in Afghanistan.

—Carl Forsberg, *Politics and Power in Kandahar*

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Wartime contracting in Afghanistan is broken, and the breakdown has led to a new breed of nouveau riche warlords, men who are too young to have fought the Soviets but who are more politically and economically savvy than their mujahideen predecessors. This new breed is called *commercial warlords*. In short, commercial warlordism is based on money and guns. Their money is not being reinvested into the local economy, but diverted to their Dubai slush funds; their hired guns are pointed not at the Taliban but rather at the citizenry and their political opponents. These commercial warlords have created an environment in which the North Atlantic Treaty Organization (NATO) International Security Assistance Force (ISAF) and the Quetta Shura Taliban are in a stalemate—a stalemate that these warlords want to perpetuate.

If there is no more war, there is no more money.

For the Afghan populace, the revulsion against commercial warlords and greedy contractors is second only to the lack (or perceived lack) of security. For this war as well as future wars, it is time for NATO to realize that aid can be a problem and that every dollar or euro spent should be a dollar or euro leveraged. This article argues that the Alliance must create a unified wartime contracting strategy to combat commercial warlordism. This strategy must:

- limit price inflation on materials and services
- limit substandard performance through proper quality assurance and quality control by civil engineers
- increase access to contracts for local companies

- identify commercial warlords through financial forensics
- allow the Afghan National Security Forces (ANSF) to provide security instead of armed security groups
- ensure all national contracting commands are placed under the regional command
- rebalance the focus of tactical requirements versus governance goals.

Price Inflation and Substandard Performance

The Tarnak Bridge in Kandahar Province, located on Highway 4 south of Kandahar City, was completed in 2005 at a cost of \$247,000. Maintaining freedom of movement on this highway is important because of the imports and exports that come and go from Pakistan through the Wesh-Chaman border crossing point, which lies at the end of the highway. Aside from trade, the highway is important for military purposes. Nearly 90 percent of nonsensitive cargo supporting U.S. forces in Afghanistan passes through Pakistan. Before April 2009, 80 percent of all traffic went through Torkham Gate at the Khyber Pass, Afghanistan's busiest port of entry, and 20 percent went through the Wesh-Chaman Gate. As of November 2009, 40 percent went through the Wesh-Chaman Gate, and 60 percent through Torkham Gate.

A suicide attack on the Tarnak Bridge in February 2010 downgraded civilian, economic, and military traffic to one-way travel. Repairs on the bridge amounted to \$527,000—more than double the cost of the original bridge. Part of the reason for this inflated price is the development and construction boom in Afghanistan that has companies charging from \$33 to over \$100 per cubic meter of gravel, with some contracting officials paying the higher end of this spectrum. Another reason is that the bridge was not properly constructed in the first place. The topping slab, which distributes the weight of the girders, was never placed on the bridge. This severely increased the wear and tear as certain girders received all the weight. Nevertheless, a letter dated January 9, 2006, from the United Nations Office for Project Services (UNOPS) says that the company “constructed this project to the satisfaction of UNOPS/PRT [Provincial Reconstruction Team] with the workmanship over the whole project being to a very high standard.” A common problem among projects is the lack of engineers who can assess workmanship.

To prevent possible future degradation of freedom of movement, a causeway will be built around the bridge for \$1.16 million because suicide attacks cannot be prevented unless every vehicle is searched at a checkpoint away from the bridge. However, this option is not feasible due to the volume of commercial, civilian, and military traffic. Without having a viable Afghan government solution, commercial warlords have an incentive to target projects just to have them repaired at a premium price. The Kandahar Department of Public Works, which is responsible for road maintenance, will not work outside a 10-kilometer radius of Kandahar City.

The solution to the price inflation is to create—and strictly adhere to—a price index of common construction materials or services. To prevent substandard performance, qualified engineers who can properly conduct quality assurance and quality control of projects must serve as project managers.

Subcontracting Due to Lack of Access

The Tarnak Bridge project illustrates the large sums of money entering the Afghan economy. ISAF knows little about where the money is going.

Research of open source contract records and company profiles revealed that the company that built the Tarnak Bridge was Bilal Noori Construction Company (BNCC),

which started out as Afghanistan Social Action Program (ASAP) in 1997. The Tarnak Bridge was completed as a joint venture between ASAP and the Attar Group of Construction and Trading Company. The owner of the Attar Group also owns the Afghanistan Rehabilitation Construction Company. At some point in time, Attar's owner was part of ASAP (he signed a contract on behalf of ASAP with the Kandahar Airfield Contracting Office on November 4, 2003). Afghan companies often change names and business owners frequently own multiple companies. Therefore, if a contracting office were to blacklist BNCC, the office probably would not know the names of the other companies the BNCC owner holds.

When companies do not have the capacity to do a whole project by themselves, they enter into a joint venture, such as BNCC and the Attar Group did for the Tarnak Bridge. On the other hand, subcontracting usually entails one company that has access to contracts subcontracting the whole project to another that did not. For example, there was a \$40,000 per month service contract in a Kandahar district that was awarded to Revival Company, which is owned by a former subcommander of Ahmad Shah Massoud, the so-called Lion of Panjshir. A Kandahar company performed as a subcontractor for \$35,000 per month. Basically, the contracting office paid a 12.5 percent markup only because the subcontrac-



Canadian engineers repair bridge damaged by suicide car bomb in Kandahar, Afghanistan

Joint Task Force Afghanistan (Matthew McGregor)

tor did not have access to the contracting office in Kandahar. While \$5,000 might seem insignificant to NATO, the idea that a company from Kabul or the Panjshir Valley is winning contracts in Pashtun-majority Kandahar is hard for many contractors as well as ordinary citizens to accept. Of more than 100 companies whose representatives met with or were interviewed by the author, every single one was said to have received a subcontract for a project in Kandahar from a company in

of companies. Although BNCC has an office in Herat, it appears to have its main headquarters in Kandahar. It is unknown how the governor actually stopped the project, and it is unknown what BNCC had to do to continue.

While a civilian official has a reason to be involved in development projects, the involvement of an ANSF commander in development projects beyond security is dubious. There are allegations that Colonel Abdul Razziq, an Afghan Border Police

of the contract price. Instead of using private security, EACC/HCRC used local subcommanders. EACC claims that Razziq normally charges an overall fee for operating in the Spin Boldak district. However, due to the high visibility of this project, he waived this fee but continued to allow his subcommanders to provide laborers and security from the two dominant tribes in the district, the Noorzai and the Achekzai.

Some argue that ANSF commanders, usually the police, should not be involved in the private security business. Some contend that paying the police is the same as bribery. Counterintuitively, using the police as security for construction companies actually forces them to get outside instead of hunkering down in their checkpoints. The alternative to ANSF providing security is unacceptable:

Forty members of a Karzai-affiliated unit, the Kandahar Strike Force, entered the office of the Kandahar City prosecutor and demanded the release of an associate being held for car theft and forgery. . . . The Kandahar City prosecutor refused to hand over the suspect, leading to an exchange of gunfire during which Kandahar Province Police Chief Matiullah Qateh was killed.¹

Furthermore, in the volatile south, new police recruits earn \$240 a month while their rival armed security groups make upward of \$600 a month, not including food and transportation to the work site. The private security company that EACC frequently uses is Asia Security Group, which is owned by Hashmat Karzai, cousin of President Hamid Karzai.

If NATO were to promote the usage of ANSF as security, perhaps recruitment and retention might increase. Although distasteful by Western standards, NATO's unified wartime contracting strategy should allow companies to utilize ANSF as security for the cost benefit as well as undermining the private security racket.

Refocusing

Do substandard performances, extended delays, and usage of ANSF as security warrant a blacklist, a warning to the company, or just a warning to the contracting offices? If one nation's contracting office does one of the above, will its other NATO partners comply as well? These questions cannot be resolved until all national contracting commands answer to the regional commands. The regional

contracts and statements of work are so technical that even native English speakers find them difficult

Kabul. It is not only the Kabul and Panjshir Valley companies that subcontract to Kandahar companies—some Kandahar companies profit from their access as well.

In July 2009, BNCC signed a \$3.1 million contract for asphalt road construction and repair that the company had no capacity to do. Instead of entering into a joint venture with another company, BNCC subcontracted all the construction work to two companies: Esmat Arman Construction Road and Supplying Company (EACC) and Hafez Construction and Road Building Company (HCRC). When these companies were asked why they did not bid for the project themselves, their reply was that they did not know about it. Only the politically connected companies have access to NATO installations and therefore their respective contracting offices. For instance, many companies not owned by the Pashtun Popalzai and Barakzai tribes have informed me that they have had difficulty getting access to Kandahar Airfield.

Financial Forensics

Researching projects costing over \$200,000 and the companies that perform them inevitably results in the identification of commercial warlords. The Highway 4 project was supposed to be completed no later than October 21, 2009. The road was completed 16 weeks late with no penalty to the contractor. Part of the delay was caused when the provincial governor of Kandahar, Tooryalai Wesa, stopped the project for an unknown duration. Rumors generally diverge into two paths; the first was that the governor stopped the project because BNCC was a company from Herat that subcontracted the construction work; the second was that the governor wanted to award this contract to his own select group

commander, placed the BNCC's owner in jail due to the delay of the project. The subcontractors believed that this happened because Razziq attended the Spin Boldak shura and promised that the road would be completed regardless of any difficulties. Razziq was also recommending contractors to NATO forces as well as threatening contractors that NATO would not pay them if they did not meet his demands.

This threat was applied to EACC/HCRC when Razziq demanded what the company thought were modifications on the contract. Technically, this was all stipulated in the 40-page statement of work, but the company strongly believes that they made modifications out of their own pockets that totaled \$586,000. This situation partly stems from the fact that contracts and statements of work are so technical that even native English speakers find them difficult. That makes it almost impossible for local Afghan contractors to comply, unless they choose the ones with Western consultants, which fuels the rage of the Afghan population.

The owner of BNCC alleges that Razziq and contracting officials promised him the second phase of the project, which was to pave the final 2.2 kilometers of Highway 4 to the Pakistan border. Due to financial forensics, BNCC was not sent solicitations for the second phase because it was assessed by the unit on the ground as well as the provincial government as doing a poor job. Also, the financial forensics process revealed a new layer of information that was previously unavailable to NATO forces.

Private Security, Public Cost

According to the subcontractors, security costs amounted to 9 percent (\$280,000)



U.S. Army (Kristina Gupton)

Afghan contractors mix concrete for soldier housing at Contingency Operating Base Pushtaysark, Parwan

command cannot tell the national contracting commands what to spend money on, but it should be able to tell them who not to use based on historical data and evidence.

The lack of a standard contracting policy requires a joint NATO effort rather than individual national efforts. For the United States, the National Defense Authorization Act (P.L. 110–181) established the Special Inspector General for Afghanistan Reconstruction (SIGAR) in 2008 with the mission to “enhance oversight of programs for the reconstruction of Afghanistan . . . and [to keep] the Congress, as well as the Secretaries of State and Defense, currently informed of reconstruction progress and weaknesses.”² The SIGAR produces quarterly reports to Congress, which include audit results. Usually, these results are bleak: “SIGAR—through its audits, inspections, investigations, and observations on the ground in Afghanistan—has identified four major oversight concerns: lack of accountability, insufficient attention to capacity building and sustainment, inadequate integration of projects, and corruption.”³

There are usually remedial measures taken in the form of corrective training for

contracting officials. However, the issue is the system, not the lack of training.

Contracting officials are judged on the speed and quality at which they fulfill requirements for the warfighter. Counterintuitively, choosing the lowest bidder can sometimes promote corruption; there are reasons why some contractors keep winning contracts. Furthermore, while contracting officials have some face-to-face interaction with prime contractors, the subcontractors doing the work at the district level are usually unknown at both the tactical warfighter level and the contracting official level.

To fix the system, it is time to establish a unified contracting command under NATO that is transparent, accountable, and responsive to both tactical and governance requirements. A unified wartime contracting strategy should establish varying levels of importance between fulfilling tactical requirements and limiting negative effects on governance, reconstruction, and development. The upcoming Kandahar operation is primarily focused on governance, and therefore the contracting strategy should accurately reflect that. For example, if one contractor has historically been the best for building checkpoints or repair-

ing craters at the lowest price, but he does so through corruption, should contracting officials choose him? That depends on whether senior decisionmakers think that enhancing governance comes from the checkpoint itself or from making the rich richer. **JFQ**

NOTES

¹ Carl Forsberg, *Politics and Power in Kandahar*, Afghanistan Report 5 (Washington, DC: The Institute for the Study of War, April 2010), available at <www.understandingwar.org/files/Politics_and_Power_in_Kandahar.pdf>.

² Public Law 110–181, “The National Defense Authorization Act for Fiscal Year 2008,” January 28, 2008.

³ Special Inspector General for Afghanistan Reconstruction (SIGAR), *Quarterly Report to the United States Congress* (Washington, DC: Office of the SIGAR, October 30, 2009), available at <www.sigar.mil/pdf/quarterlyreports/Oct09/pdf/SIGAROct2009Web.pdf>.

Atlas V is launched with Advanced Extremely High Frequency satellite onboard



U.S. Air Force (Larry E. Reid, Jr.)

Spacepower and Warfare

By M . V . SMITH

Colonel M.V. Smith, USAF, is Director of the Air Force Space and Cyber Center at Air University. This article is an excerpt from Colonel Smith's chapter in the forthcoming NDU Press book *Toward a Theory of Space Power: Selected Essays*, which is the outcome of the Institute for National Strategic Studies Spacepower Theory Project.

A discussion of the nexus of spacepower and warfare is controversial because space has yet to be overtly weaponized or generally recognized as an arena of open combat. Many, if not most, nations want to keep space a weapons-free peaceful sanctuary, particularly the suprastate actors. Just because all other media are weaponized and used as arenas of combat does *not* mean that space will automatically follow suit.¹ Perhaps this generation will figure out how to keep the beast of war in chains short enough to prevent it from going to space. But the next (and each succeeding) generation must also keep the chains short. Unfortunately, the constant march of technology is making space more important to states at the same time it is making it easier to build space weapons.

In anticipating the future of spacepower for theoretical discussion, we can do little

more than extract a roadmap from the history of human activity and extrapolate forward. The preponderance of evidence suggests that space will be no different from air, land, and sea regarding warfare. In the words of Colin Gray:

It is a rule in strategy, one derived empirically from the evidence of two and a half millennia, that anything of great strategic importance to one belligerent, for that reason has to be worth attacking by others. And the greater the importance, the greater has to be the incentive to damage, disable, capture, or destroy it. In the bluntest of statements: space warfare is a certainty in the future because the use of space in war has become vital. . . . Regardless of public sentimental or environmentally shaped attitudes towards space as the pristine final frontier, space warfare is coming.²

The strategic value of space to states is not in question. Advanced spacefaring states are already reliant—and moving toward dependence—on space-derived services for activities across every sector of their societies. Spacepower is becoming critical to their styles of warfighting. Likewise, the injury that can

be caused to such states by menacing their space systems can be considerable. Given these incentives, the beast of war will either break its chains all at once or stretch them slowly over time.³

Like war itself, space warfare, the decision to build space weapons, and whether or not to weaponize space are all matters of policy, not theory.⁴ It is the job of theory to anticipate such developments given the template that history suggests. Land, air-, and seapower lend imperfect analogies to spacepower, but they are applicable enough to see that spacepower may have its own grammar, but not its own logic.⁵ The logic of statecraft and warfare laid out in Sun Tzu's *The Art of War* and in Carl von Clausewitz's *On War* applies to spacepower as well as any other element of military power. A student of spacepower must become thoroughly familiar with both of these works.⁶ War is a political activity and therefore a human activity with a long history that serves as a guide path. Spacepower is already part of the warfighting mix in the political and strategic unity of war, and this trend will continue.⁷ Some predict that spacepower will make the greatest contributions to combat effectiveness in wars of the 21st century.⁸

War Extended to Space

War is an instrument of policy, and spacepower, as an element of the military instrument of power, is part of the policy mix that makes war, whatever form it may take.⁹ Space generally has been treated as a sanctuary since the Eisenhower administration, and the use of space systems in warfare is limited to supporting terrestrial forces. This is not likely to change if the security concerns of states remain low. However, if states are confronted with intense security concerns, such as their survival, the weaponization of space and its use as an arena of conflict become far more likely.

Spacepower is a player at every point along the spectrum of conflict.¹⁰ Covert operations often use space services with the same degree of reliance as the large joint military forces of advanced spacefaring states engaged in a conflict. In addition, space systems often support multiple military operations with varying intensities in different parts of the world simultaneously.

Spacefaring prowess is a common attribute of the dominant powers in the world today. Special attention must be paid

to so-called rogue states that have access to space-related technology and may even be spacefaring but do not have the conventional forces to achieve their policy aims. Those aims tend to be very intense, and these players may

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seek space weapons as an asymmetric hedge against spacefaring adversaries who may try to coerce them.

The dominant military powers in the world, some of whom are potential adversaries, also tend to be the dominant spacefaring states. Because of the economic benefits and exponential enhancements that spacepower delivers to terrestrial warfighting, those states are under increasing pressure to defend their space systems and to counter those of their potential adversaries. This may lead to a space weapons race and an immediate escalation of hostilities to “wipe the skies” of enemy satellites should war break out between two or more dominant military space powers.¹¹

When assessing the interplay between the spectrum of conflict and the spectrum of belligerents, it may be the case that war between two weak actors will not likely extend into space. However, if the power is perceived to be disparate, a weak actor is far more likely to use space weapons against a powerful state as an asymmetric defensive move.¹² A powerful state may counter the space systems in use by a weaker adversary, but it is likely to do so by placing diplomatic pressure on commercial vendors, or executing attacks on their ground stations, or launching highly selective covert attacks on the satellites they use by employing temporary and reversible means.

Should two dominant spacefaring powers go directly to war with each other with intense motives, both will find it critical to preserve their space systems and will consider it a dangerous liability to allow their enemy to exploit them. Given the ability of spacepower to cut the fog and friction of war while connecting military forces at the tactical, operational, and strategic levels, it is likely that space systems will be primary targets that will be negated in the opening moves of war. The fight for space is likely to be intense and brief.

Temporary means of negation will probably switch to permanent methods of destruction to remove doubt in the minds of commanders.

Offense and Defense

Sun Tzu pointed out, “Invincibility lies in the defense; the possibility of victory in the attack. One defends when his strength is inadequate; he attacks when it is abundant.”¹³ All warfare depends on interplay between the offense and the defense. They are “neither mutually exclusive nor clearly distinct . . . each includes elements of the other.”¹⁴ Defense generally implies a negative aim of protection and of preserving the status quo in the face of an attack. Conversely, offense generally pursues a positive aim by inflicting damage on the adversary to coerce him into accepting terms. However, consider that there are defensive aspects resident in every attack. Warriors of old carried their shields into battle when they attacked with their swords to protect them from the thrusts of the defenders. The offense is also resident in every defense. Remember that the Royal Air Force won the great defensive Battle of Britain by attacking the invading German bombers.

The general goal of offense is to inflict such damage on the adversary that they are *defensively culminated*, meaning they can no longer resist the attack and must either accept terms or be annihilated. Conversely, the goal of defense is to resist the attack and inflict such costs on the adversary that they are *offensively culminated*, meaning they can no longer attack and can only defend themselves. These concepts will come into play when we discuss space control and space denial.

It is often said that defense is the stronger form of warfare.¹⁵ This is not true in space—today. Defending satellites and their data links is a difficult proposition at best. Satellites are delicate, fragile devices that can easily fall prey to any number of space weapons that currently exist, such as lasers, radio frequency jamming, brute force weapons, and surface-to-space missiles with kinetic kill vehicles—many of which are relatively small, mobile systems. While satellites in low Earth orbit are the most vulnerable to lasers and lofted kinetic kill vehicles, satellites all the way out in the geostationary belt and in highly elliptical orbits share a universal vulnerability to radio frequency jamming and electromagnetic brute force attacks. Satellites do not need to be physically destroyed to be rendered ineffective. Satellites are commanded

(as applicable) and provide their services to ground stations and users via the electromagnetic spectrum. Hence, there is a rule: no spectrum means no spacepower. The rapid proliferation of jammers and electronic intrusion devices around the world in recent years occurred upon recognition of this rule.

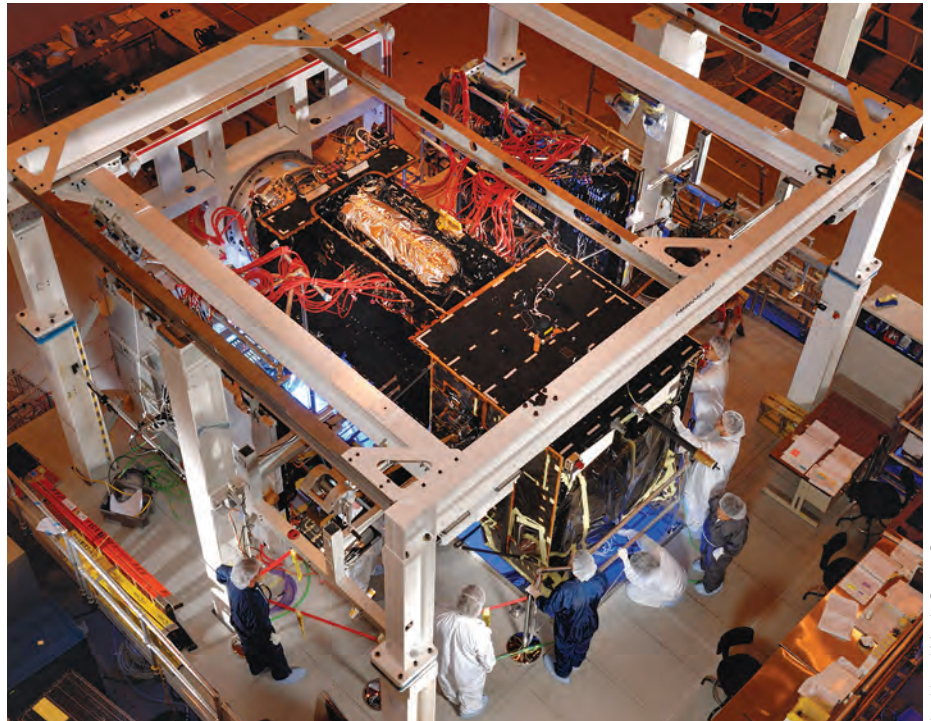
today's space defense rests on the assurances in the Outer Space Treaty, which imperfectly implies that space is a peaceful sanctuary, although it only bans the basing of weapons of mass destruction in space

Defenses to date are paltry at best. An adversary with robust space denial weapons may be able to negate all friendly space systems in a matter of hours; therefore, it is imperative for space powers to acquire the ability to find, fix, track, target, and destroy an adversary's space weapons very quickly. Such systems may reside on land, at sea, in the air, or in space. It will require close coordination with terrestrial forces to engage them against space weapons at the behest of the space commander.

In essence, today's space defense rests on the assurances in the Outer Space Treaty, which imperfectly implies that space is a peaceful sanctuary, although it only bans the basing of weapons of mass destruction in space. Does this mean all lesser threats are allowed? This is a hotly debated point. No one contests the language in article 51 of the United Nations charter that gives states the inherent right of self-defense. Presumably, this includes self-defense from space weapons and space-based weapons. It can be argued that space weapons are a matter of the inherent right of self-defense. The slope to space warfare is slippery indeed.

Although offense is the dominant form of war in space today, this will not always be the case. Defense is possible. Three principles will likely guide the development of future space defenses.

First, *if you can't see it, you can't hit it*. Satellites are already getting smaller—too small for most space surveillance networks to detect and track. This trend will likely continue not only as a matter of cost savings, but



Lockheed Martin Space Systems

Baseline integrated system testing of Space-based Infrared System geosynchronous orbit spacecraft

also as a matter of stealthy defense. Avoiding detection includes maneuvering satellites to undisclosed wartime orbits.

Second, *all warfare is based on deception*.¹⁶ Potential adversaries collect intelligence on each other's space systems and make their estimates based on their intelligence assessments. Action must be taken to deceive potential adversaries into underestimating the value of critical systems and overestimating the value of inconsequential systems. In addition, the use of wartime-only modes of operation, frequencies, and other unanticipated behaviors will further complicate an adversary's problems.

Third, *there is strength in numbers*. *The age of the capital satellites is over*. Employing only one or two large, very expensive satellites to fulfill a critical mission area, such as reconnaissance, is foolish. Future space systems must be large constellations of smaller, cheaper, and, in many cases, lower fidelity systems swarming in various orbits that exploit ground processing to derive high-fidelity solutions. In addition, swarms improve global access and presence.

The best defense for a space system in the 21st century may be the dual-use system that is owned, operated, and used by broad international partners. A hostile foe may be deterred from attacking a satellite if doing so comes with the likelihood of expanding the

war against their cause. This is also dependent on the hostile foe's policy aim. If it is intense, such as national survival or radical ideology, they may attack anyway.

The term *attack* is practically synonymous with *offense*, but it must be understood in a much more nuanced way regarding spacepower than is generally ascribed among those who hype the threat of direct kinetic kill antisatellite weapons that may smash satellites to bits. It must be remembered that space systems are comprised of space, ground, and user segments integrated through data links. Any of these segments or links can be targeted by an attack to gain the desired effect. A specific target within a space system is selected and a weapon is chosen to attack that target in a certain way to achieve the desired *level of negation*. The first includes temporary and reversible effects such as deception, disruption, and denial. The second includes permanent physical effects such as degradation and destruction. They can be described this way:

- *Deception* employs manipulation, distortion, or falsification of information to induce adversaries to react in a manner contrary to their interests.

- *Disruption* is the temporary impairment of some or all of a space system's capability to produce effects, usually without physical damage.



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Modernization of U.S. Air Force Integrated Space Command and Control program will result in “virtual command center”

■ *Denial* is the temporary elimination of some or all of a space system’s capability to produce effects, usually without physical damage.

■ *Degradation* is the permanent impairment of some or all of a space system’s capability to produce effects, usually with physical damage.

■ *Destruction* is the permanent elimination of all of a space system’s capabilities to produce effects, usually with physical damage (called *hard kill* or, without physical damage, *soft kill*).¹⁷

Ultimately, the level of negation is chosen to achieve the desired effect that serves the objectives given to space forces in support of the overall strategy and operational plans of the war. A very low-intensity war is likely to involve covert use of the temporary and reversible levels of negation. Conversely, more intense wars will probably tend toward the permanent levels.

There is a drawback to temporary levels of negation. It is exceptionally difficult to determine if the application of the weapon is achieving the desired effect. Permanent levels of negation may deliver more easily observable confirmation of effects. This is somewhat analogous to the problems of determining a tank kill in Operation *Desert Storm*. Some

commanders considered a tank killed if its unit was attacked and the tank was no longer moving. Others did not agree with this. But all agreed that it was a kill if the tank had its turret blown off.

It must be kept in mind that a small number of powerful directed energy space weapons can quickly cause permanent levels of negation to dozens of satellites. On the other hand, it would take several dozen space weapons such as jammers that only cause temporary effects to negate the constellations of the larger spacefaring states. Since noise jammers are only effective when broadcasting, and broadcasting jammers are relatively easy to find and target, there are incentives to develop space weapons that cause permanent effects.

If history serves as a template for the future in space, then space will become a warfighting medium. It is already heavily militarized, with powerful spacefaring states using the medium to enable their surveillance and reconnaissance strike complexes in ways that accelerate the scale, timing, and tempo of combat operations exponentially beyond non-spacefaring actors’ ability to cope. Weak actors are likely to employ space weapons in an attempt to counter the advantage space confers on powerful states. The most dangerous situation, however, will occur if two powerful spacefaring states go to war with each other. If the

motives are intense, it is likely that they will be forced to counter each other’s space systems in the very early stages. At present, there are inadequate defenses for space systems, but defense is possible. Space denial strategies of warfare are likely to evolve, wherein a belligerent merely attacks an adversary’s space systems to inflict costs or to induce strategic paralysis on the enemy before offering terms. Finally, space is very much part of the military mix of all actors, state and nonstate, and it must be recognized that spacepower is not a replacement for terrestrial forces, but an additional set of tools that delivers unique capabilities. **JFQ**

NOTES

¹ Karl Mueller, “Totem and Taboo,” *Astropolitics* 1, no. 1 (September 2003), 26–28.

² Colin S. Gray, *Another Bloody Century: Future Warfare* (London: Phoenix, 2006), 307.

³ It has been postulated that the weaponization of space will occur in one of two ways, based on either a single trigger event or a slippery slope. See Barry D. Watts, *The Military Uses of Space: A Diagnostic Assessment* (Washington, DC: Center for Strategic and Budgetary Assessments, February 2001), 98.

⁴ Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1989), 87. Clausewitz’s famous dictum that “war, therefore, is an act of policy” serves as a central proposition for *On War*.

⁵ Extrapolated from Clausewitz, 605.

⁶ Sun Tzu, *The Art of War*, trans. Ralph D. Sawyer (Boulder, CO: Westview Press, 1994); Clausewitz, previously cited.

⁷ Clausewitz, 605–607.

⁸ Colin S. Gray, *Modern Strategy* (Oxford: Oxford University Press, 1999), 256–257.

⁹ Clausewitz, 87.

¹⁰ Brian E. Fredriksson, “Space Power in Joint Operations: Evolving Concepts,” *Air and Space Power Journal* (Summer 2004), available at <www.airpower.maxwell.af.mil/airchronicles/apj/apj04/sum04/fredriksson.html>.

¹¹ The urgency felt by powerful spacefaring states to “wipe the skies” is the thesis of a book by William B. Scott et al., *Space Wars: The First Six Hours of World War III* (New York: Forge, 2007), 7–16.

¹² *Ibid.*

¹³ Sun Tzu, *The Art of War*, trans. S.B. Griffith (New York: Oxford University Press, 1982), 85.

¹⁴ John Schmitt, *Warfighting: The U.S. Marine Corps Book of Strategy* (New York: Currency-Doubleday, 1995), 30.

¹⁵ Clausewitz, 84; Schmitt, 30.

¹⁶ Sun Tzu, *The Art of War*, ed. James Clavell, trans. Lionel Giles (New York: Delacorte Press, 1983), 11.

¹⁷ Air Force Doctrine Document 2–2, *Space Operations*, November 27, 2001, 13.