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Wild Blue Yonder (WBY)

600 Chennault Circle

Maxwell AFB, AL 36112-6010

e-mail: WildBlueYonder@hqau.af.edu

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Force Posturing and the Contemporary Security Environment: Options for Industrially Dependent Countries

AIR COMMODORE NASIM ABBAS KHAN, PAKISTAN AIR FORCE

Traditionally, nation-states have relied on armed forces for securing their survival and interests. Their force postures were designed for specific security environments precipitated mainly by conventional military threats from adversaries. However, the prevailing volatile international security environment fueled by technology, globalization, and the concomitant novel spectrum of threats has exacerbated the force posturing challenges for nation-states across the globe. They now have to configure their force postures to match a wide spectrum of conventional and nonconventional threats emanating from both state and non-state actors. Today's force postures are not only technology intensive, they are also exorbitantly expensive requiring a sound economic base and a cutting-edge industrial capability. While economically strong countries with a robust industrial base find it comparatively easier to develop force postures best suited for their peculiar security environments and national aspirations; developing nations with meager economic resources and limited industrial base are facing unprecedented challenges in developing and sustaining requisite force postures necessitating innovative and ingenious force posturing solutions to make up for their inherent limitations.

This article discusses the anatomy of a country's force posture and its major determinants as major drivers of the military buildup and force posturing of a nation. It then scans force postures of few powerful nations in the backdrop of prevailing security environment to draw some relevant conclusions before proposing possible options for the developing countries to address their force posturing challenges.

Defining Force Posture

Before the advent of nuclear weapons and nuclear strategy, the term *strategic posture* was associated with the means and methods by which nations pursue their national interests, principally military forces and the way they are organized and employed.¹ However, after World War II, the term *strategic posture* came to

be almost singularly associated with nuclear weapons,² while force posture became the overarching concept encompassing all military capabilities and their disposition.

Force posture, according to the Department of Defense, is the overall military disposition, strength, and condition of readiness of a military.³ Obviously, this definition has a militaristic focus compared to a much broader understanding of force posture by Elaine Bunn, former US deputy assistant secretary of defense for nuclear and missile defense and an eminent defense expert. She considers force posture to consist of current force capabilities, military actions and decisions taken, and the infrastructure.⁴ Where force capabilities are the number, training, quality, disposition, and posture of the force, military actions and decisions are the actions taken during an active conflict or exercises, and infrastructure includes science and technological base that feeds research, development, testing, and engineering. She also considers civil-military personnel, industrial base, economic wherewithal, and the declaratory policy of a nation vital for a force posture.⁵ We can, therefore, understand force posture as a comprehensive capability brought about by a number of factors including technology, industrial base, national resources, military strength and readiness and national resolve aimed at achieving its intended objectives during war and in peace.

As far as terms like *industrially dependent* and *independent countries* are concerned, they are relative in today's globalized world where everyone is dependent on someone in one way or the other. For instance, the world's most developed nations like the US, Germany, France, United Kingdom, and so forth, despite having unparalleled technological and industrial capability, do not produce everything they need for obvious economic reasons. However, they can be considered adequately self-sufficient and independent as far as their defense needs are concerned. Therefore, for the purpose of this military oriented article, countries reliant on others for their major defense needs can be assumed as industrially dependent.

Determinants of Force Posture

States need force posture for a variety of reasons. For a hegemon, a large and strong military is the primary tool of safeguarding its widespread interests, maintaining its power position and of preventing anyone from eroding its sphere of influence. For others, it may be aimed at ensuring their survival, protecting their interests and deterring any potential adversaries from aggression. The international

system is characterized as anarchic with no central authority,⁶ where the core interest of any state is survival besides other interests.⁷ It is a world where the strong do what they can, and the weak suffer what they must,⁸ where weakness invites aggression.⁹ Therefore, every state calculates and analyzes the threats to its survival and interests and accordingly develops the required force postures best suited to realize its national aspirations. Since every state has its own peculiar and ever evolving security environment and set of interests and aspirations, no single force posture can be the ultimate solution for everyone. By and large, following important determinants shape the force postures of states.

Ideology, Purpose, and Aspirations

A nation's ideology plays a key role in defining the grand strategy and force posture of a state. Ideology can be good or bad, it can be political (communism, democracy, and so forth), religious (Islamic State of Iraq and Syria, Hindutva, and so forth) or nationalist (Nazi, Rashtriya Swayamsevak Sangh, and so forth), while some theorists argue that all ideology is, by its nature, political.¹⁰ Most of the political and social scientists define *ideology* in terms of beliefs, attitudes and values.¹¹ According to Anthony Downs, ideology is a verbal image of the good society and of the chief means of constructing such a society.¹² Therefore, ideology is the very platform supporting the entire edifice of a nation. It is from ideology that a nation draws her "raison d'être" and purpose that, in turn, gives birth to her aspirations at the national and international level. The larger the scope of these aspirations or universal the ideology, the stronger the force posture required. American founding fathers considered life, liberty, and pursuit of happiness as the core values for their political ideology, and after securing their freedom, embarked upon realizing the true potential of this ideology and went on to becoming the sole superpower of the world. Despite the differences between the proponents of a "crusader state" and the "city on the hill" approaches, American political idealism of spreading democratic values around the globe has been at the center of its force posturing debates.¹³ A study by the RAND Corporation of the American force postures since 1783 indicates how the United States has grown from a relatively weak and insular regional power that was primarily concerned with territorial defense into the preeminent global power. According to this study, America has had seven distinct and identifiable force postures since 1783 (fig. 1),¹⁴ highlighting the changing scope of her evolving power in pursuit of her aspirations and ideology.

Ideal Type Defense Postures, 1783–Present

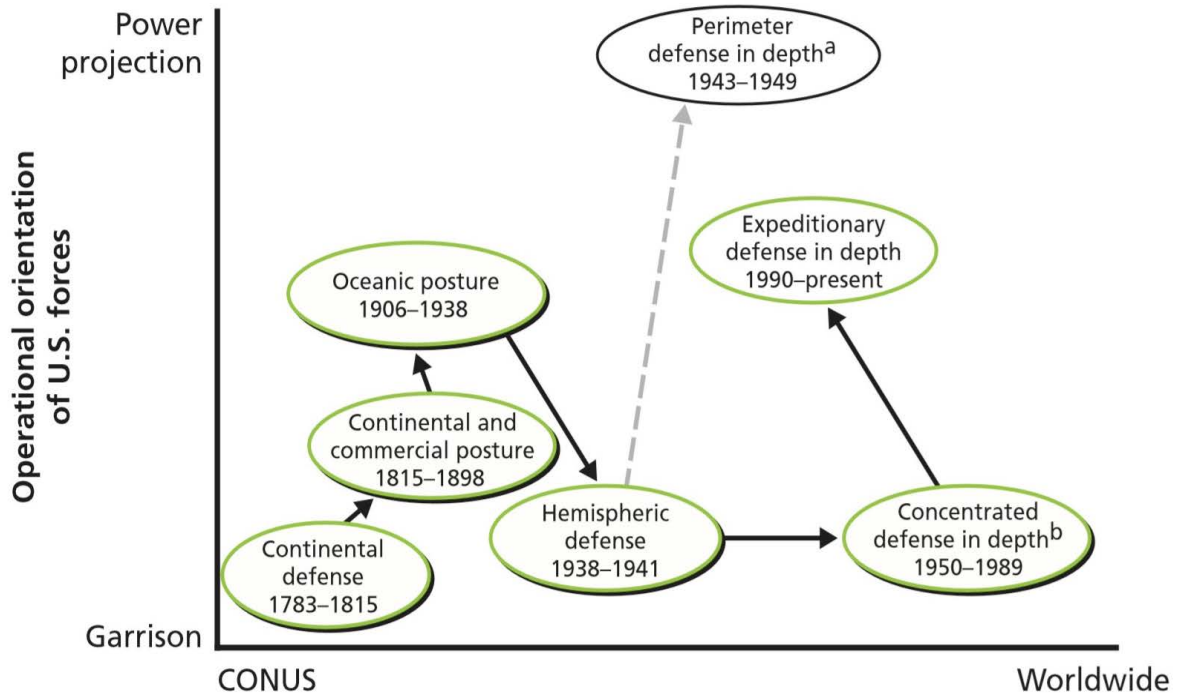


Figure 1. Operational orientation of US forces

All these force postures are indicative of an evolving grand strategy in relation to the growth in nation's power, influence, and interests. Similarly, religious and nationalist ideologies have also played dominant roles in defining the force postures of various empires and states in history. In the contemporary world, the rising Hindutva in India with aspirations of reliving the supposedly lost golden civilization and her concomitant aggressive force posturing are indicative of the staunch linkage between ideology and force posturing.¹⁵ In short, force postures are designed to serve a state's grand strategy that feeds on the very ideology upon which that state exists.

National Interests and Objectives

National interests and objectives are more explicit manifestations of national aspirations and are vital determinants of any force posture. Besides the core interest of survival, there are other economic, commercial, and political interests and objectives of states that need to be furthered, protected, and secured.¹⁶ The larger

the scope and scale of the interests and objectives, the stronger the force posture required to secure them. In other words, interests and objectives are the ends being pursued while force posture is one of the means to reach them. However, states and their leaders need to find a balance between these ends vs means. As a general rule, you keep your objectives within the reach of your means while simultaneously working to improve your means that can then allow expanding the scope of interests and objectives. An earlier example of the US adequately indicates the intricate relationship between national interests and objectives and the force posture. Since force posture is predominantly a relative term, its two main dimensions are structural capabilities and the policy intent. Given the relative difficulty of assessing intentions (precise interests and objectives), a careful analysis of a nation's force posture tells us a lot about her aspirations and the scope of her interests. In the contemporary world, the strength of the force postures maintained by the leading nations inform us about the scope of their interests and objectives. Likewise, rising powers (India, Brazil, and so forth) and their concomitant force posturing point toward their larger aspirations.

Security Environment

Since survival is one of the core interests of every state, security environment becomes another important determinant of the force posture. The larger the perceived or actual threats to the survival of a state and her interests, the stronger the force posture required to mitigate them. Moreover, regions with historical unresolved issues and ambitious regional powers as is the case in south Asia (India),¹⁷ have a greater potential for arms race and stronger force posture requirements notwithstanding their economic limitations. Great-power competition and alliances also affect the international and regional security environment exacerbating the security issues of local players. Similarly, the volatile security environment of the Middle East and other regions of the world make it obligatory for countries with greater stakes and larger threats to have stronger force postures. Countries also make their own assessment of the prevailing security environment around them and about the intentions of their adversaries to constantly evaluate the scope of present and future threats to define requisite force posture solutions. In such volatile regions, despite their limited economic capabilities, states are pushed to have strong force postures even at the cost of their national prosperity.

Economy, Technology, and Industrial Capacity

Economy, technology, and industrial capacity greatly contribute toward facilitating development and maintenance of stronger force postures. Stronger economies

generally need and can have stronger force postures with better chances of success on the battlefield. A study conducted by Michael Beckley for the University of Columbia suggests that during hundreds of battles between 1898–1987, the more economically developed side consistently outfought the poorer side on a soldier-for-soldier basis.¹⁸ The study concludes that the conventional military dominance of Western democracies stems from superior economic development, not societal pathologies or political institutions.¹⁹ In particular, economically developed states are more capable of generating highly skilled military units and producing, maintaining, and modernizing sophisticated military equipment.²⁰ Part of this advantage stems from a greater surplus of wealth, which allows developed states to sustain large military investments without undermining long-term economic growth. But economically developed states also derive military benefits from their technological infrastructures, efficient production capacities, advanced data analysis networks, stocks of managerial expertise, and stable political environments.²¹ However, not all the nations with developed economies have the strongest force postures, mainly due to their low-threat security environments, limited global aspirations, and better national power potential. Developing nations with limited economic, technical, and industrial capacity face serious challenges in developing and maintaining potent force postures and are therefore reliant on advanced nations. A support that is not always available to everyone owing to the complex nature of international and regional alliances, preferences, and restrictions, and when it does become available, their meager economic capacity may hinder their defense aspirations.

National Prestige, Passion, and Honor

National prestige, passion, and honor besides security, interests, and aspirations according to some studies, also play a contributory role toward military industrialization and the development of a particular force posture of a nation. Arms and space race between superpowers during the Cold War was also partially driven by national prestige, passion, and honor. Not only are developed countries influenced by these motives, but some developing states with broader interests and aspiration are also motivated by passion toward military industrialization and force posturing to earn recognition. According to a study conducted by David Kinsella at the University of Missouri about the military industrialization of five nations, including Brazil, Israel, India, South Africa, and South Korea, indicates the role of passion besides interests in their military endeavors.²² It concludes that arms production in the Third World is also driven by states' passions by their quest to become modern nation-states.²³

Nuclear Weapons

Nuclear weapons have altered the very dynamics of force posturing options in the contemporary world. They provide a potent deterrent and international recognition to the states possessing nuclear capability and have become a vital determinant of their force postures. Nations possessing this prestigious capability are endeavoring to achieve a fine integration of nuclear and conventional capabilities to realize the full potential of nuclear weapons. A study conducted by Robert Peters, Justin Anderson, and Harrison Menke suggests that the marginalization of nuclear deterrence after the Cold War and changing nature of threats requires a fine integration of conventional and nuclear deterrence strategies.²⁴ States with nuclear capabilities have already started integrating the whole range of military capabilities for effective deterrence.²⁵ Gen John Hyten, while commanding US Strategic Command, observed: “We have adversaries that are looking at integrating nuclear, conventional, space and cyber, all as part of a strategic deterrent.”²⁶ thus, underpinning the role of nuclear weapons in deterring a wide range of threats with comprehensive force posturing solutions. Before getting into further discussion, it would be appropriate to have a quick scan of the prevailing security environment in general to ascertain the nature of threats that the nation-states are facing today to ascertain some general guidelines for the possible force postures options especially for industrially dependent countries.

Prevailing Security Environment and Concomitant Threats

The international environment characterized by its anarchic nature and no central authority,²⁷ continues to be in a state of flux and is being denoted with the VUCA (Volatile, Uncertain, Complex, and Ambiguous) environment²⁸ owing to the ongoing competition for resources, power, and influence among the major players coupled with the unprecedented effects of technological boom, globalization, and associated new threats.

The ever-growing influence of science and technology, associated globalization, and unprecedented interconnectivity of economic interests among states and nonstate entities around the world have blurred the national boundaries thus affording greater freedom to nonstate actors, nongovernmental organizations, and multinational giants to influence affairs at the international, regional, and national canvases. New technologies like cyber, space, artificial intelligence (AI), big-data analytics, autonomy, robotics, directed energy, hypersonics, and biotechnology have revolutionized the scope of their potential for states and nonstate actors. Terrorism, transnational crime, cyberattacks, biological attacks, proxy warfare, social engineering, and the proliferation of lethal sophisticated technologies

(nuclear and biological) have emerged as major sources of concern and threats for the international community and the states in general.

The growing lethality of modern weaponry, catastrophic potential of weapons of mass destruction, complex global interconnectivity of economic interests, the cost of a conventional open military confrontation, and modern communication tools to influence societies have forced nations to adapt to the new environment. Globalization and technology have facilitated the almost simultaneous use of other instruments of national power and modern tools in sync with the military to coerce and compel the adversaries. All these new tools of warfare have transformed the very character of war. The means of modern warfare are no more restricted to conventional military means. Today's battlefields have extended to almost every field of human activity giving birth to a new generation of war—the hybrid war. Consequently, the gray-zone activities through subconventional and nonconventional means are the favorite tools of today's warfare. This tendency has blurred the boundaries between war and peace, friends and foes, and between civilians and combatants.

However, it does not mean that the importance of conventional military forces has been undermined. Future wars between compatible adversaries, being technology intensive, are likely to be short, swift, intense, and comparatively limited in scope and scale. They would be preceded by the conditioning of the environment through other elements of national power for calibrated and precise application of military tool for quick and decisive results. The side having the technological edge across all domains, especially in the air (including cyber and space), with the capability to generate maximum effects in the shortest possible time, would have an edge. Thus, the importance of a potent force posture has increased tremendously. Force postures of the industrially independent or advanced nations today are designed to serve their individual national aspirations and objectives keeping in view their peculiar security environments and the direction of their grand strategies. However, developing nations are facing great challenges in meeting the technological demands of modern force postures.

Force Postures of Powerful Nations

Force postures also undergo evolution and change with the ever-changing and evolving security environment, shifting national aspirations, interests and objectives, and economic capabilities of the states. Any change in national aspirations and the grand strategy would also lead to an altered force posture, and since force postures are not easy to alter overnight, therefore, a careful articulation of grand strategy and national objectives is necessary to ensure their potency and effectiveness. A study of the past and present force postures of the advanced and powerful

nations also indicates the evolution and transformation of their grand strategies. Historically, the force postures of the major powers like the US (from a continental power to a hegemon), Russia (from a continental power to a global power), China (from a regional power to a rising global power), France (from a colonial power to a major power), United Kingdom (from a global colonial power to a major power), Germany (from an aspiring global hegemon to a major power), and so forth, and many others transformed and changed in line with their changing national aspirations, priorities, interests and objectives, security concerns, and economic capabilities or with the changing direction of their grand strategies.

A brief look at some of the developed and prominent states around the world indicates some interesting trends and conclusions regarding the interplay of economic strength, military power (force posture), and overall power. Figure 2 shows the world's top 15 military spenders in 2019.²⁹ Twelve of these (barring Saudi Arabia, Israel, and Iraq) are also among the top 15 economies of the world for the same year (fig. 3),³⁰ which indicates that larger economies are generally the highest spenders on military. Their force postures are mainly driven by their broader spectrum of interests, prestige, economic power and aspirations besides security concerns.

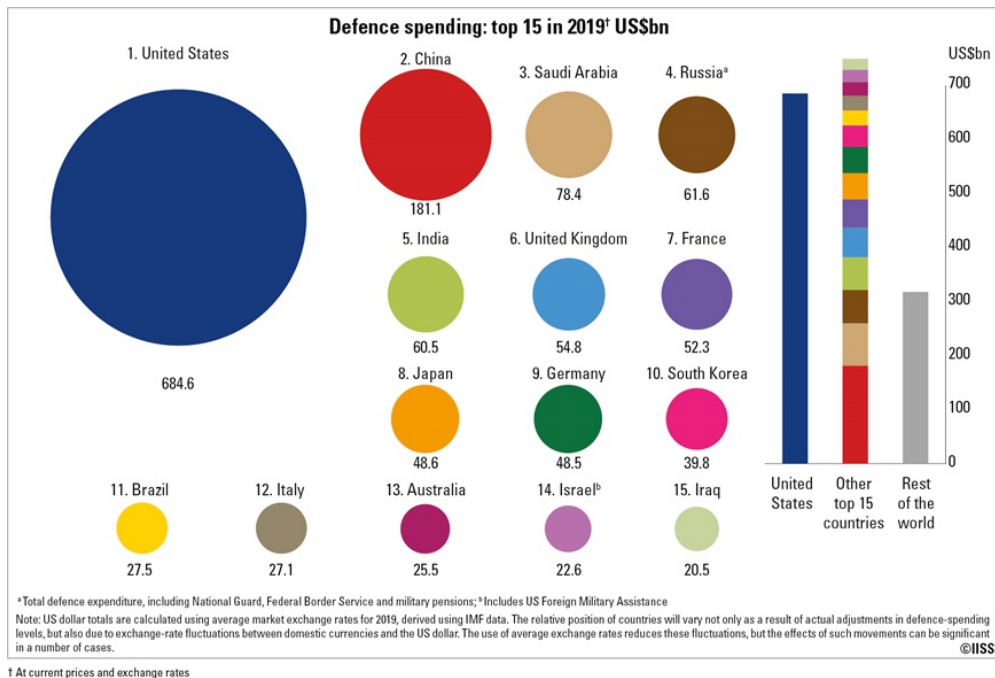


Figure 2. Top 15 in defense spending in 2019

THE WORLD'S TOP 20 LARGEST ECONOMIES IN 2019.



- | | |
|-------------------|------------------|
| 1. UNITED STATES | 11. SOUTH KOREA |
| 2. CHINA | 12. RUSSIA |
| 3. JAPAN | 13. AUSTRALIA |
| 4. GERMANY | 14. SPAIN |
| 5. INDIA | 15. MEXICO |
| 6. FRANCE | 16. INDONESIA |
| 7. UNITED KINGDOM | 17. NETHERLANDS |
| 8. ITALY | 18. SAUDI ARABIA |
| 9. BRAZIL | 19. SWITZERLAND |
| 10. CANADA | 20. TAIWAN |

Source: CEOWORLD magazine

Figure 3. Top 20 largest economies in 2019

Figure 4 shows the 15 strongest militaries of the world for 2019.³¹ Here we find four countries, that is, Turkey, Egypt, Iran, and Pakistan that are not among the top 15 economies yet maintaining very strong force postures without being among the top 15 military spenders. A closer look at these countries indicates that their force postures are mainly driven mainly by their security environments and concerns besides other factors. This examination shows that security concerns generally force the countries to develop strong force postures despite their economic weaknesses (Egypt, Iran, and Pakistan); mostly at the cost of national prosperity. We can also say that generally a large military spending (Israel, Iraq, Saudi Arabia, and Australia [fig. 2 and 4]) or having a larger economy (Canada, Australia, Spain, and Mexico [fig. 2 and 4]) does not always mean one of the strongest military or force posture in the world as force posture is relative and driven by the grand strategy of a nation.

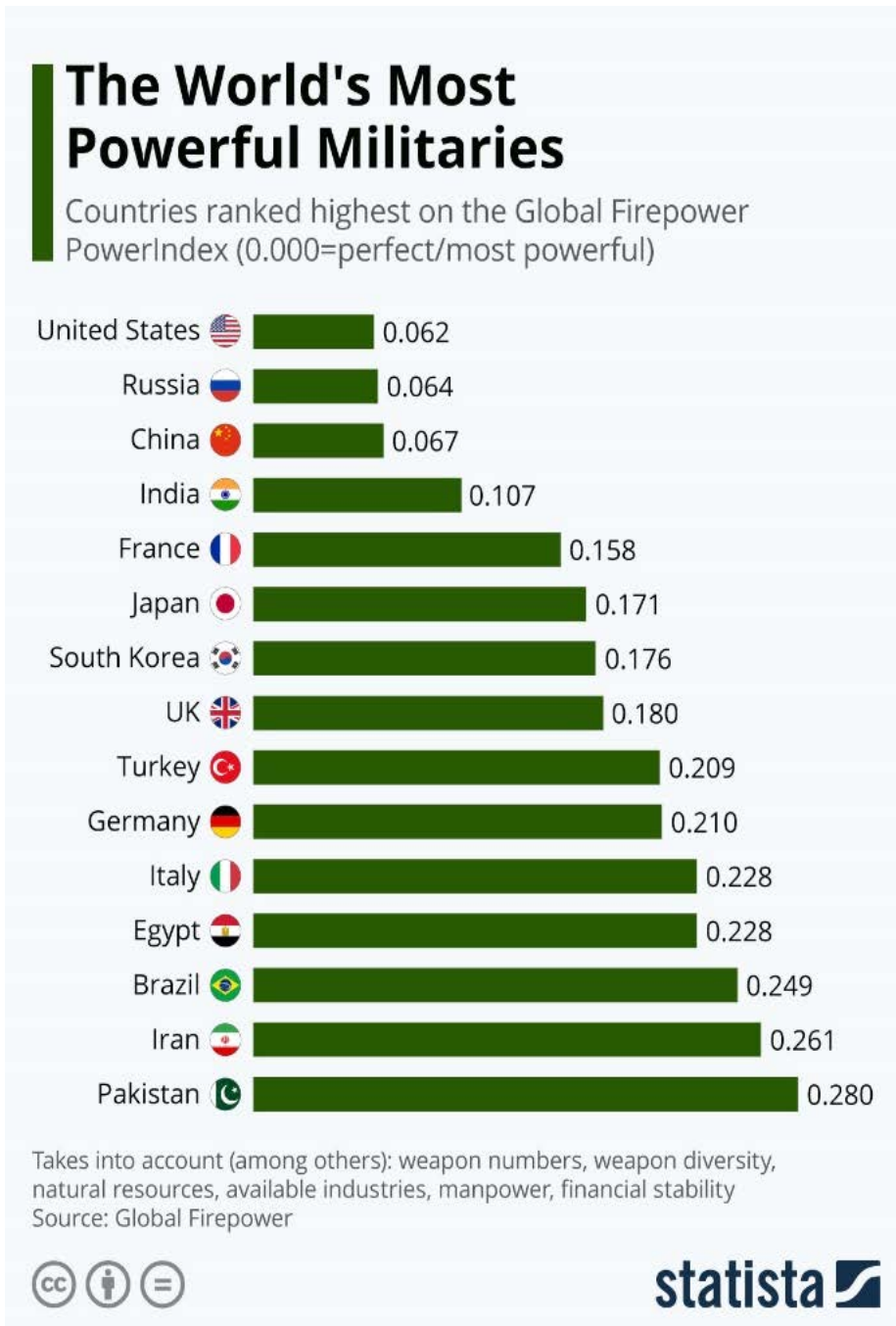


Figure 4. The world's most powerful militaries

We come across another interesting fact when we look at the 15 most powerful nations of the world for 2019.³² The list shows six countries, that is, Israel, Saudi Arabia, United Arab Emirates, Canada, Switzerland, and Australia, that are not among the 15 most powerful militaries but are among the list of 15 most powerful nations (fig. 5).³³ This fact indicates that a strong force posture alone does not determine the overall national power and influence indicating the interplay of other factors and instruments of national power.³⁴ India, for example, despite being the fourth strongest military and fifth largest economy of the world, is not among the 15 most powerful countries in the world.

HERE ARE THE WORLD'S 20 MOST POWERFUL COUNTRIES IN 2019.



- | | |
|-------------------|--------------------------|
| 1. UNITED STATES | 11. UNITED ARAB EMIRATES |
| 2. RUSSIA | 12. CANADA |
| 3. CHINA | 13. IRAN |
| 4. GERMANY | 14. SWITZERLAND |
| 5. UNITED KINGDOM | 15. AUSTRALIA |
| 6. FRANCE | 16. TURKEY |
| 7. JAPAN | 17. INDIA |
| 8. ISRAEL | 18. ITALY |
| 9. SAUDI ARABIA | 19. IRAQ |
| 10. SOUTH KOREA | 20. SINGAPORE |

Source: CEOWORLD magazine

Figure 5. The world's most powerful countries

Thus, we can say that different countries are maintaining different force postures best suited to serve their grand strategic objectives. Countries with limited global aspirations and low-to-medium threat environment like Canada, Australia, Switzerland, Spain, and so forth, despite being stronger economies, are maintaining moderate force postures while the US, Russia, China, and major powers in Europe have force postures commensurate with their larger national aspirations, interests, and security environments. Others (Saudi Arabia, Pakistan, Israel, and so forth) are driven either by their security environments or aspirations to become global/regional players (India, Brazil, and so forth) or by a combination of both.

While any potent force posture in the contemporary security environment is exorbitantly expensive, a common trend observed in most of the modern or industrially independent nations is a positive shift from numbers to quality driven by technology with main focus on lethality, precision, flexibility, speed, and efficiency.³⁵ Being industrially independent, economically strong and technologically self-reliant, the advanced countries find it comparatively easy to manage required force postures. However, it has become increasingly challenging for the industrially dependent and developing nations with diverse security concerns to develop and maintain requisite force postures in the face of economic, technological, and political constraints.

Force Posturing Options for Industrially Dependent Countries

From the discussion so far, we have seen that force postures of the nations are driven by a number of factors but limited only by the scope of their capabilities (economic and industrial) and aspirations. We have also observed that variety and scope of threats across the spectrum of conflict has increased tremendously in the contemporary security environment. In such a complex environment, only technology savvy, agile, lethal, and efficient militaries shall be able to withstand the challenges of contemporary warfare. While industrially independent and advanced nations have little difficulties realizing this, let us see what force posturing options are available with developing or industrially dependent nations in the face of multiple economic, political, and technological constraints. While no single force posturing solution can be an answer for everyone's needs and aspirations, some general guidelines to plug in the inherent limitations of industrially dependent countries can be put forward.

Economy. As discussed earlier, economic well-being is one of the primary determinants of a potent force posture. Poor states simply cannot offset the military deficiencies inherent in their economic backwardness.³⁶ Therefore, they have to strike a balance between guns and butter as per the dictates of their security environment and the economic capability. Since the common purpose of every state is the well-being, peace, and prosperity of its people, any force posturing effort that pulls a country away from this purpose becomes detrimental to the broader future of the state in the long run. Developing states must remember that force postures are the means toward larger ends and not the ends in themselves. The main issue for them, however, is not whether they raise their defense budgets or increase their access to advanced technologies from abroad—though these factors remain important—but whether they develop the economic capacity to produce, maintain, and coordinate complex military systems.³⁷ Long-term dependence on others would otherwise over-stretch and exhaust their meager

economic resources resulting in a decline in overall national power. There is no ideal alternative to economic development. Industrially dependent states have to figure out ways, like mitigating or reducing the sources of conflict for improving their economies. Strengthening other elements of national power, including diplomacy, information, and the projection of soft power would also help in boosting national power—compensating for weaknesses in the force posture.

Alliances, partnerships and friends. Finding common ground for materializing suitable alliances (tactical, strategic, historical, and so forth) with powerful nations is a challenging proposition for the developing nations. However, having powerful and strong allies, partners, and friends with common interests and mutually beneficial relationships could help the developing or industrially dependent states in many ways. Maintaining friendly relations with the advanced countries may be comparatively easier and more in the benefit of developing states to catch up with the modern world and share the fruits of globalization. Besides ease of access to the latest technologies and education, they provide much needed military and economic sustenance along with the political and diplomatic support at international and regional levels. Close and friendly interaction with advanced countries would keep the military personnel of the developing states abreast with the latest developments thus providing strength to their force postures. However, shifting strategic alliances of the powerful nations with some at the cost of others, in some regions when undertaken without taking into cognizance the on-ground security realities and repercussion tend to disturb the existing balance of power resulting in increased instability. Consequently, technologically reliant states affected by such alliances find it extremely difficult to sustain their force postures as their security concerns exacerbate. Such developing states are under immense pressure to divert already scarce resources toward the military to bridge the widening gap with their adversaries or keep it within manageable limits, thus putting extra pressure on their weaker economies. They are also forced to rely on nonconventional means for ensuring their security against militarily stronger and technologically superior adversaries. However, in most cases, states bound in strategic alliances with advanced countries end up benefiting at both the internal and external fronts.

Indigenization and Innovation. Developing nations must invest optimally on indigenization to explore innovative solutions for their force posturing challenges. Owing to the multidimensional interests of the powerful and advanced nations cutting across a broader range of partners, friends, and allies, some developing states are denied access to the latest technologies and weapons. Having indigenous capabilities helps during such transitory periods without serious fallouts for force postures. However, to have such a capability, you need more than mere economic

resources. Highly educated human resources and access to the latest technologies are a must for realizing indigenization and innovation necessitating cordial relationships with developed nations.

Regular and calculated investment in the existing military industrial capabilities under a long-term strategy for improving self-reliance is of great value for industrially dependent states. Countries like Israel, Indonesia, and Singapore have made astounding progress in this respect and can be followed as role models by the developing nations. According to a few studies, investments in military industrial complex can be a stimulus for economic growth as well and a motivation for calculated investment in military indigenization.³⁸

Military Training. Clausewitz considered war as the realm of physical exertion and suffering. We can term today's wars as the realms of physical, mental, emotional and psychological exertion, and suffering. Today's military training must provide military men with that strength and balance of body and soul to withstand the challenges of modern warfare as highly professional soldiers. Developing nations need superior training more than anyone else as they can hardly afford mistakes during peace or war. Similarly, military-to-military cooperation and international exercises with developed nations provide developing nations with those unique opportunities to train their human capital with the latest trends in warfare. Industrially dependent nations also need to evaluate the evolving character of warfare that is technology intensive and keep their human resource abreast with the latest developments.

Modernization. The quality of human resources, equipment, and infrastructure tailored to meet the demands of contemporary and projected future environment has become a compulsion for everyone especially the developing states. They must utilize their friendly relations with the advanced nations and their own indigenous capabilities to keep modernizing their equipment and infrastructure to stay abreast with the latest technological developments and be ready for the future. Cyber, space and AI are the game-changing technologies of the future warfare. While space is extremely expensive, developing states must harness the immense potential of cyber and AI. Since modern state-of-the-art platforms are highly expensive, developing nations must invest on capability enhancement besides the acquisition of new platforms when economically viable. Their main focus should be lethality, ingenuity, creativity, and innovation to modernize their forces utilizing indigenous capabilities as far as possible and practical. Future militaries must be equipped and trained to retain independence of action in the degraded future environments full of chaos and confusion.

Professional military education. A well-crafted system of professional military education (PME), is the strategic asset of any military today. PME has been

the backbone of military organizations around the world and has helped military leaders in understanding the ever-changing character and the complex nature of warfare influenced by social, political, cultural and economic factors driven by the perpetual technological advancement. Today's system of PME must be aimed at developing leaders with inquisitive minds equipped with critical and creative thinking, comprehensive analytical abilities, and an aptitude to come up with innovative and out of the box solutions in stressful environments. They must be educated in international relations, strategy, leadership, strategic thinking, military planning, and above all, military history. If we ask Clausewitz about the importance of military training or military education, he understands it as being able to draw upon principles extending across time and space, so that you will have a sense of what has worked before and what has not. You then apply these to the situation at hand. The result is a plan, informed by the past, linked to the present, for achieving some future goal.³⁹

Such a system of PME should produce professionally educated, highly motivated, morally upright, and balanced but dynamic leaders capable of comprehending the complexities of prevailing environment at strategic level and capable of taking bold, calculated, and timely decisions when needed while understanding and avoiding the dangers of vacillation that ensnares them. An efficient system of PME must be able to nurture Clausewitz military genius who is a harmonious combination of many elements of intellect and temperament, in which one or the other ability may predominate, but none may be in conflict with the rest.⁴⁰ No other quotation explains the importance of a well-crafted PME than these words generally attributed to Thucydides and William Francis Butler both: "*The Nation that makes a great distinction between its scholars and its warriors will have its thinking done by cowards and its fighting done by fools.*"

Leadership and strategy. Superior and huge militaries equipped with state-of-the-art weaponry if employed without political foresight, sound doctrine, and ingenious strategy would fail to achieve the political objectives of war. While historically superior economies and huge militaries have generally prevailed during war, history is also a witness to numerous strategic failures of superior militaries and stronger economies. What happened to the Persians in Greece led by the great Xerxes, to Athenians in Sicily, to the Roman Legions in the Teutoburg Forest, to the Spanish in the English Channel, to the British in America, to Napoleon in Russia,⁴¹ and many more recent examples, are lessons of history trying

to inform today's civilian and military leaders that mere plenitude of resources and military might cannot not rescue a flawed strategy.

War has an enduring nature that demonstrates four continuities: political, human, the existence of uncertainty, and the contest of wills.⁴² While these continuities are present in all wars, every war exists within its own social, political, and historical contexts, giving each war much of its unique character.⁴³ Besides other factors, technology has a significant influence on warfare. Both the nature of war and the changes in the character of warfare influence strategy. Therefore, the "most far-reaching act of judgment that the statesman and commander of today have to make is to establish the kind of war on which they are embarking. They must remember one fact: war is not the end in itself, it is just the means to the end, it is about the peace that follows. It should serve and not consume the very states it is trying to protect."⁴⁴

Industrially dependent countries with scarce resources can hardly afford strategic miscalculations and tactical blunders. Their PME systems should be able to produce leaders equipped with the strategic dexterity to manipulate the multiple contradictions of strategy to balance the intricate equation of end-ways-means. They must also regularly update their war-fighting doctrines—the key to military effectiveness—with evolving capabilities and changing threat scenarios. As President George Washington noted in his eighth annual message to the Congress in 1797: "However pacific the general policy of a nation may be, it ought never to be without a stock of military knowledge for emergencies." Doctrine is that knowledge.⁴⁵ The interdependence of doctrine and strategy requires a regular scanning of security environment, changing nature of threats, national means and capabilities. While material resources and strong industrial base are prerequisites for a strong force posture, superior leadership, sound doctrine, and ingenious strategy provide military postures the cutting-edge required to prevail during war.

Conclusion

Historically, the military has been the preferred choice of states to thwart aggressions, ensure survival, and to force the adversary into submission. However, unprecedented technological advancement and globalization has transformed the international security environment. Yesterday's conventional threats have been multiplied exponentially manifesting themselves into areas not directly related to the military. The accumulative effective of technology, worldwide connectivity, and globalization has superimposed economy, diplomacy, information, along with

social and cultural factors over the traditional understanding of warfare, thus attempting to alter the very nature and character of war. With this transformation, the tools and threats to subdue the adversary have also multiplied exponentially. Future wars are likely to be short and intense and exceedingly dominated by latest technologies. They would be preceded and supplemented by a plethora of new coercive tools available with states. The military would be applied in a calculated way at an opportune time to accrue maximum political benefit.

Developing and maintaining potent force postures designed to address this new spectrum of threats under the prevailing VUCA environment has become a challenging task for developed as well as developing nations. However, challenges faced by the industrially dependent countries with weaker economies are numerous.

While their first and foremost priority should be the improvement of the economy, they need to invest in indigenization, innovation, modernization of existing equipment, and infrastructures to transform their militaries into lethal, agile, and efficient tools. They also need cordial relations with developed and industrially independent countries to retain access to the latest technologies and education besides other commercial, diplomatic and political benefits. Finally, they must ensure efficient and future-oriented training besides keeping their war-fighting doctrines and strategies abreast with the requirements of latest developments in their security environment.

Air Commodore Nasim Abbas Khan, Pakistan Air Force

Air Commodore Abbas Khan (MA, National Defense University Islamabad; MA, National Defense University Islamabad) is a senior instructor at the Pakistan Air Force Air War College. He is a graduate of German General Staff Course and a Distinguished Graduate of US Air War College, Grand Strategy Seminar AY-18. With more than 2,500 hours of flying experience, Air Commodore Abbas has held various command and staff appointments during his career, including command of a fighter squadron, deputy director, and director at Air Headquarters.

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Island Hopping—Feet Dry!

Intelligence, Surveillance, and Reconnaissance Indications and Warning in Austere Environments

MAJOR F. PATRICK FILBERT, USA, RETIRED

Multi-domain operations is really about thinking through how we penetrate, where we need to penetrate; how we protect what we need to protect inside a contested space; how we persist in that environment for the period of time that we have to remain there.

—GEN DAVID GOLDFEIN
Goldfein's Multi-Domain Vision

With our allies and partners, we will challenge competitors by maneuvering them into unfavorable positions, frustrating their efforts, precluding their options while expanding our own, and forcing them to confront conflict under adverse conditions.

—GEN CQ BROWN, JR.
*USAF/PACAF September 2018 Adaptive Basing
and Agile Combat Employment Summit*

The Donovanian Incursion

Driving the GM Defense electric Silverado ZH2 truck onto the ramp of the C-130, SSgt Ron Jackson carefully maneuvered the vehicle to ensure the attached Silent Falcon ceramic composite trailer lined up with the aircraft's fuselage.¹ Concentrating to follow the loadmaster's hand signals, he briefly remembered the last time he did this and accidentally smacked the edge of the cargo bay. "Not going to do that this time," he thought, remembering with a wince both the "choice language" the other plane's loadmaster had used as he "significantly reviewed" the damage to the plane and the ribbing he took from his own Silent Falcon team members. "It was only some paint on the plane, and the trailer's 'clear coat' (MXene electromagnetic interference coating) DOES have titanium in it; so, the trailer wasn't even damaged . . . besides, we were jumping because of incoming Donovanian missiles and that insurgent attack on the other side of the airfield anyways."² Carefully bringing the truck level and easing the trailer into the aircraft, Jackson brought the vehicle to a halt. Waving to the loadmaster, he went

back out of the plane to get the rest of the team so they could start securing their vehicle.

Remembering back to the Donovanian forces' St. Patrick's Day attack on Otso, Jackson wondered, "Had it really only been three months since he'd arrived as part of the Combined Expeditionary Force and three weeks since the 'bumper car' incident, as the rest of the team called it, as Donovanian cruise missiles had started falling?"³ Nice to see that the composite trailer could keep out more than just dust and bugs and the fragments flying around had not also severed the antenna links! Jackson remembered the news was all about "Donovia can defeat the United States and its allies because they have better robotics" and "their advanced AI and dedicated swarm unmanned aircraft systems (UAS) will most definitely defeat the US as their tech outstrips ours, blah, blah, blah!" Jackson remembered his uncle's response to that, when he told Jackson about the media doing the same thing during the run up to the First Gulf War. "Glad the reporters didn't ask about our vehicle weak spots like they did back then!" Of course, technology lags also plagued US forces after the terror attacks on 9/11.



(US Army photo)

Figure 1. Donovanian forces. Soldiers of the 3rd Squadron, 16th US Cavalry Regiment, pose for a photo as opposition Donovanian forces, 21 December 2018. Two support platoons from 3rd Squadron, 16th US Cavalry Regiment, have transformed from standard threat emulators into a thinking enemy.

While the United States seemed to turn inward on itself, the emergence of improvised explosive devices in the hands of violent extremist groups and technological advancements from the Mediterranean Sea to Russia and China hampered US technology developments. Or so the press would have people believe, Jackson snorted. Yet the United States was no slouch when it came to innovation. After all, the Silent Falcon and its “combat Tesla” prime mover was the result of a concept that came from the minds of some forward-thinking Airmen more than 12 years ago. Those same Airmen were now USAF senior leaders. Rather than relying on fixed-site Air and Space Operations Centers (AOC), which were vulnerable to missile and cyberattack, the Silent Falcons were designed to spread out across the area of operations. Their mission was to keep aircrews up-to-date with the latest intelligence and indications and warning (I&W) as the battle lines moved forward.

Back to the Beginning



Figure 2. DATE Europe. US Army Training and Doctrine Command Decisive Action Training Environment—Europe Map (ODIN, DATE Europe, <https://odin.tradoc.army.mil/>.)

The trip from the United States to the forward staging area in Europe was long and tiring. However, the main thought on the team’s mind, that there would be

time to sample some German food and, more importantly, the outstanding German beer, became a distant dream for the team as they got closer to touchdown. Donovanian cyber and malware attacks, coupled with local area launched UAS swarms to interfere with air traffic management caused chaos at Ramstein Air Base just as the Silent Falcon Team's C-17 was on final approach. Once on the ground, the focus was to shift the team into two subsections. The support section would immediately move to a waiting C-130 Super Hercules to load and head off to establish a site at the Otsoian Air Base. Meanwhile, the analytical team, under SSgt Heather Radcliff, would hook into the AOC to download the most current Donovanian-related intelligence products and then head over to their own "Super Herc" to link up with the support section.

"So glad this download will go faster than setting up my playlist before we deployed!" thought Radcliff. Not having to "bin" the products into specific folders and allowing the BAE Systems advanced Geospatial eXploitation Products software to do it for her, making all the data instantly searchable, made her wish she could do the same thing with the songs she had downloaded into her smartphone. "Note to self, develop a proposal to do just that!" she thought. As the download completed in record time, despite the "Novians" cyberattack, Radcliff's team's next priority was getting on their waiting C-130 and getting to their Otsoian destination. She could see her team chief, TSgt Nohelani "Spam" Kalawai'a, gesturing to move faster; that meant the Hercules crew wanted to leave now. "So much for getting a jaeger schnitzel and a Hofbrau beer," Radcliff thought.

Once loaded, the analyst team had an advantage over the support team. They could ride inside their trailer as it was pressurized, and this allowed their Hercules to fly at higher altitudes to get to their first location faster. It was the nap-of-the-earth approach in the final leg that never failed to turn at least part of her team's faces green. "Snickers bar?" Radcliff asked SrA Jake Demoss. Demoss shot Radcliff a dirty look and said, "Only if you're cool with my lunch on your shirt!" Laughing, Radcliff donned her augmented reality (AR) headset, took it off power save, and asked the flight crew what the estimated arrival time and conditions were. After receiving the information, she directed her team to be ready to get out of the shelter upon landing and take the tie-downs off the vehicle and trailer. She sent an instant message (IM) to Silent Falcon driver SSgt Jackson to be ready to move once she gave the thumbs up.

As the C-130's wheels hit the ground at the Otsoian Air Base, her team became the professional, well-oiled machine she had trained them to be. Jokes were left aside as the team removed tie-down cables, got back in the trailer, and locked their chairs down for movement as SSgt Jackson drove the Silent Falcon off the plane. Radcliff's AR showed it was dark outside, and having an electric vehicle as

the trailer's prime mover helped get them into place down the flight line fast and quietly. Flight operations queried her headset, and she shifted the call to Demoss, while tasking SrA Dean Roth and newly promoted SSgt Jimmy Garfield to let the Silent Falcon "know" where it was in Otso. Radcliff then brought up the most current disposition of Donovanian forces they had downloaded from the Super Hercules' inflight planning software system while en route.

"Demoss, what did flight ops want?" Radcliff asked. "Just sent it to your headset," Demoss noted. Radcliff saw the overview was an incoming flight of four 75th Fighter Squadron F-35s, designated Nova 3 through 6. Their mission was to support a larger attack on key Donovanian command-and-control facilities to disable portions of their artificial intelligence (AI) infrastructure. "Airman Roth," Radcliff called out, "get ready to provide an updated situation report on those Donovanian combined surface-to-air (SAM)/directed energy (DE) systems to the pilots. They've got about 90 minutes before takeoff to refuel/rearm; so, head over after they land. Garfield, you and Jackson get the external antennas set up, I want to be able to have Roth linked in to whatever is operating near the border and/or over Donovania in the next 30 minutes."

As the clock ticked down to the briefing, SrA Roth finalized his briefing, uploaded it into the trailer's detachable Surface Pro 12 tablet, and removed it from the docking station. Taking off his AR headset, Roth tapped SSgt Radcliff on the shoulder and said "all ready." Radcliff sent a quick IM to TSgt Kalawai'a noting Roth was about to head over to the fighters, "Hey Spam, Roth is on his way to Nova Flight." Kalawai'a responded, "Roger, ensure he takes his weapon; there's been reports of Donovanian insurgents operating in the area, and I don't want to get folks shot just after getting here." Radcliff acknowledged the update and reminded Roth to take his weapon. "On your way out, have Garfield give me an update on setting up the . . . wait, disregard, the line-of-sight (LOS) feed just came up. Good luck with your brief."

SSgt Garfield came back in and began linking in with the U-2 that was conducting a stand-off surveillance mission to see if there was anything he needed to send over to Roth prior to his briefing. "SSgt Radcliff! Looks like we've got a hit on that Donovanian Corruptor SAM/DE system. They've moved west into Otso and are setting up about 15 kilometers in!" "Roger," said Radcliff, "send Roth an update and remember to ensure the auto-encrypt is working." "Copy all," said Garfield. Just as SSgt Radcliff noted to send the Corruptor message, there was a knock at the shelter door. SSgt Radcliff got up, and TSgt Kalawai'a was standing there asking if anyone was hungry. Radcliff had completely forgotten about the possibility of food after departing Germany due to all the pre-mission tactics,

techniques, and procedures she had to accomplish and noted yes, chow would be a good thing.

Just as Radcliff completed the order for food for her team, another request for support came over the AR headset—this time for the 933 Weapons Squadron (WS). They were getting ready to conduct a convoy with missiles, rockets, and 30-mm rounds forward to rearm a flight of upgraded A-10Xs supporting Army troops attacking to displace Donovanian forces from Otso. “Radcliff, new support message for the 933 WS coming your way. See if Roth is done and send the latest on Route Condor to his tablet, and then have him get it to them.” “WILCO,” said Garfield.

Just as Roth arrived at the 933rd, SSgt Radcliff came running up and nearly beat the incoming warning message “CRUISE MISSILES INBOUND,” noting, “Hey, there are people shooting at folks around flight ops!” SSgt Radcliff notified TSgt Kalawai’a she was initiating tear down and prepping to move, noted the ground and air attacks, and directed Jackson to oversee tearing down the antennas and stowing them. “I’ll retract the collapsible antennas,” she said. At the same time, she sent a note to Roth to “touch transfer” the Route Condor information to the 933 WS Intelligence Section’s tablet and to get back to the Silent Falcon along with watching out for insurgents. She also instructed Demoss to contact flight ops with their request for aircraft and that they were displacing.

Just as most of the equipment was stowed, Roth came running up yelling, “Hey, I think there’s an attack going on over by flight ops!” Radcliff hurriedly said, “Got it; let’s finish up, and I’ll see if our planes are ready or if we need to ‘blend’ with the other containers and ride this out. Stand by to either disconnect the truck and hide it or be ready to get on a plane—I’ll let you know directly.” Before Radcliff could get on the flight ops link, the door flew open and Spam Kalawai’a threw in some MREs and said, “I got you a plane, we’ll follow with the support team directly . . . get Jackson moving! The plane is wheels down in two minutes, and I need you ready to drive straight on; head over to the taxiway!”

Jackson called back on the truck to trailer intercom, noting, “Our plane just landed, hang on!” and the trailer lurched forward, dropping the MREs and items of equipment that had not yet been stowed onto the floor. A few minutes later there was a loud “bang!” as the trailer hit the airframe of the plane. As the first detonation of incoming cruise missiles occurred, Jackson saw the angry face of the loadmaster, backed up, and pulled in. “He can chew me out when we’re airborne!” Jackson yelled.

View from Today

The above scenario is one that could quite possibly occur in the near future. As near-peer nations have been updating their combat systems across all the land, sea, air, space, and cyber domains, they seek to outmaneuver the United States. Realizing advancements over the last decade in the commercial sector have made many countries think they are unbeatable means the United States must think beyond just the technology. Innovation and initiative have always been welcomed in the US military; yet, as the twenty-first century moves into its third decade, the technological and operational advantages the United States has enjoyed have slowly eroded. Near-peer and transnational adversaries study how the United States has waged war and how they can take advantage of areas America is not focusing on; specifically, finding the seams where the United States is weakest and exploiting those seams. These adversaries are utilizing unconstrained budgets and rapid commercial technological advancements to equip their forces to achieve overmatch with the United States.

This has resulted in nation-states like Russia and China reaping the benefits of advanced technological developments. It also means transnational violent extremist organizations are using the initiative to purchase and modify technology not designed for combat and integrating these technologies into their tactics. The rapid advancements and investments made by potential, and current, adversaries' development and integration of disruptive technologies require the United States to be more creative on how to counter these advancements. Adversaries are focusing on how robotics and autonomous systems, bio-science, quantum information sciences, space-based weapons and communications, and nanotechnology and DE weapons can be used against the United States. Further, they are exploiting the advantage of not integrating ethical restrictions the United States follows. From the US perspective, initiatives focusing on innovation (technology and non-material solutions), rapid prototyping and testing must rely, in parallel, on the initiatives of the younger Soldiers, Sailors, Marines, and Airmen, as well as innovators in academia, industry, and laboratories.

What's the Problem & Solution?

This article is a consolidated effort to identify a developmental, rapid prototype way ahead related to conducting intelligence, surveillance, and reconnaissance (ISR) I&W fusion in a contested, degraded, operationally limited (CDO) environment—"ISR Node" for short. The ISR Node would fall under the Air Force Chief of Staff's concept of *adaptive basing*. The goal of the ISR Node effort is to enable continued support to deployed USAF tactical war fighter, logistical, and

other organizations as a “forward-based, rapidly displaceable” capability.⁴ Figure 2 depicts how USAF planners develop future operating concepts like adaptive basing to enable operational effects of three strategic documents for regional based airpower—the Office of the Secretary of Defense’s Third Offset Strategy, USAF Strategic Master Plan, and Air Force Future Operating Concept looking to the anticipated 2035 environment.

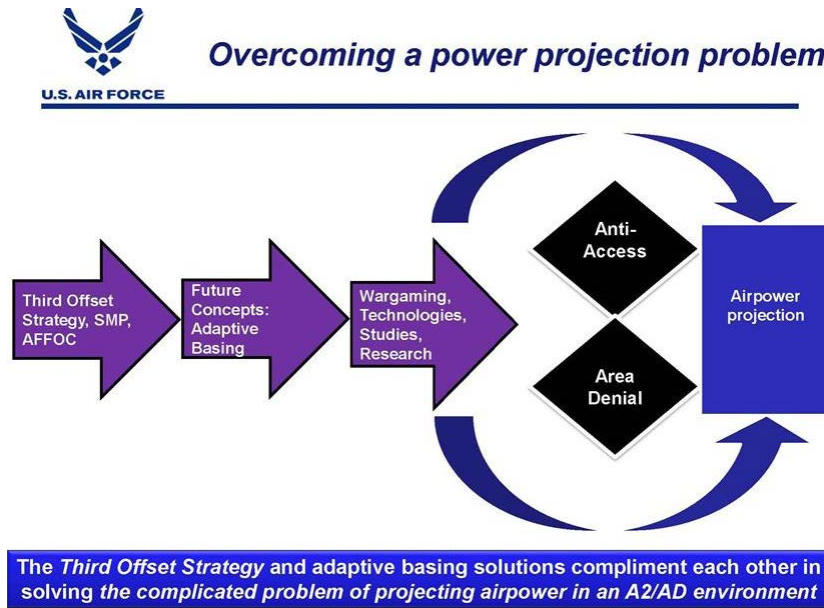


Figure 3. Projecting airpower to overcoming the antiaccess/area denial (A2/AD) problem. (Maj David Dammeier, Lt Col Meka Toliver, and Capt Logan Smith, “Overcoming a Power Projection Problem,” *Civil Engineering Online*, Spring 2016, <https://www.afcec.af.mil/>.)

The ISR Node will move fast and conduct I&W using stored intelligence products. Once deployed in large numbers across the area of operations, these products would conduct “catcher’s mitt” LOS information “pulls” from air and space ISR platforms. This aspect provides an updatable attribute, as stored products “go stale” for tactical use after several days. The ISR Node will also have the capability to execute on-site analysis of information pulled in via LOS. This supports USAF, and later coalition and Joint element, units who arrive and depart on what could be a daily basis at austere sites as the conflict occurs. This supports units operating in multiple locations with having “the

latest information” to execute their missions. It also allows the conduct of “audibles” to modify operations to survive and fight another day.

Way Ahead Aspects

As the ISR Node development and testing effort continues, how to test things that are not fully developed or fielded becomes the quandary. The answer is to use current and recently emerged technology, software, and processes as the “in lieu of” for developmental technology. This allows for testing of what will be available in 5–10 years now, enabling USAF to receive the advanced capabilities with validated concepts of operation in place. Such an approach enables a rapid prototyping effort and concept validation at a much faster pace. This takes into account that technology will advance and ideas and efforts only now emerging will be robust and usable by the middle of the next decade.

There were several efforts and fielded systems that the 526 Intelligence Squadron’s Technology, Test and Integration (TTI) Flight reviewed as they moved forward with the concept of the ISR Node effort. One of the primary source links was with the US Army’s Distributed Common Ground System-Army Support Activity (DSA). Discussions and a visit to the DSA to see the Army’s Tactical Intelligence Ground System (TGS) provided a wealth of information of existing, fielded capabilities, emerging ideas, and concepts using newer technology. TTI Flight also realized not to overlook training on whatever system was ultimately devised to fit the ISR Node. Continuous, cross-service interaction between the Army and the Marine Corps provided an expanded knowledge base, while opening the TTI Flight’s understanding of supporting subsystem and software aspects that could be incorporated into the effort.

Using a literature review and incorporating information identified from attending service symposiums and visiting commercial production facilities benefited TTI Flight for review of emerging ISR Node support system technology that could be tested in concept. These subsystems, making up the larger weapon system itself, included antennas, tactical cloud storage, prime mover vehicles, shelters and power generation, and austere location communications efforts. Visits to commercial vendors to discuss shelter design, antennas and data link integration, analytical hardware and software capabilities all with an emerging 5-10-years capability focus occurred. All the visits ended with an invitation to come to Nellis AFB, Nevada, and conduct demonstrations, which vendors accepted.

Literature reviews also identified other USAF efforts to test concepts similar to ISR Nod. This provided the benefit of not expending limited resources and funds to redo past test efforts. Instead, the flight could take lessons learned from the other test efforts, interview participants, and apply what was learned to the flight's test plan development. An example of this approach is quantified in several articles on an effort conducted by the 263 Combat Communications Squadron (CCS) in Antarctica in late 2018. As part of Operation Deep Freeze, the 263 CCS's effort focused on a proof of concept to install and validate temporary, isolated satellite communications to increase the network data rate at the South Pole.⁵

To increase technology's capabilities and how it can be used requires innovation. Identifying how to fit emerging technology into the mission construct can be viewed as limiting; however, there has to be a starting point. The TTI Flight effort to develop a way to propagate ISR I&W at tactical, austere locations in CDO environments while quickly reestablishing links to bring the conflict to a faster conclusion is paramount. "Island hopping" with multiple ISR Nodes placed forward, constantly updating the mobile, adaptive force to restrict enemy capabilities while being rapidly redeployable is a way to challenge the system. "Baking in" capabilities via innovation and rapid prototyping will enable faster integration of newer technology to support not just the war fighter but all of the integrated warfighting functions as well.

Major F. Patrick Filbert, US Army, Retired

Major Filbert (BA-History, University of Hawaii; Masters of Strategic Intelligence with honors, American Military University; OUSD (I&S) Intelligence Fundamentals Professional Certification) is a test planner for the Office of the Secretary of Defense's (OSD) Joint Hypersonic Strike, Planning, Execution, Command and Control Joint Test. His post-military career includes providing support to four OSD Joint Tests; serving as a senior intelligence analyst in two USAF Intelligence Squadrons; leading as intelligence contract team lead in the USAF 432 RPA Wing Operations Center; and serving as project manager, USINDOPACOM J2 Socio-Cultural Intelligence Analysis effort.

Notes

1. Yasmin Tadjdeh, “Army Driving Forward with Electric Vehicle Plans,” *National Defense Magazine*, 21 February 19, <http://www.nationaldefensemagazine.org/>. The Silent Falcon is a fictitious name created for this article; no such capability currently exists in USAF.

2. André Taylor, “Film Blocks Electromagnetic Interference,” *Tech Briefs Magazine*, 1 Feb 19, <https://www.techbriefs.com/>. MXene is a carbon nanotube, titanium carbide semitransparent film.

3. The fictional countries of Donovia and Otso are used in US Army training events, manuals, and articles. These countries are part of larger operational environments (OE) broken out by region, including Africa, the Caucasus, Europe, and the Pacific. Developed by Army Training and Doctrine Command (TRADOC), these countries are included in the Decisive Action Training Environment (DATE) Knowledge Base hosted on the OE Data Integration Network (ODIN), <https://odin.tradoc.army.mil/DATE>.

4. Adaptive basing is a USAF concept that looks to provide new ways to deploy and maneuver assets during a crisis or conflict in order to operate in contested, degraded, and operationally limited environments.

5. TSgt Nathan Clark, “Operation Deep Freeze,” 145th Airlift Wing Public Affairs, 12 January 2019, <https://www.hill.af.mil/>; and Oriana Pawlyk, “As Russia, China Encroach, Airmen Work to Expand Comms Network in Antarctica,” *Military.com*, 22 January 19, <https://www.military.com/>.

Issues with the Integration of Space and Terrestrial Military Operations

PAUL SZYMANSKI

It is critical that military space operations become coordinated and integrated with the more traditional military planning conducted on Earth (air, land, sea, and Global Integrated Operations). In my experience, this integration of space and terrestrial military actions has frequently encountered many problems. Space mostly provides information: sensors (imagery, signals intelligence, navigation, weather, missile warning, and so forth) and transmission of that info (satellite communications). Thus, any space control actions are mainly to deny, degrade, delay, deceive, disrupt, destroy, and such the flow of this information. It is easier to evaluate the effects of taking out a bridge on the ground and how this action impacts the overall conduct of the current terrestrial battle. It is very difficult to assess how information denial affects the overall battlefield. Consequently, in the 15 different military exercises I have participated in with space components, the terrestrial commander ranks space actions as very low priorities (even actions against terrestrial space terminals) compared to other immediate needs. The commander generally does not truly understand space and its importance to the overall war effort. The commander knows space is important but cannot objectively measure this value or qualitatively rank space communication targets vs. sensor satellite targets, especially if the commander only controls a few antisatellite weapons. Conversely, adversary commanders probably understand less than the allied side of the importance of space to their own war efforts and may discount any blue force counterspace actions taken against them. Both the allied and adversary disjuncts prevent any meaningful evaluation of space and terrestrial targeting analyses, without first establishing common measures of merit for ranking information flow targets on the battlefield (fig. 1).

Space Warfare Political Consequences

Complicating this dilemma is the fact that military actions in space have much more severe political consequence than the more historically acceptable terrestrial war operations, even with the potential of no casualties in space. In my total experience, space war fighters do not take into account political consequences. I have been at many military exercises where space war fighters totally blew off the political and diplomatic consequences of their actions and sometimes believed

that this was not even their role, as more senior leaders would “catch” their mistakes later on in the approval process. In one simulated military exercise, the Chinese embassy was accidentally bombed again—mistaken for a satellite receiver station because the space war fighter in charge believed that people further up the command chain would catch this mistake, and it was late in the day anyway, and time to go home. I heard the same thing about space operators at the NORAD Cheyenne Mountain Complex going home at 5 PM during Desert Storm because that was their normal time to quit work, and space was not that important anyway. I have even heard general officer-level space leaders express their opinions that space war fighters under them would not be able to comprehend these complex issues so there was no sense including these political issues in space battle-management software currently being developed or even as part of military exercises. Contrast this attitude with how the Army is taught to always think of the political consequences when entering a high-threat village and to consciously monitor the probable effects of their actions.

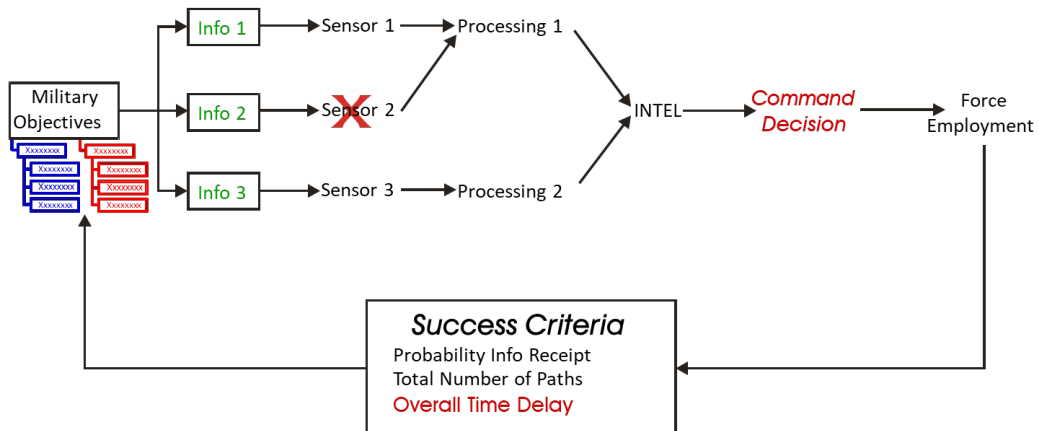


Figure 1. Flow of information on the battlefield

Possibly another complication to this attitude is the fact that space war fighters do not particularly have “skin in the game,” unlike terrestrial war fighters. Much like Air Force personnel located in the United States who control drones over battlefields in Afghanistan and Iraq, space war fighters have a very low probability of being counterattacked by adversary weapon systems. This obviously leads to a different set of fundamental emotions and mind-sets than more traditional “war fighters” who can reach back to thousands of years of military

tradition and culture concerning the stress of warfare. The space operators have an even less tenuous connection to the battlefield than Air Force drone operators, as these Space Force war fighters have little worry about causing human casualties in outer space as a consequence of their military actions. Besides the financial, economic, political, and diplomatic effects of their operations against satellites in space, the scenario simply may possibly feel more like a video game to the space war fighters.

Space Supports Terrestrial Warfighters

Space war fighters forget that their main mission goal is to support terrestrial military actions. Until we have permanent settlements in space requiring defending, most space activities ultimately support terrestrial operations. There needs to be a common measure of merit for ranking space actions compared to terrestrial military courses of action. If the commander states he does not want an adversary imaging his preparations for surprise attacks, planners need to rank the following military actions:

- a. Attack imagery satellites;
- b. Attack ground receiver terminals supporting these imagery satellites;
- c. Attack links from satellites to ground terminals;
- d. Attack communications links from satellite ground terminals to adversary commanders;
- e. Attack unmanned aerial vehicles providing the same imagery data; and
- f. So forth.

Algorithms need to be developed for common target ranking between space and terrestrial targets. These algorithms ultimately would track the flow of information across the battlefield for both space and terrestrial systems and provide tools to determine optimum attack strategies that consider both space and terrestrial targets simultaneously.

Space vs. Terrestrial Military Terminology

Space war-fighting terminology needs to closely align with traditional terrestrial terminology and planning processes (see an example of this in fig. 2). Space battle-management systems completely ignore Joint Publication 5-0 *Joint Planning* when

it comes to war-planning principles. Because of this, space plans are more difficult to communicate and understand for theater commanders and cannot be easily compared and ranked in priority. Senior space officers I talked to about this see no problem with space planning being conducted differently than what JP 5-0 mandates, another indication of the mental separation between space and terrestrial military planning. This narrow-focus approach means the continuing isolation of space planners from the *real* battlefield on Earth. Senior Space Force leaders need to make changes to these attitudes and assure that we are all fighting the same war. Too many senior space war fighters firmly believe space missions and courses of action are in total isolation from the terrestrial battlefield and have no idea why they are denying a particular space system, how it fits into the overall terrestrial battle plan, how these actions ultimately support terrestrial war fighters, and in accordance to which critical timelines and acceptable conflict escalation risks. In addition, space war fighters should be made aware of how their actions may impact both space and terrestrial conflict escalation control (see table 1).

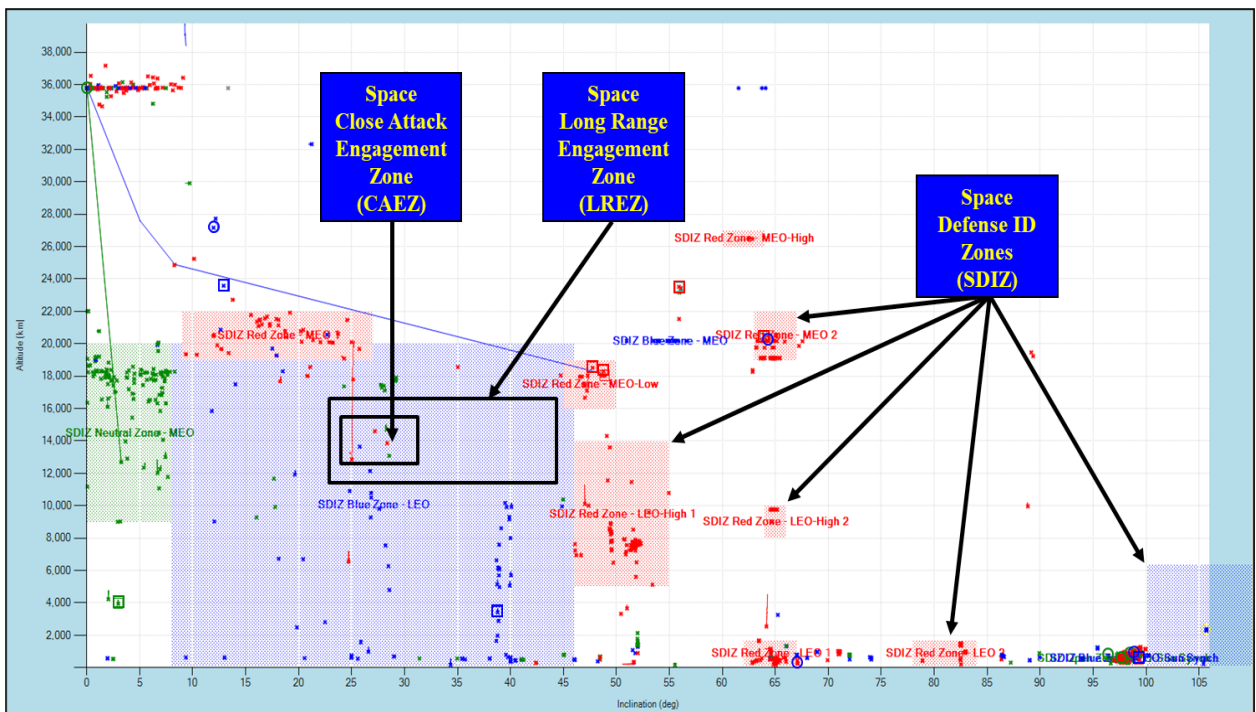


Figure 2. Extension of classical air defense terminology to space control engagement zones. (Contact author for additional space terminology alignments)

Table 1. Space conflict escalation ladder

| Campaign Phases | | | | | | | | | |
|-----------------|---------|------------|---------------------|---|--|--|---|--|--|
| S. | WHS | RCE Domain | Conflict Phase | Territorial Campaign Phase | Space Campaign Phase | Weapon Type | Space Campaign Phase Full Name | Weapon Category | Comments |
| 10 | P.3.A.0 | Space | Pre-Conflict | Phase II: Pre-War Buildups (Shaping) | 1st Wave Attacks: Phase A | Pre-Conflict Deter | 1st Wave Attacks: Phase A - Pre-Conflict Deter | Cover Weapons; Tracking & Development; Tracking; Sub-orbit Launches; Space Activities; National Space Surveillance; Tracking & Reconnaissance Activities; Satellite Const | |
| 9.8 | P.3.B.0 | Space | Pre-Conflict | Phase III: Pre-War Buildups (Shaping) | 1st Wave Attacks: Phase B | Periodically Springing Propaganda Swirls; Increasingly increased Space Surveillance & Close Satellite Inspections | 1st Wave Attacks: Phase B - Pre-Conflict Periodically | Diplomatic Rhetoric & Outreach; Economic Actions; Intelligence; Urgent Actions; Administrative Actions; Transferring Propaganda Broadcasts; Issuing Propaganda Bulletins; Increased Spring & Surveillance; Mutual increases in Space Surveillance and Tracking Activities; Numerous Alerts of Your Advancing; Menace to Avoid Attacks | Even though spring is normally a peaceful activity, discovery of a major spy network during two of the highest levels can increase the escalation ladder |
| 9.8 | P.3.C.0 | Space | Pre-Conflict Crisis | Phase IV: Pre-War Buildups (Shaping) | 1st Wave Attacks: Phase C | Under: Covert Cyber Political Operations; Under: Covert Cyber Information; Under: Covert Cyber Law Enforcement Military Low-Level; Transferring Satellite Manpower; Increase Space Radiation; Initiate Satellite Defensiveness Measures; Employ Nation's Activities on International Space Station for Military Uses | 1st Wave Attacks: Phase C - Pre-Conflict Under | Counterintelligence; Stop Activities; Mobility; Cover Technology Developments; Small Covert Civil Assets; Cyber Attacks; Covert Actions in Areas of Interest; International Treaty; Confidential Operations; Increase space surveillance and Agitation; Employ Landfall Forces Against Your Own Citizens; Mobilize Forces; International Alert Level (NCCO); Menace Close Enough to Advance Abilities to Purposely Space Intrusions; Increase Space Surveillance; Increase Tracking; Evolving Forces into War Reserve Mode; Go High by Space Intrusion; Increase Space Development; Increase Investment in Capabilities Used by Adversaries; Initiate Satellite Defensiveness Measures; Deploy Network Activities on International Space Station for Military Reconnaissance and Surveillance; Space and Fully World Wide Distribution of Satellite Location Data; Tracking Data | Covert actions in violation of international treaties include discovery and a subsequent increase in the escalation ladder |
| 9.2 | P.2.A.0 | Space | Trans-Conflict | Phase I: Deployment / Defenseless (Deter) | 2nd Wave Attacks | Trans-Conflict Deter | 2nd Wave Attacks: Trans-Conflict Deter | Penetration But False Attacks; Linked Attacks; Denial Attacks; Altruistic Country Attacks; Blockades; Major Covert Civil Attacks; Terrorist Attacks; Summary Events; Sabotage; Series & Sequential Targeted Attacks; Avoid Alert Satellite Systems; Arm Satellite Self-Defense Mechanisms; Alert Anti-Missile Defenses; Alert Anti-Aircraft Defenses; Arm Allied Astronauts on International Space Station | |
| 7.6 | P.3.A.1 | Space | Trans-Conflict | Phase II: Host Incursions (Deter Initiative) | 3rd Wave Attacks: Phase A1 - Ground Based | From Territorial Partial Temporary KII | 3rd Wave Attacks: Phase A1 - Territorial In-Space Partial Temporary Effects | Denial; Deny; Covertly Associate Adversary Diplomatic Ambassador; Third Adversary Astronauts with Laser Destroyer; Openly Conduct Extensive Warfare Against Adversary Satellite Systems | |
| 7.3 | P.3.A.2 | Space | Trans-Conflict | Phase III: Host Incursions (Deter Initiative) | 3rd Wave Attacks: Phase A2 - Ground Based | From Territorial Total Permanent KII | 3rd Wave Attacks: Phase A2 - Territorial In-Space Total Permanent Effects | Denial | |
| 6.5 | P.3.B.1 | Space | Trans-Conflict | Phase IV: Air Center Offensives (Dominate) | 3rd Wave Attacks: Phase B1 - Space Based | From Space Partial Temporary KII | 3rd Wave Attacks: Phase B1 - Space In-Space Partial Temporary Effects | Denial; Deny | |
| 5.9 | P.3.B.2 | Space | Trans-Conflict | Phase III: Air Center Offensives (Dominate) | 3rd Wave Attacks: Phase B2 - Space Based | From Space Total Temporary KII | 3rd Wave Attacks: Phase B2 - Space In-Space Total Temporary Effects | Denial | |
| 5.3 | P.4.A.1 | Space | Trans-Conflict | Phase IV: Joint Counter Offensives to Reduce Friendly Pre-Conflict Status (Stabilize Borders) | 4th Wave Attacks: Phase A1 - Ground Based | From Territorial Partial Permanent KII | 4th Wave Attacks: Phase A1 - Territorial In-Space Partial Permanent KII | Degrade | |
| 4.7 | P.4.A.2 | Space | Trans-Conflict | Phase IV: Joint Counter Offensives to Restore Friendly Pre-Conflict Status (Stabilize Borders) | 4th Wave Attacks: Phase A2 - Ground Based | From Territorial Total Permanent KII | 4th Wave Attacks: Phase A2 - Territorial In-Space Total Permanent KII | Denial; Info Includes; Declaring Space Related Territorial Sites and Encouraging Direct Assault Against Adversity with Anti-Missile Weapons Systems | |
| 4.1 | P.4.B.1 | Space | Trans-Conflict | Phase V: Joint Counter Offensives to Capture Adversary Capital (Enable New Civil Authority) | 4th Wave Attacks: Phase B1 - Space Based | From Space Partial Permanent KII | 4th Wave Attacks: Phase B1 - Space In-Space Partial Permanent KII | Degrade; Denial; Monitor; Interdict Adversary Populations | |
| 3.5 | P.4.B.2 | Space | Trans-Conflict | Phase VI: Joint Counter Offensives to Capture Adversary Capital (Enable New Civil Authority) | 4th Wave Attacks: Phase B2 - Space Based | From Space Total Permanent KII | 4th Wave Attacks: Phase B2 - Space In-Space Total Permanent KII | Denial; Threaten to Kill Adversary Astronauts on International Space Station | |
| 2.9 | P.5.A.0 | Space | Trans-Conflict | Phase VII: Defend Against Adversary Counter-Attacks Against Friendly Home-Land (Defend Friendly Citizens) | 5th Wave Attacks | Space Managed Permanent KII - KII Adversary Astronauts | 5th Wave Attacks: Space - Managed Permanent KII | Degrade; Denial; Kill Adversary Astronauts on International Space Station | |
| 2.3 | P.5.A.0 | Space | Trans-Conflict | Phase VIII: Defend Against Adversary Counter-Attacks Against Friendly Home-Land (Defend Friendly Citizens) | 5th Wave Attacks | Space In-Earth Permanent KII | 5th Wave Attacks: Space-to-Earth Permanent KII | Degrade; Denial | |
| 1.8 | P.5.A.0 | Space | Trans-Conflict | Phase VII: Defend Against Adversary Counter-Attacks Against Friendly Home-Land (Defend Friendly Citizens) | 5th Wave Attacks | NBC-Ups - Space | 5th Wave Attacks - NBC-Ups - Space | Degrade; Denial; Alert Readout Passes for Detection Perceptions | |
| 1.2 | P.6.A.0 | Space | Trans-Conflict | Phase VIII: Defend Against Adversary Counter-Attacks Against Friendly Targets (Defused Friendly Military) | 6th Wave Attacks: Phase A - Military Targets | NBC-Ups - Space & Territorial | 6th Wave Attacks: Phase A - NBC-Ups Space & Territorial - Military Targets | Degrade; Denial | |
| 0.6 | P.6.A.0 | Space | Trans-Conflict | Phase IX: Defend Against Adversary Counter-Attacks Against All Friendly Targets (Defused Friendly Military & Civilians) | 6th Wave Attacks: Phase B - Civilian Targets | NBC-Ups - Space & Territorial | 6th Wave Attacks: Phase B - NBC-Ups Space & Territorial - Civilian Targets | Degrade; Denial | |
| 0 | P.6.A.0 | Space | Post-Conflict | Phase X: Post-hostilities (Reconstruction & Substitution) | 7th Wave Attacks | Post-Conflict Deter | 7th Wave Attacks - Post-Conflict Deter | Diplomatic Requests; Economic Actions; Urgent Action; Administrative Actions; Issuing Propaganda Broadcasts; | |

In addition, one aspect of the genius of JP 5-0 is the requirement to define the conflict termination (surrender) criteria *before* any military planning commences. That way all military courses of action can be traced to ultimate battlefield goals. The terrestrial conflict termination criteria—such as regain territory, change adversary leadership, and so forth—may be more easily defined than space ones. However, space-war termination criteria are more difficult to express, since there is no “territory” to hold (much like air and sea warfare) and it is easier to hide space weapon systems inside innocent-looking commercial and civil satellite systems (see table 2).

Table 2. Possible space war surrender criteria

- The balance of power in space between Red and Blue is sufficient to deter Red from any near-future space attacks for the next 10 years.
- Red will and ability to continue fighting in space has been severely restricted.
- Red cannot image battlefield with less than 1-meter resolution.
- Red cannot recover major space capabilities in less than 10 years.
- Red space launch capabilities reduced by 50 percent.
- Red on-orbit military space assets supporting current conflict region (AOR) delta-v maneuvering capability reduced by 50 percent.
- Red on-orbit antisatellite (ASAT) capabilities reduced to 10-percent remainder (capabilities de-orbited).
- Red forced to negotiating table over ASAT weapons.
- Red provides war reparations for Blue and Gray space systems degraded/d destroyed.
- Red develops program to clean up space debris caused by their military actions.
- Red surrenders some of their internationally-assigned geosynchronous orbital position slots.
- Red does not approach any Blue critical satellites within 100 meters.
- Red required to place tracking beacons on all future satellites. Blue establishes declaratory policy to immediately neutralize any Red satellites without these tracking beacons for the next 10 years.
- Red national leadership publicly declares they will no longer pursue space weapon development.

Joint Space Terrestrial Map Displays

There needs to be joint space–terrestrial battlefield map displays to better understand adversary actions and the effects of our responses. This would be a good first step toward integrated space and terrestrial war-fighting planning. When one visual representation allows senior planners to fully understand allied and adversary actions in space and how they impact the overall battlefield, then more rapid reactions to space–terrestrial timelines are enabled. I believe that all summary space situation displays should be readily readable and understandable to decision

makers, even those with little to no space experience, so senior general officers can better appreciate how space systems impact their battlefields. As part of this, there is a requirement to expand space icons to better align with the more traditional terrestrial military standard (MIL-STD-2525D *Joint Military Symbolology*) for common situation displays (see examples in fig. 3). The current space icons in MIL-STD-2525D can only be described as weak and meek and do not include representations of all space objects currently in orbit. There is even confusion as to which parameters are important to display with each military icon, with the current MIL-STD believing that nonsensical satellite “speed” is an important number to display to map readers. All of this needs to be integrated into one space-terrestrial user interface concept and battle-management system. This will propel the United States into a new era of situational awareness beyond what our adversaries or even allies are currently capable of (see figs. 4 and 5).









| New-Space-Icon | Space-Mission-Type | Examples |
|--|---|--|
|  | Joint-Mil-Commercial-COMM-- Geostationary--Friend | XTAR-EUR-{28542}; BRAZILSAT-B1-{23199}; TELECOM-2C-{23730} |
|  | Earth-Observation--Hostile- SIDC:10060500001112000000 | SICH-2-{37794}; SINAH-1-{28893}; SJ-9B-{38861}; VRSS-1-{38782} |
|  | Weather--LEO--Neutral | KALPANA-1-{27525}; MTSAT-1R-{28622}; METEOSAT-7-{24932} |
|  TOM: 9 Hrs, 16 Min, Ago 100919002MART2 | Reconnaissance-Satellite-- Optical--LEO--Unknown- Country-Affiliation | [UNKNOWN] |
|  | Satellite --Maneuver-Detected-- | [UNKNOWN] |
|  | Anti-Satellite (ASAT) --Kinetic-Kill-Vehicle (KKV)- Attack-- | --India-Mission-Shakti- |
|  | Anti-Satellite (ASAT) --Grapples-Attack-- | [UNKNOWN] |
|  | Satellite-Status --SIGINT-Change-- | [UNKNOWN] |

Figure 3. Some proposed MIL-STD-2525 new space icons

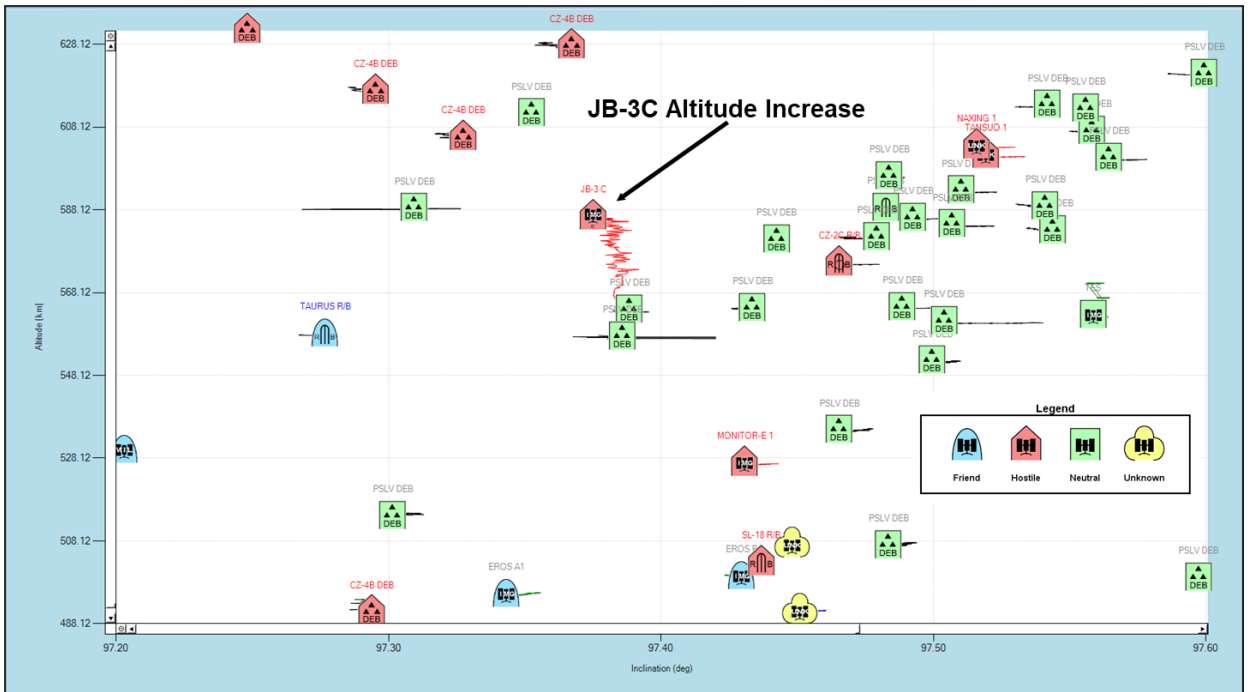


Figure 4. Example space situation map

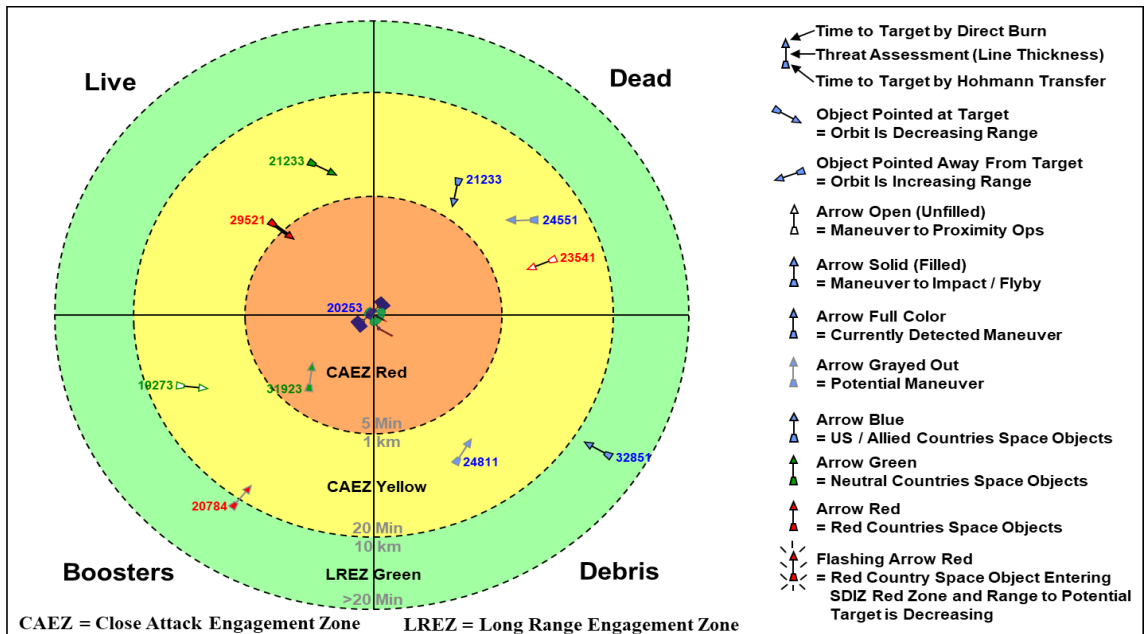


Figure 5. Alternate example space situation map

Overclassification of Space Systems Loses Wars

The overclassification of select space systems prevents their use on the battlefield. In my experience, senior battlefield commanders refuse to authorize space control systems they never heard of and never trained with, for the promise of unverifiable effects. Integration of these deeply buried space systems into normal planning processes is very difficult, especially with allied participation, in spite of what the current Space Force Chief of Space Operations is trying to change. This will be a continuing problem, especially with the political sensitivities of space weapons, their fragility to countermeasures, and their ability to surreptitiously show resolve and intent to potential adversaries without the general population understanding what is transpiring. In addition, potential allied support in specific space operations is doubtful. Besides allies probably possessing limited space weapon systems, the probability these systems are in the right place at the right time is low. If the United States requires space control measures in the Pacific, it is doubtful that NATO space systems would be in a position to support these requirements. Remember, due to the difficulty and high maneuvering fuel requirements of space systems, space wars need to be fought with whatever assets are at hand in the immediate combat area. The overall space war will be concluded before any additional offensive or defensive assets can be repositioned.

In addition, allies will have differing rules of engagement for employment of politically sensitive space weapons systems. For example, Europeans have different rules than the United States for authorizing potential loss of life simply to prevent damage to military equipment. In other words, would many NATO countries disallow an attack on a manned adversary ground station controlling a space weapon system, if this weapon system is only attacking an unmanned, but critical, satellite?

Space Warfighter Checklist Mentalities

Space war fighters are accustomed to conducting operations through checklists only (see fig. 6). This does not work well when a high-paced, never before experienced, space conflict takes place at the time when human imagination and creativity is most required. My calculations have shown that most major space wars will be concluded within 24–48 hours. Will an integrated space-air-ground Combined Air Operations Center (CAOC) be able to respond in a timely manner? Many space military actions may require National Command Authority (NCA) approval. Generally, the NCA will require validation as to who is attacking before military responses can be authorized. Due to the vast distances in space, verification is extremely difficult and time-consuming. For example, if we are in a war

with China over, let us say Taiwan, and one of our critical satellites covering the Western Pacific suddenly stops working, what are we to assume? Was it caused by natural events such as solar flares or meteor fragments, maybe just normal reliability failures, or intentional attack? One could easily assume that China had something to do with this, but we could not be sure, and it usually takes months to figure out how a satellite *possibly* failed. Maybe Russia caused this satellite failure just to be stirring the pot? Maybe we will self-deter in our responses due to excessive uncertainties before the space war is already concluded? Remember, Sun Tzu stated, “All warfare is based on deception.”

Manage Contingencies

- RSO Has Surprise Smaller RSO Nearby -

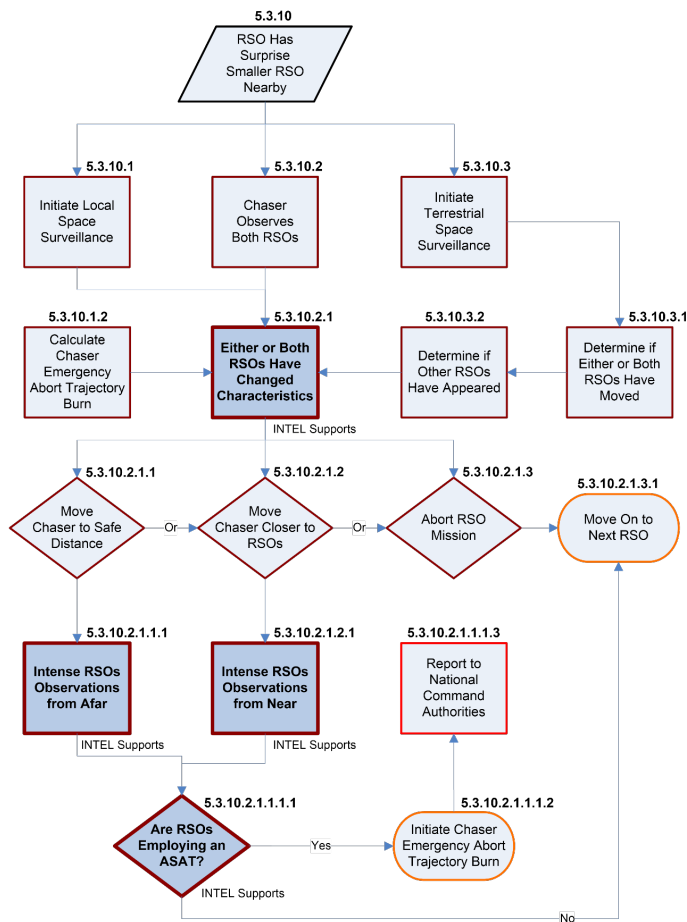


Figure 6. Example space battle-management checklist for a notional inspector satellite

RSO = Resident Space Object (Target)



Summary

In final summary, my most important point is that there are far too many examples in military history where one force that was supposedly inferior on paper was able to beat a much superior force, due to better doctrine, strategies, and tactics. Countries that are overly familiar with victory are particularly vulnerable to hubris. When was the last time the air war was in doubt for the United States? Maybe in the early days of World War II, almost 80 years ago. Since then we have produced many generations of military leaders who are far too accustomed to winning wars and doing things the good old way. Space is too new a conflict environment for lazy thinking about how to conduct decisive warfare. I experienced this kind of overconfident attitudes in the Air Force over the years, and that is why I think it is actually easy to beat the United States in any major conflict in space, despite our supposedly superior technologies. Technologies do not win wars—great thinkers do.

An example of this is in the beginning of World War II, when the Allies actually possessed 17 times the number of tanks that the Germans did, and the Allied tanks possessed superior technologies. Add to this correlation of forces the extremely expensive Maginot Line, and the Allies' overconfidence in their superior military hardware. The Germans succeed in pulling off the most dramatic defeat of the twentieth century with their superior strategies and tactics of Blitzkrieg warfare—not by implementing superior technologies. There are also some who theorize that, like the German grand strategy of WWII, the Chinese might feel inferior in space military technology and plan for a Blitzkrieg space war in the near future to catch the United States off guard and complete space control operations before the United States knows what hit it and be able to verify who the adversary was and what that adversary's strategic aims are. We will probably self-deter until it is too late, due to moral and political concerns.

In addition, it is easy to assume that a clever adversary will take out our eyes and ears in space before initiating terrestrial conflicts. There are key choke points in space at which this adversary must position his antisatellite (ASAT) forces, before initiating these surprise attacks. Good space domain awareness may detect this pre-positioning of ASAT assets and possibly prevent the terrestrial war from even starting, by frustrating the adversary's pre-conflict space battlefield preparations and confronting him in public diplomatic forums (see fig. 8).

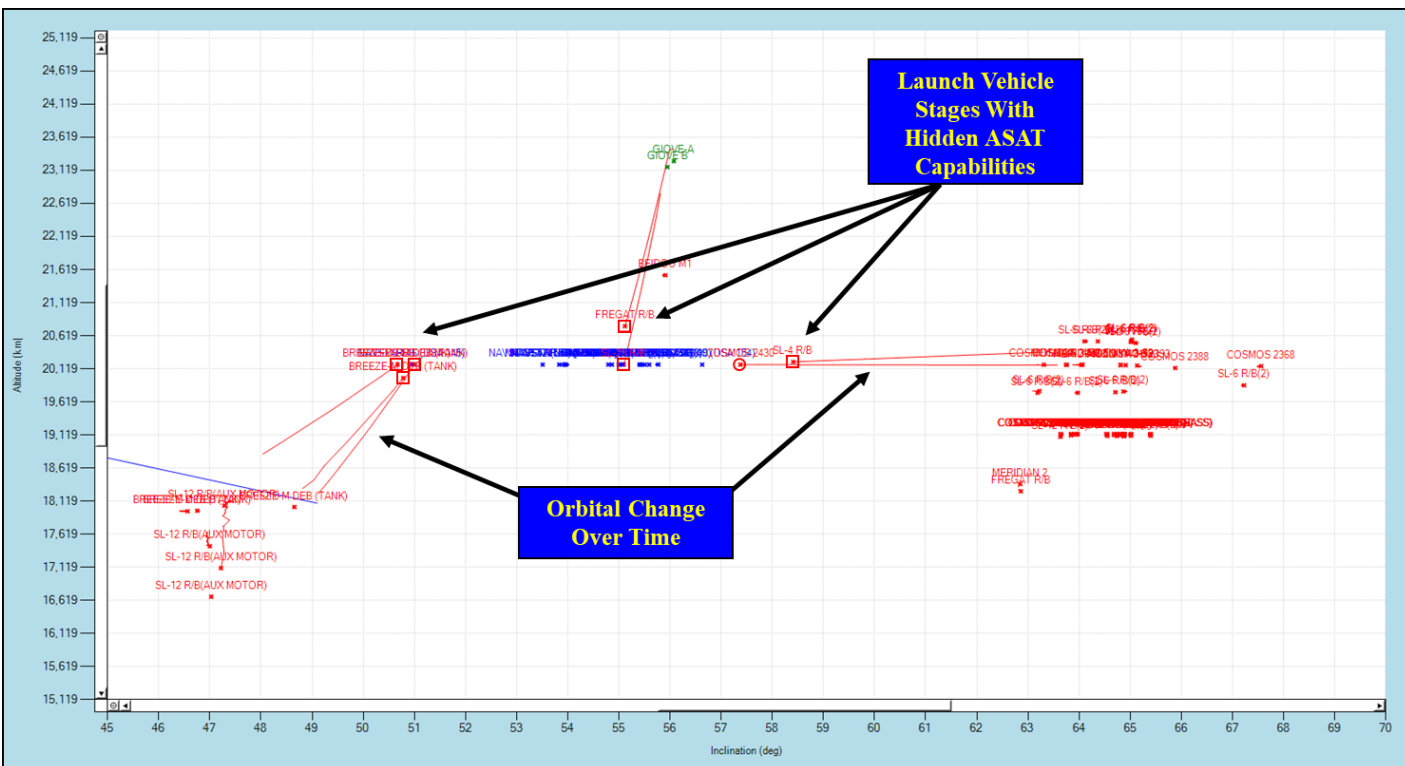


Figure 8. Notional attack on GPS

Paul S. Szymanski

Mr. Szymanski (BS Physics, Mathematics, and Logic '73 & MS Experimental Physics, '74, Carnegie-Mellon University) has been conducting military operations research analyses for 46 years for the United States Air Force, Navy, Army, and Marines. The last 43 years have been exclusively in outer space program analysis, management and development of space warfare theory, policy, doctrine, strategies, tactics, and techniques. He has worked with the Air Staff at the Pentagon (Secretary of the Air Force), the Space and Missiles Systems Center (SMC) in Los Angeles, California, and the Air Force Research Labs (AFRL) in Albuquerque, New Mexico, along with experience in operational field testing of missile systems at China Lake, California.

He currently manages a private discussion group consisting of 15,372 hand-picked members of LinkedIn interested in space, with members including 1,429 general officers and admirals; 56 current and former Under/Assistant Secretaries of Defense (including one former Secretary of Defense); 238 from the Joint Chiefs of Staff (including two former Chairmen of the Joint Chiefs of Staff); past and current commanders of the 4th, 5th, 6th, Pacific, and Korea Naval fleets; 569 Congressional House and Senate staffers; 136 diplomats; 268 staffers from the White House and National Security Council; and 52 astronauts, among others.

Posse Comitatus in Space

Forging a Relationship between the US Space Force and Law Enforcement

CAPT GLENN GERMANY, USSF

The Posse Comitatus Act¹ and additional federal law² prohibit the use of the Army, Air Force, Navy, and Marine Corps to execute laws in the United States. In stark contrast, the US Coast Guard (USCG) possesses law enforcement capabilities and responsibilities “upon the high seas and waters over which the United States has jurisdiction, for the prevention, detection, and suppression of violations of laws of the United States.”³ As the Department of Defense continues its stand up of the US Space Force (USSF), Congress must draft legislation similar to that pertaining to the USCG to allow local law enforcement agencies to use USSF assets, specifically surveillance satellites, in their investigations and reconnaissance. With the increase in commercial space operations and advancement of technology we see every day, the USSF will need the flexibility to enforce laws in space as well as help law enforcement agencies from space with its assets in place.

Expansion of Space Tourism Signals a Need for Law Enforcement Body Now

Space is the final frontier, and it holds countless opportunities for exploration and recreation. There are a number of private entities, i.e., SpaceX⁴ and Virgin Galactic,⁵ that have aims to send civilians to space, creating a new form of entertainment known as space tourism. Although civilian orbital sojourns are exorbitantly priced and rare to launch at present, the trend is a message to regulators that there will be a time in the not-so-distant future that space needs not only regulations but also an entity such as the USSF to help enforce those regulations.

Critics might argue that it is premature to give any sort of law enforcement capabilities to this brand-new branch, but acting now will save time and allow a federal agency to enforce regulations when necessary. The USCG law enforcement powers were granted by statute in 1949,⁶ a time when the focus of homeland defense was against foreign states, not foreign drug cartels. However, because the law enforcement powers were broadly granted to the USCG, its role has been able to evolve as the threat has changed. Now a primary mission of the USCG is drug interdiction,⁷ which would not have been possible had legislation not given the

USCG law enforcement powers. Congress would have had to pass new legislation granting law enforcement powers to the USCG while a valuable asset sat idly by and may not have even joined the law enforcement team. Though the Outer Space Treaty⁸ grants the exploration and use of outer space to all countries, there will come a time when sovereign nations and bad actors will use space to harass and injure other states. This will, in turn, push nation-states to redefine jurisdiction between airspace and space to allow better security for all. Granting broad law enforcement powers to the USSF similar to the USCG now will ensure there is an enforcement body in space before space becomes more public, thus, enabling regulators to monitor and control space actions over the United States before technology, practices, and law get ahead of law enforcement.

The Public Debate Concerning Government Satellite Surveillance

With regards to the USSF aiding local law enforcement agencies in surveillance, the debate over using government satellite equipment for law enforcement purposes is not a new one. As recently as 2007, the Department of Homeland Security was looking to aid law enforcement from space. In that year, Congress funded a program known as the National Applications Office, a sort of go-between for law enforcement and federal spy agencies. If it were implemented, civilian law enforcement agencies would be able to request satellite imagery from America's spy agencies for their investigations, similar to the Civil Applications Committee that enables agencies to request spy imaging for environmental and scientific study.⁹ Eventually the National Applications Office lost steam, and the program was abandoned due to congressional concerns over protecting civilian privacy.¹⁰ Several Democrats decried the office, though some did state in a memo to then-Secretary of the Department of Homeland Security Michael Chertoff that they supported "any Department effort to engage in more effective and responsive information sharing with our nation's first preventers."¹¹

Privacy and the Plain View Exception to the Fourth Amendment

Although privacy arguments will still be made by opponents to the USSF sharing resources with local law enforcement, a review of current jurisprudence shows that the US Supreme Court would find that satellite imaging would fall under the plain view exception to the Fourth Amendment prohibition on warrantless searches because society is willing to accept the fact that people do not have an expectation of privacy from satellite surveillance.

California v. Ciraolo¹²

In one of the first cases the US Supreme Court reviewed in regards to aerial surveillance, *California v. Ciraolo*, the test of privacy in regards to the Fourth Amendment was addressed. In *Ciraolo*, local law enforcement applied for and obtained a search warrant based on aerial observation of a suspect's backyard from an airplane flying 1,000 feet over the suspect's home.¹³ The Court, citing *Katz v. United States*,¹⁴ applied a two-part test to determine whether aerial observation could fall under the plain view exception to the Fourth Amendment protection against warrantless searches and seizures: "first, has the individual manifested a subjective expectation of privacy in the object of the challenged search? Second, is society willing to recognize that expectation as reasonable?"¹⁵

The Court found the suspect did have a subjective expectation of privacy shown by the fences erected in the backyard, and the Court quickly turned to the second question of the test. When considering society's willingness to accept the expectation as reasonable, the Court asked "whether the government's intrusion infringes upon the personal and societal values protected by the Fourth Amendment."¹⁶ Because any civilian could have seen what these officers saw in public airspace, the Court ruled society was not prepared to honor the expectation of privacy.¹⁷

Dow Chemical Company v. United States¹⁸

The US Supreme Court decided another aerial plain view case the same year as *Ciraolo* in *Dow Chemical Company*. Although different from a Fourth Amendment search, given the corporate nature of Dow and the rights a corporation possesses, the Court made a statement, in *dicta*, with regards to highly sophisticated photography equipment. When Dow argued that the government utilized cameras not readily available to the public, the Court dismissed the argument but added the caveat that "surveillance of private property by using highly sophisticated surveillance equipment not generally available to the public, such as satellite technology, might be constitutionally proscribed."¹⁹

Kyllo v. United States²⁰

Another applicable case when considering satellite imaging is *Kyllo*, wherein the US Supreme Court considered whether government agents could use thermal-imaging devices to take heat signatures from inside a suspect's home without a warrant. An arrest was made based on observations that indicated heat lamps were being used illegally to grow marijuana. The Court concluded because law enforcement used "a device that is not in general public use, to explore details of the home

that would previously have been unknowable without physical intrusion, the surveillance is a 'search' and is presumptively unreasonable without a warrant."²¹

Today's Application

In today's world the question of whether satellite imagery falls under the plain view doctrine will be two fold. First, if an individual claims an expectation of privacy from satellite surveillance, is society willing to accept that expectation as reasonable? Second, what level of photography sophistication is too advanced as to render a search unlawful?

With regards to society's view of searches from space, it is clear that satellite imaging is a common and accepted practice. With the advent of private corporation mapping (i.e., Google and Apple Maps) as well as imaging from these companies where an individual can see the shape and size of buildings, the individual plants in a backyard, and the cars parked in a driveway, it has become commonplace for an individual's belongings and property to be on display for free to society as a whole. If law enforcement were to get images from the USSF showing the same things from a corporate entity, a court would be hard pressed to find that society still accepts this expectation of privacy from satellite images. As the Supreme Court stated in *Katz*, "What a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection."²² Society is increasingly exposing things that it knows can be seen from space through satellite surveillance, and thus, satellite imaging should not be afforded Fourth Amendment protection.

Further, space will soon welcome private citizens in the space tourism industry. In the not-so-distant future, space will be considered a public space, while Joe Public will have the ability to view into another's backyard similar to citizens in planes in the 1980s akin to the *Ciraolo* case. It is unlikely it would be reasonable for society to accept that expectation of privacy.

Some will ask why a military body should be given this authority when private companies take the same images. A litany of arguments can be made for either side, but a key distinction would be government imaging is presumed to be reliable. A corporation has competitors and vulnerabilities that make it susceptible to altering and cyberattacks. Whereas a military body will have squadrons devoted to the protection of the networks and systems that generate the images. Critics will also point out that the National Reconnaissance Office (NRO) already provides these images through their assets, thus negating the needs for the USSF to have similar powers. While this article acknowledges the role of the NRO in some local law enforcement activities, the scope of this article is solely on why the USSF, specifically, needs law enforcement powers as well.

As technology advances courts will have to determine what constitutes an invasion into the sanctum of one's home. Currently, without a warrant, law enforcement cannot use technology that penetrates the walls of a home, such as audio eavesdropping, thermal imaging, and other such devices. Military satellites have tremendous capabilities beyond what is available to the public, and these abilities should not be employed for law enforcement purposes. Society is not ready to give full access to their homes over to the government. However, high-definition cameras and other imaging technologies that are used by both the military and private corporations should be allowed, as society would not support a claim of privacy from this type of search.

Regardless of what society currently thinks is reasonably private or not, Congress needs to draft legislation allowing the Space Force the ability to assist law enforcement similar to the USCG. As technologies advance, society will become more accustomed to space assets viewing their backyards and other properties and will no longer be willing to accept an individual's assertion to privacy in those areas. If these provisions are not enacted in the initial stages of standing up the USSF, Congress will have difficulty enacting them later, as illustrated by the case of the National Applications Office in 2008. Congress must provide legislation to have better information sharing between the USSF and the nation's first preventers.

Capt Glenn Germany

Captain Germany (BA, Brigham Young University, 2008; JD, Santa Clara University School of Law, 2011) is an assistant staff judge advocate and currently serves as the Chief of Operations Law at Peterson AFB, Colorado. Prior to joining the USAF, Captain Germany worked as a criminal prosecutor in California for six years. His children constantly ask him if he will be the first JAG to fly in space as part of the United States Space Force.

Notes

1. *US Code*, vol. 18, sec. 1385 (1956).
2. *US Code*, vol. 10, sec. 275 (1981).
3. *US Code*, vol. 14, sec. 522 (1949).
4. Tariq Malik, "SpaceX Will Fly Space Tourists on Crew Dragon for Space Adventures," *Space.com*, 18 February 2020, <https://www.space.com/>.
5. Darrell Etherington, "Virgin Galactic Becomes the First Public Space Tourism Company on Monday," *TechCrunch*, 24 October 2019, <https://techcrunch.com/>.
6. *US Code*, vol. 14, sec. 522 (1949).
7. *US Code*, vol. 6, sec. 468 (2002).
8. "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies," entered into force: 10 October 1967, *United States Treaties*, volume 18, sec. 2410.
9. Robert Block, "U.S. to Expand Domestic Use of Spy Satellites," *Wall Street Journal*, 15 August 2007.
10. Department of Homeland Security, *Secretary Napolitano Announces Decision to End National Applications Office Program*, 23 June 2009.
11. House Committee on Homeland Security to Michael Chertoff, Secretary of Homeland Security, memorandum, 7 April 2008.
12. *California v. Ciraolo*, in *United States Supreme Court Reports*, vol. 476 (1986), 207.
13. *Ciraolo* at 209–210.
14. *Katz v. United States*, in *United States Supreme Court Reports*, vol. 389 (1967), 347.
15. *Ciraolo* at 211.
16. *Ciraolo* at 212.
17. *Ciraolo* at 214.
18. *Dow Chemical Company v. United States*, in *United States Supreme Court Reports*, vol. 467 (1986), 227.
19. *Dow Chemical Company* at 238.
20. *Kyllo v. United States*, in *United States Supreme Court Reports*, vol. 533 (2001), 27.
21. *Kyllo* at 40.
22. *Katz* at 351.

On Early Air Combat in Southeast Asia

After Wingate's Fortitude Eclipsed Mountbatten's Folly

RONALD H. CARPENTER, PhD

Early in World War II, President Franklin D. Roosevelt opposed American armed forces helping restore British colonies overrun by Japan. He nevertheless agreed in August 1943 after meeting with Prime Minister Winston Churchill and his staff at the Quadrant Conference in Quebec, Canada. An "Air Commando" Group thus was created by Gen H. H. "Hap" Arnold and led by Lt Col Phil Cochran, a 30-year-old, "hot pilot" who became Col "Flip" Corkin in a long-running comic strip. For combat in Burma, this unit was formed by Arnold after hearing British Brig Gen Orde Wingate speak at Quadrant—in stark contrast to Adm Lord Louis Mountbatten, Churchill's chosen commander for Southeast Asia.

For Quadrant, Roosevelt also brought Army general George Marshall and Navy admirals Ernest King and William Leahy (the latter, FDR's aide). Although major conference planning yielded Overlord, the D-Day assault upon Nazi-occupied Europe, warfare elsewhere was discussed. *The Oxford Companion to World War II* deemed Wingate's creating so "favorable" an impression that he received "more resources than he could ever have expected."

Generals and admirals bring *prior* credibility to conferences. Insignia of rank demonstrate authority; rows of ribbons denote extensive service if not valor; and reputations for previous sound decisions (or lack thereof) may affect listeners. Some credibility, however, is enhanced by their speaking *during* those meetings. At Quadrant, Wingate exemplified such impress.

After leading Emperor Haile Selassie's irregular forces against Italian troops in Ethiopia early in World War II, Wingate went to India in June 1942 to organize and command a Long-Range Penetration Group. Called "Chindits" (after animal statuary guarding Burmese temples), they operated from February to June 1943 behind Japanese lines in Burma. Three thousand men started out; 800 became missing or killed; of returnees, only 600 were fit for active duty after their hunger, thirst, and disease. In small groups evading Japanese encirclement, men too sick or wounded to keep up—by orders—were left behind. As Churchill once observed, "going into the jungle to fight the Japanese was like going into the water to fight a shark."



Figure 1. Wingate's Chindits. British general Orde Wingate (in pith helmet), commander of the Chindits, briefs the C-47 Dakota pilots of the 1st Air Commando, US Army Air Forces, in Burma.

Although suggesting the Japanese might be “beaten at their own game of jungle fighting,” Wingate was problematic for many British commanders. Deemed “an arrogant, out-of-control visionary,” his well-known trademarks were an Old Testament beard and a nineteenth-century, colonial-era pith helmet “from a museum.” He also favored a sweaty, smelly, jungle-filthy uniform for conferences with superiors. Churchill’s personal physician, Charles Wilson (Lord Moran), deemed him “rather unbalanced . . . hardly sane—in medical jargon a borderline case.” Nevertheless, Wingate favorably impressed Roosevelt’s accompanying commanders in Quebec, particularly General Arnold, who created Cochran’s Air Commandos.

Churchill departed for Quadrant on the evening of 5 August 1943. Wingate had arrived from India that day to report at the War Office about Chindit operations, but was ordered to appear first at 10 Downing Street, the prime minister’s residence. As Churchill’s personal physician remembered, “strange stories” had

reached London suggesting this brigadier was another T. E. Lawrence of Arabia (famed for leading Arab irregular forces against Turkish troops in World War I).

Deeming Wingate a “man of genius and audacity,” Churchill wanted “a look at him before I leave for Quebec.” Having just landed after a three-day flight from India, Wingate—in a dirty, sweaty uniform and Wolseley-era pith helmet—arrived at 10 Downing Street before Churchill left that evening by boat-train for Scotland to board the *Queen Mary* for the voyage to Canada. He was invited to stay for dinner, during which Churchill’s daughter, Mary, deemed him “a tiger of a man.” After listening for “half an hour” about jungle warfare, the prime minister decided “at once” to take him to Quadrant and said “our train” leaves “at ten.” Wingate’s wife (living in Scotland) was told to pack a suitcase and accompany him.

For the voyage to Quadrant, Wingate had only his dirty, sweat-stained uniform when arriving from India and going directly to 10 Downing Street. *Queen Mary* personnel thus loaned him naval officers’ attire. Although some fellow passengers commented adversely, the “oddity” was “typical” of one who “purposely” neglected to buy clean uniforms in Cairo where they were abundant. In his cabin, Churchill heard more from the brigadier about Chindit operations. Already having read Wingate’s written report, however, he first critiqued its “crudities” and “some phrases . . . not to my liking” nor “liking of our language.” Nevertheless, the prime minister put his general “more perfectly at ease” for Quadrant.

During the voyage, Wingate addressed the Imperial Chiefs of Staff when Southeast Asia received “prolonged discussion.” As chief of staff, Gen Alan Brooke recalled discussing “what could be done” to prove to Americans that “we are in no way” neglecting “operations in Burma.” Wingate thus spoke in Quebec on 17 August when Quadrant attendees had “quite a good meeting” at which he “gave a first-class talk” about warfare against Japanese forces that had overrun Burma. Agreement ensued: another Long-Range Penetration Group should operate on a “considerably extended scale.”

At Quadrant, Viscount Sir Antony Head, British Secretary for War, recalled Wingate’s speaking “rigidly to the point” and fixing attention of listeners “thoroughly weary of the arts of eloquent men,” that is, Churchill and Roosevelt. Moreover, he spoke “with as much candour [*sic*] as though he were addressing his column commanders.” For example, Great Britain’s Indian Army troops were a “system of outdoor relief” (in Head’s polite paraphrase), but the “impropriety”

did not detract from merit of the “performance.” Churchill embraced eloquence; Wingate preferred profanity.

The British anticipated acrimony at Quadrant. Formal minutes have bracketed words, “bickers” and “bickering,” when Burma was discussed on 19 August. Whereas Roosevelt sought only a land route to supply China, Churchill wanted “operations” to “reach Singapore as quickly as possible” (causing FDR’s “cool reception”). Believing Britain also sought “a controlling interest” in the Dutch East Indies when recaptured, Admiral King’s response included what Admiral Leahy called “undiplomatic language, to use a mild term.” Following Quadrant from afar, Gen Douglas MacArthur lamented the Dutch East Indies “turned over to the British” after being “neutralized” by his South-West Pacific operations; for “past experience” indicated “it might be difficult to pry them loose.”

Amid acrimony, Viscount Head recounted communication whereby Wingate “excelled himself in a modest and stirring account, packed with matter, delivered with hardly one look at his notes.”

He had the mysterious ability to make his presence felt without insistence. He rarely asked to speak but waited until he was invited, and somehow, by the expression of his face or whatever goes to impress personality, he made it difficult for others to pass him over in the course of debate. Sometimes, when his opinion was sought, he paused for as much as 15 seconds, (which can seem like 15 minutes), before giving his answer.

Long pauses did not suggest zeal extolling empire in Parliament but rather judiciousness to Americans suspicious of British colonialism.

Before Quadrant, at a 7 January 1943 White House meeting, Roosevelt insisted that American warfare on the Asian mainland be limited to opening the Burma Road to China. Marshall thus recommended any such combat be “confined to the northern part of Burma,” and Leahy proposed calling it “The Burma Road Operation.” On 6 April 1943, however, King warned Roosevelt that the British Chiefs of Staff prefer recapturing the “whole of Burma” so the route to China would be secure, and Marshall said they wanted its “complete” reoccupation. FDR thus opposed American “white troops” helping restore a British colony. Nevertheless, when Marshall urged “some offensive action” there or “China would be lost,” Arnold reiterated an “obligation to open the Burma Road.”

At Quadrant, Wingate favorably impressed Leahy, who lauded his “daring initiative and imagination and superlative courage.” Furthermore, Marshall

found him “strong for me . . . in the class of Lawrence of Arabia but for his death” (in an American aircraft accident). This brigadier clearly differed from previous British generalship in Asia. Defending Malaya and Singapore, Gen Arthur Percival received a telephone call on 7 December 1941 from the Crown Colony Governor, Sir Shenton Thomas, about a Japanese attack and assumed, “Well, I suppose you’ll shove the little men off.” With a total of almost 70,000 uniformed personnel, Percival surrendered them to General Yamashita’s force of 35,000 men. Of 32,000 Indian Army troops surrendered, many joined a Japanese-sponsored “Indian National Army” against the British Raj. Percival’s other troops became prisoners of war after British officers, in tropical uniform shorts, were photographed striding with a white flag to surrender.

Although some Americans deemed Mountbatten “a man of great energy and daring,” many British officers perceived an “aristocratic playboy” in “a political job, of course.” As noted in Sir Anthony Eden’s *Quadrant* diary, Wingate was a “refreshing contrast” for people “doubtful of Mountbatten being up to” becoming Southeast Asia commander-in-chief—when several Americans found SEAC signifying “Save England’s Asiatic Colonies.”

Wingate’s Chindits now operated with Cochran’s aircraft inserting them by air, evacuating casualties, attacking Japanese ground targets, and bringing in supplies (including mules). This American force consisted of 20 B-25 Mitchell medium bombers, 30 P51A Mustang fighter-bombers, numerous Waco gliders, and 13 C-47 transport planes (the military version of the venerable DC-3 also towed gliders). With American production capabilities, Cochran’s command was a proverbial drop in the bucket. But if that was all Wingate needed, no *carte blanche* was restoring British colonialism.

Roosevelt even contributed a Chindits’ counterpart: “Merrill’s Marauders.” Code named Galahad, the 5307 Composite Group of about 3,000 infantrymen was commanded by Brig Gen Frank D. Merrill. Having previously refused Gen Joseph Stillwell’s request for American ground forces in the China-Burma-India theater of war, FDR sent them after *Quadrant*. Although Cochran’s command was miniscule, no other World War II special operations rivaled the one Wingate advocated in Quebec.

At *Quadrant*, Wingate differed markedly from Brooke, whose tongue was “shooting out and round his lips” with “the speed of a chameleon.” As Admiral King added, he “talked so damn fast.” Although Brooke attributed his lack of favorable impress to American “mental sluggishness,” King found it “hard to

understand what he was saying.” More significantly, Wingate differed markedly from Mountbatten.

Brooke’s transcribed diary for *Quadrant* lamented at length “one of Dickie Mountbatten’s bright ideas.” For North Atlantic warfare, the Admiral advocated “aircraft carriers” made from a floating, frozen compound of ice and wood pulp called “Pykecrete” (after its inventor, Geoffrey Pyke, a scientist on Mountbatten’s former Combined Operations staff). Although Brooke thought he was “pulling our leg,” Mountbatten “was in earnest”; for if bombed, craters presumably would be filled with water to freeze quickly and restore flight decks. Brooke lamented: “Heaven knows how much money went down the sink over this project.” When Mountbatten pleaded to explain them at *Quadrant*, Brooke replied, “To hell with Habakkuk! We are about to have the most difficult time with our American friends and shall not have time for your ice-carriers.”

Nevertheless, as a “heated” meeting was concluding, Mountbatten rushed up to remind Brooke of Habakkuk, who therefore asked Marshall if he and the American Chiefs “would allow Dickie to give an account” of the project. They agreed. After attendants brought in two large cubes and placed them in the room, Mountbatten said “the cube on the left was ordinary pure ice, whilst that on the right” was less liable to splinter and thus “far more suitable” for “aircraft carriers.” Having brought a pistol to fire shots at the cubes, he would “prove their properties.” When “all rose and discreetly moved behind him,” Mountbatten fired at the block of ordinary ice. A “hail” of splinters struck attendees. “Dickie” then said, “now I shall fire at the block on the right to show you the difference.” The rebounding bullet “buzzed round our legs like an angry bee,” nicked Admiral King’s trousers and narrowly missed the British Chief of Air Staff, Marshall Charles Portal. An officer, who left the room earlier, heard the shots and remarked, “Good Heavens, they have started shooting” at each other. General Arnold sought an axe to chop contemptuously at Pykecrete.

Yes, England accomplished epic martial endeavors. From 26 May to 4 June 1940, almost 300,000 men of the British Expeditionary Force trapped in France were evacuated off an open beach at Dunkirk by civilian yachts, fishing boats, and various other shallow-draft vessels—during what Churchill eloquently deemed Great Britain’s “finest hour.” Equally epic was the aerial defense of England by the Royal Air Force, the “so few” to whom “so many” eloquently owed Churchillian “so much.” Nevertheless, in June 1942, at Tobruk in North Africa, British generalship surrendered almost 30,000 men to Erwin Rommel’s

significantly smaller Axis force. Moreover, to defeat the Deutches Afrika Korps at El Alamein in October 1942, Gen Bernard Montgomery needed 1,029 tanks to the DAK 496 as well as 195,000 Eighth Army troops to defeat an Axis force of 104,000 men with barely 50,000 Germans.

As a result of Quadrant, General Arnold gave Wingate “as much assistance as possible” because “I liked his initiative and imagination, his resourcefulness and his courage” as well as “mystery of personal chemistry” that “can never be pinned down.” After “one look at that face” atop a uniform smelling of “jungle and sweat and war,” one knew: “Hell, this man is serious.” And “when he began to talk, you found out just how serious.” Wingate’s fortitude trumped Mountbatten’s folly—and Arnold formed a storied unit in US Air Force history: Cochran’s Air Commandos.

Ronald H. Carpenter, PhD

Dr. Carpenter is emeritus professor of English and Communication Studies, University of Florida. Before receiving his doctorate, he was commissioned through AFROTC and served on USAF active duty in the latter 1950s. He is the author of six books and more than 50 journal articles and chapters in anthologies.