Strategic Mobility: The Essential Enabler of Military Operations in Great-Power Competition

John Fasching

"If everyone is thinking alike, then somebody isn't thinking."

—General George S. Patton

America's military instrument of national power has prevailed over those of our adversaries because of an unparalleled ability to project and sustain dominant force levels rapidly around the globe. In concert with the diplomatic, information, and economic instruments of national power, the military helps to implement America's national security and defense strategies,[1] but success in great-power competition and future conflict will require a reinfusion of innovation and resources.

Traditionally, the Department of Defense (DOD) has invested in a set of strategic mobility enablers that can move war-winning levels of combat forces, equipment, and supplies to sustain military operations at the time and place, and for the duration of, our choosing. DOD has developed and resourced the necessary strategic mobility–related doctrine, organizations, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) in order to meet the force-flow requirements of geographic combatant commanders in executing their operational war plans. This commitment is demonstrated by the four-star-level, joint United States Transportation Command (USTRANSCOM), which orchestrates American strategic mobility operations in concert with interagency, intergovernmental, multinational, nongovernmental, and commercial stakeholders.

Growing Critical Challenges

At the same time, however, America's competitors and adversaries have been making their own investments in an effort to offset American strategic mobility overmatch in future armed conflicts. Our recent military successes have been against nation-states that were not capable of global competition or nonstate actors with little to no ability to disrupt our strategic mobility capabilities. The nature of the competition through the conflict continuum vis-à-vis China, Russia, Iran, North Korea, and even the fight against terrorism, or likely combinations thereof, in an era of great-power competition and conflict demands strategic mobility–enabling processes and capabilities

Retired U.S. Army Lieutenant Colonel John Fasching has written and presented on strategic mobility issues for such organizations as the National Defense Transportation Association, the Association of the United States Army, and the National Academies of Sciences Transportation Research Board. The views expressed in this essay are those of the author alone and do not reflect the official policies or the positions of any DOD, joint, interagency, intergovernmental, multinational, nongovernmental, or commercial organization.

that are different from those we have now. Our current deployment process must be enhanced, particularly for "early" deployers in contested environments, because it is predictable and inadequate for ever-compressing, adequate military-response timelines and threat capabilities for disruption of our force flow.

Adversaries with advanced (and in some cases superior) weaponry, lethal global reach, and strategic mobility programs and capabilities of their own have combined to force us to acknowledge the contested nature of our military operating environments and adjust our concepts, strategies, plans, and capability development efforts. Concentrations of forces and supplies create target-rich environments, and our operations must become more and more distributed to increase our survivability and resilience as we move further away from benign operating environments.

Our most recent concerted, top-down directed strategic mobility investment occurred in the 1990s with nearly $50 billion directed by Congress and applied across DOTMLPF-P. It garnered strategic military air and sealift platforms and access to commercial lift capacities, globally prepositioned military equipment and supplies, deployment training exercises, railcars and equipment, deployment infrastructure, management systems, process improvements, and other deployment enablers. Over the 30 years since then, our deployment capability has declined relative to the anti-access/area denial (A2/AD) strategies and investments made by our adversaries to counteract our long-standing strategic mobility overmatch.

While operating in Iraq and Afghanistan, we deferred most investments in the modernization of strategic mobility enablers, and much of our current strategic mobility solution set now faces critical near-term age-out and obsolescence challenges. Our domination of the air, land, maritime, cyber, and space warfighting domains, which enabled unmatched force projection capabilities, has atrophied as we have had the operational luxury of largely uncontested, long-lead-time, rotational, and contractor-enabled deployments to Iraq and Afghanistan. While we accepted risk in deferring modernization, adversaries were developing their own global-reach capabilities that threaten to disrupt deployment operations both in America and en route to theaters of operation the next time we deploy a campaign-quality force in support of large-scale combat operations (LSCO). Our adversaries have invested heavily in A2/AD capabilities that directly threaten American strategic mobility.

There are cultural challenges that stand in the way of the necessary shift in our thinking about what our strategic mobility solution set should look like and how it should be prioritized to ensure the successful execution of our national security and defense strategies. Undoubtedly, fiscal pressure and competition for resources will limit significant investments in truly transformational programs of strategic mobility capability development, so we must refocus our attention on reconfiguring our existing strategic mobility solution set in affordable ways for little-to-no-notice, rapid, expeditionary, contested deployments against astute and dynamic great-power adversaries.

The $50 billion investment made 30 years ago has served us well, but it has run its course, and existing lift platforms and infrastructure should be reconfigured with the enabling of future, contested LSCO in mind. As the overall size of America's Joint Force has declined since the end of the Cold War, so too has the strategic mobility enterprise. Major portions of our strategic sealift and airlift platforms, rail deployment enablers, and deployment infrastructure have reached or are fast approaching the end of their serviceable lives, and spending for modernization has been either woefully inadequate or deferred entirely. These deferrals have created a gathering tsunami of strategic mobility–related funding requirements. In addition, our aging strategic mobility enabler set was designed for deployment operations and conditions that are vastly different from the operational challenges that we face today and will face in the near term. Combat vehicle

weights and dimensions have increased to improve fire power and crew survival rates; however, this trend affects a key performance parameter for new equipment development: the ability to transport and rapidly employ these vehicles.

This constant friction between weapon system lethality and survivability versus transportability and the cumulative impacts on strategic mobility is intensifying as military operating environments become more and more lethal. We are at an inflection point in the history of America's dominance in strategic mobility capability and overdue for another hard look at how to transform America's strategic mobility capability not only across America's joint military organizations, but also within the context of the interagency, intergovernmental, multinational, and commercial partners that are critical to our strategic mobility operations in any conflict.

The Strategic Mobility Triad

According to DOD's joint doctrine:

> Strategic mobility is the capability to deploy and sustain military forces worldwide in support of national strategy. Beyond the intrinsic capability of some US forces to self-deploy, the bulk of our nation's strategic mobility requirements are met through common-user sealift, common-user airlift, and pre-positioned stocks, known as the strategic mobility triad....[2]

Modernizing this triad requires planning, prioritization, coordination, and resourcing among joint, interagency, intergovernmental, multinational, and commercial (JIIM-C) partners.

Joint organizations that contribute to strategic mobility operations include the Navy, Air Force, Army, Marine Corps, geographic, and functional combatant commands. Since America's air and naval forces largely self-deploy, the strategic mobility triad predominantly supports the rapid movement of land-domain personnel, equipment, and sustainment from the Army and Marine Corps into conflict areas. Prepositioning some of their equipment, supplies, and ammunition allows some early deployers to fly in, draw equipment, and rapidly organize for combat, providing a deterrent effect through the rapid buildup of combat power in a theater of operations. Recent efforts to "combat configure" prepositioned stocks lessen the time it takes to issue the gear, thus "priming the pump" and accelerating the delivery of combat-ready forces to combatant commanders.

The four services plan, resource, coordinate, and synchronize their independent capability development efforts for strategic mobility, and the United States Transportation Command (USTRANSCOM) orchestrates the joint deployment process when forces are alerted to deploy.

- The Navy's Military Sealift Command (MSC), a component of USTRANSCOM, operates and maintains the 125 ships that sustain maritime domain operations and transport Army and Marine Corps forces. These MSC ships, which perform a wide variety of missions that provide all manner of logistics support to maritime assets, include hospital, cargo, underway fuel and dry cargo replenishment, and rescue and salvage ships.

- The Air Force operates aerial refueling and transport aircraft to support strategic mobility through its Air Mobility Command (AMC), also a USTRANSCOM component command.[3] The current air transport fleet includes 428 C-130 Hercules, 222 C-17 Globemaster, and 52 C-5 transport aircraft.[4]

- The Army's USTRANSCOM component command is the Military Surface Deployment and Distribution Command (SDDC). SDDC integrates and synchronizes surface deployment and distribution capabilities to project and sustain U.S. forces,

primarily through road, rail, and seaport operations and transportation engineering assessments, coordinating the movement of equipment from a unit's home station to its seaport of debarkation.

Interagency Partners and Strategic Mobility

Interagency partners play a critical role in strategic mobility's underpinning of U.S. national security by rapidly introducing military capabilities either domestically or abroad. The herculean effort involved in deploying campaign-quality forces and sustaining them for the duration of combat operations requires a vast network of non-military partners, starting with interagency organizations. In this context, the joint doctrinal definition of strategic mobility fails to account adequately for and describe enabling capabilities provided by the other "IIM-C" entities. Joint and service concepts under development must account for the fact that America's deployment process is only as reliable, fast, and effective as the JIIM-C stakeholders that enable it.

Using sealift as an example, the Army can be ready to deploy its equipment and initial sustainment stocks to seaports of embarkation in time to load aboard ships, but if the ships are not on par with their own readiness rates and abilities to meet force-flow synchronization timelines, the force will arrive late to the theater of operations, giving our adversaries more time to fortify defenses and further delay our deployment process while undermining the will of the American people to continue prosecuting military operations. Conversely, if Army units do not make it to the port on time, the sailing schedule will be delayed, causing delays all along the joint deployment process and negatively affecting the combatant commander's ability to execute his plan according to operational timelines.

The role of America's interagency partners in facilitating force deployments includes coordination by the Department of State in obtaining diplomatic clearances, basing rights, and overflight rights and building coalitions for military operations. Interagency support also includes heavy reliance on Department of Transportation (DOT) capabilities such as those provided by the United States Coast Guard to ensure maritime and port security. Another DOT interagency partner, the Maritime Administration (MARAD), provides multiple types of ships to deploy and sustain military operations through three programs that underpin the National Defense Reserve Fleet (NDRF): the Maritime Security Program (MSP); Voluntary Intermodal Sealift Agreement (VISA); and Voluntary Tanker Agreement (VTA). These three programs collectively give MARAD access to 185 ships. "At its height in 1950," however, "the NDRF consisted of 2,277 ships."[5]

In contrast to the decline in America's maritime capability, "China is seen as striving to overtake the U.S. as the dominant naval power in Asia and already boasts the world's largest navy in numbers of vessels."[6] Even with fewer U.S.-flagged ships, the need to find trained and qualified U.S. mariners, resources to recapitalize ships, and the necessary naval combatant ship escorts in the event of an LSCO puts our maritime-domain strategic readiness at unacceptable levels of operational risk. As aptly summarized by national security expert Loren Thompson:

> Washington…is not sending the right message to Moscow and Beijing if its goal is to deter aggression by demonstrating the means to respond quickly and forcefully. Lack of sealift could prevent the world's most capable ground force from getting to the fight in time to make a difference—or being able to sustain an effective defense over time without resorting to use of nuclear weapons. To put it bluntly, America could lose a Eurasian war for lack of timely sealift.[7]

On the Military Sealift Command side of the equation, our maritime readiness shortfalls were underscored during USTRANSCOM's most recent TURBO ACTIVATION (TA)

readiness exercise: "Of the 61 ships assigned to the Organic Surge Fleet at the start of TA 19+, a total of 63.9% (39 of 61 ships) were ready for tasking (RFT)."[8] Given that about 90 percent of the deploying equipment and sustainment stocks are moved to a contingency on sealift, the negative trends in U.S. sealift capability, capacity, resiliency, and readiness must be reversed.

Intergovernmental (civilian) and multinational (military) cooperation and agreements provide basing and prepositioning sites, overflight rights, customs and transportation clearances, and access to other required infrastructure for coordinated global deployments. U.S. forces flow through host-nation commercial seaports and airports and clear them using distribution infrastructure alongside commercial cargoes. Commercial cargo operations must be balanced with military force flows to avoid both negative effects on host-nation economies and the undermining of public support for U.S. deployments abroad.

Public and geopolitical pressure can deny U.S. forces the use of planned deployment infrastructure, as when Turkey denied access to U.S. forces during Operation Iraqi Freedom.[9] Turkey's decision precluded a large-scale maneuver operation into Iraq from the north and caused a sealift logjam. It also delayed the commencement of U.S. offensive ground operations. Fortunately, Iraq lacked the long-range, precision strike capability to threaten Kuwaiti ports and could not turn the operational delay into a significant military advantage.

Today's adversaries have studied recent U.S. deployments and will precisely target the relatively few world-class seaports and airports on which U.S. forces largely depend for rapid, efficient, and effective deployment operations, thus adding to force-flow planning and execution challenges as potential host nations weigh the risks involved in granting access.

Commercial Assets and Civilian Contractors

Commercial-partner airlift and sealift capacity is made available for military deployments through the Voluntary Intermodal Sealift Agreement and Civil Reserve Air Fleet (CRAF) programs that leverage U.S.-flagged commercial strategic lift platforms to deploy and sustain military forces in times of war. The armed services have largely relied on outsourcing to commercial industry to fill capability gaps in deploying and sustaining forces during recent operations. Operations Iraqi Freedom and Enduring Freedom saw unprecedented levels of contractors on the battlefield, and those trends are extremely hard to reverse, particularly once the services have divested themselves of force structure by leveraging the support of contractors.

Given the lethality and risks inherent in the changing character of war in contested environments the likes of which we have not seen since World War II, we must reassess the tactics, techniques, and procedures associated with fully leveraging commercial assets and civilian contractors for strategic mobility capability in anticipated contested environments. We can ill afford losses on the scale of the 1,614 ships and 9,521 mariners lost by the Merchant Marine during World War II.[10] Nor can we absorb the significant losses of commercial aircraft in strategic mobility roles that, given the proliferation of advanced anti-aircraft weapons systems, are likely in fights with great-power adversaries and their proxy forces.

DOD is but one part of an extensive, complex JIIM-C team, providing strategic mobility in response to almost every type of operation, from disaster response and consequence mitigation to large-scale combat operations. The COVID-19 pandemic response highlighted how defense support to civil authorities can augment a whole-of-nation—or even a whole-world—response. It also exposed national vulnerabilities and areas where we may be accepting unreasonable risk, particularly where supply chains originate in or run through competitor or adversary nations, thus threatening our strategic mobility capabilities.

Great-power competitors and adversaries are developing and leveraging multi-domain, global reach, and strategic mobility capabilities

of their own to counter our phenomenal but aging and predictable joint deployment process and its enablers. Maintaining robust strategic mobility capabilities significantly deters rational bad actors and is part of our calculus for military courses of action when adversaries threaten U.S. national security interests.

Moreover, maintaining overmatch requires a concerted strategy and the resourcing of operational capability across JIIM-C stakeholders and enabling organizations. When the information system screens go black and information and data stop flowing because of disruptions in the space and cyber domains, our ability to operate depends on institutional memory and training in the use of pre-digitized battlefield tools, tactics, techniques, and procedures. For example, if an adversary were to deny the use of GPS, U.S. forces would have to rely on celestial, terrain-associative, or other navigational and target location techniques.

Weaknesses in the Joint Deployment Process

America's adversaries understand that America's recipe for success is its joint deployment process, and they understand the importance of contesting our strategic mobility overmatch in any future conflict. Our adversaries are fully leveraging opportunities during competition across their own instruments of national power to offset our traditional overmatch in strategic mobility.

For example, China invests heavily to gain a controlling interest in global seaports of strategic value; owns about 90 percent of the International Organization for Standardization (ISO) shipping container manufacturing market; and has constructed and is improving facilities on islands it has built as A2/AD defensive outposts in the South China Sea. China's published "Made in China 2025" strategy clearly indicates that Beijing seeks to dominate certain manufacturing industries—many of which are critical to U.S. national security and force-projection capability. According to China's English-language website:

> Nine tasks have been identified as priorities: improving manufacturing innovation, integrating technology and industry, strengthening the industrial base, fostering Chinese brands, enforcing green manufacturing, promoting breakthroughs in ten key sectors, advancing restructuring of the manufacturing sector, promoting service-oriented manufacturing and manufacturing-related service industries, and internationalizing manufacturing.
>
> The above ten key sectors are:
> 1. New information technology
> 2. High-end numerically controlled machine tools and robots
> 3. Aerospace equipment
> 4. Ocean engineering equipment and high-end vessels
> 5. High-end rail transportation equipment
> 6. Energy-saving cars and new energy cars
> 7. Electrical equipment
> 8. Farming machines
> 9. New materials, such as polymers
> 10. Biomedicine and high-end medical equipment.[11]

This list has implications for where we acquire war materiel and enablers, particularly within the maritime domain. According to Loren Thompson:

> In its bicentennial year of 1976, the United States was the biggest builder of commercial oceangoing vessels in the world. Dozens of ships were under construction at domestic shipyards. The Reagan Administration wiped out the industry (and 40,000 jobs) by eliminating construction subsidies without seeking reciprocal action from other shipbuilding nations.
>
> That was a self-inflicted wound. But then in 2006, Beijing designated commercial shipbuilding as a strategic industry and began channeling massive state

subsidies to the sector. End result: China has become by far the biggest producer of commercial ships in the world, while fewer than 200 ships in the global fleet of 44,000 oceangoing vessels are American.

The U.S. today barely manages to rank among the top 20 commercial shipbuilding nations (it's number 19), and all of the oceangoing ships built recently in America were for use on protected domestic routes. Industry experts say without that protection, the commercial shipbuilding sector and the U.S. merchant marine would literally cease to exist.[12]

In the candid words of former USTRANSCOM Deputy Commander and DOT Administrator Lieutenant General Ken Wykle (Ret.):

The ability to rapidly deploy our forces suffers from two primary deficiencies. The first is a lack of Merchant Marine ships, and the second is a lack of qualified merchant mariners.

First, the ships. This is a matter of sheer numbers. In 1951, the U.S. Merchant Marine had 1,288 ships operating in international trade. Today, there are 81 ships. This means the U.S. Merchant Marine does not have the shipping capacity our country needs to deploy and supply the most capable military in the world....

The human capital shortage may be worse than the shortage in ships. A report by the Maritime Administration to Congress highlighted the problem. The report "estimates that 11,768 qualified mariners... are available to crew the Ready Reserve Force...the estimated demand for mariners [in an emergency] is 13,607."[13]

As strategic risk to missions and forces during future crisis response operations and attrition continue to manifest, these pressures will change how we deploy and redeploy forces. We are going to have to fight our way to the fights. Combat configuration–related reviews of the entire joint deployment process, from origin to destination, should be undertaken. JIIM-C operations against adversaries with global reach and advanced weaponry in all domains require whole-of-nation and multinational approaches, investments, and planning.

It is crucial that previous assumptions about capital and combat losses be called into question. The next version of the nation's strategic mobility solution set must reflect the harsh realities of JIIM-C operating environments and how our soldiers, sailors, airmen, Marines, Coast Guardsmen, Merchant Mariners, Medical Service Corps personnel, and populations are trained and prepared to respond to periodic windows of ubiquitous battlespace and global combat operations.

The October 1, 2016, missile attack on the former MSC Expeditionary Fast Transport Ship HSV-2 Swift[14] indicates the complexities of operating in a JIIM-C-enabled, contested environment in which the lines between competition and conflict are all but indistinguishable. It also highlights how non-governmental organization actors or their proxies can complicate deployment and sustainment operations. The attack was carried out by Houthi rebels off the coast of Yemen, and the vessel was leased to the United Arab Emirates for a humanitarian aid mission—a potpourri of JIIM-C operations on both sides.

Dynamic Force Deployment

Another example of how we must change our execution of global force projection involves the joint reception, staging, onward movement, and integration phase of the joint deployment process, which concentrates critical infrastructure, equipment, and personnel into a target-rich environment. All-domain effects on civilian populations and infrastructure that enable America to mobilize and deploy its forces can demoralize and undercut the popular will to support military operations. Therefore, as part of "dynamic force employment,"

DOD is exploring how to conduct more geographically dispersed, mobile, and distributed operations to offset increased risk to mission and forces. LSCO will test the nation's character, and senior leaders must candidly address the implications of this operational shift to contested environments in their strategic messaging and testimony before Congress.

Corey New, a retired Army colonel and former commander of the Defense Logistics Agency's Susquehanna Depot, has said that "building combat power begins at origin, not in a theater of operations." Extrapolating his point, in globally contested operations, America's military may be employing combat power at origin and en route, not just in theaters of operations. How well we transition to this new paradigm correlates directly with any deterrent effect on our adversaries. Acknowledging the reality of increasingly lethal global operating environments, our national military strategy seeks to deter adversaries and win during the competition phase *before* large-scale armed conflict. If deterrence fails, our ability to fight and win decisively hinges on a robust and resilient strategic mobility set of enablers and rapid, near-term offset strategy solutions. Our challenge is to respond operationally to—and navigate "gray area" warlike acts by—competitors and adversaries as they affect all warfighting domains, as well as all instruments of United States national power (diplomatic, information, military, and economic).

The National Defense Strategy (NDS) cites "[r]esilient and agile logistics" as a key area of capability modernization and states that DOD "will prioritize prepositioned forward stocks and munitions, strategic mobility assets, partner and allied support, as well as non-commercially dependent distributed logistics and maintenance to ensure logistics sustainment while under persistent multi-domain attack."[15] Two challenges cascade from that guidance for joint operating environments and adversary capabilities:

- The lines between JIIM-C deployment and sustainment operations blur in realistic (defense) planning scenarios and defense support to civil authorities (DSCA) potential missions, particularly when the homeland is no longer a sanctuary, and

- The American strategic mobility capability set and the joint deployment process used to execute it are JIIM-C partner–enabled, but the full complement of stakeholders have not performed all-domain, contested operations at scale and echelon since World War II.

Studying Mobility Capability Requirements

The cyclical, congressionally mandated Mobility Capability Requirements Study (MCRS) is currently underway and should ascertain strategic mobility gaps and shortfalls associated with the execution of deployment operations in support of combatant commanders' operational plans in the context of likely scenarios and adversary capabilities. In a June 2018 *Airman Magazine* interview, General Darren McDew stated:

> [I]f I had a crystal ball and talked about this new Mobility Capability Requirements Study…it will be different than all the ones we've had previous[ly] for a couple of different reasons.
>
> The biggest of which is we're acknowledging a contested environment from day one. That's huge.
>
> We're also acknowledging something that we've got to come to grips with—attrition. We've never in our history, accounted for the attrition of logistics and mobility in our war plans. For now, we've got numbers we've subscribed to for a number of years that say these are the numbers of assets we need to accomplish the mission. But, that assumes everything makes it. On time. Every time.

> We don't believe that's realistic in today's environment. The character of war has changed to a place not just with bombs and bullets, but also ones and zeros. It's a reality that attrition will exist in the next war.[16]

Those involved in MCRS are underappreciated American heroes with a wicked problem to solve: informing strategic mobility decisions during persistent conflict and great-power competition with compressing response timelines and ever more complex and lethal operating environments. Contested operating environments require increased resilience across JIIM-C partner organizations. We must bolster our ability to defend key terrain and operations globally and "harden" our strategic mobility platforms, systems, and processes for better survivability and resilience. Our assessments and analysis must leverage the full power of JIIM-C enablers to deploy, redeploy, and sustain LSCO across potential conflicts involving China, Russia, North Korea, Iran, and counterterrorism efforts.

Leveraging the Navy/Marine Corps distributed lethality concept and reimagining the Army "cargo" aboard MSC and MARAD ships as taskable-en route, Army-provided, cross-domain effects–capable warfighting platforms can help to offset capability gaps and shortfalls in naval escorts by leveraging Army-assisted maritime defense and offense as a near-term approach to alleviating the risks that confront missions and forces. Reimagining the usable stowage areas on the weather decks of MSC and MARAD sealift ships as Army maneuver space in and from the maritime domain provides for the operational realities of contested logistics required to meet NDS guidance. If adversaries continue to shrink our advantages or if fiscal environments deteriorate to austerity-measure levels for DOD, the next iteration of air and sealift recapitalization will need to innovate quickly and cheaply to maintain strategic mobility overmatch and enhance joint combined arms maneuver capabilities over strategic distances.

DOD and others with a deployment mission could investigate the use of mobile, small-reactor power generators in plans for war, natural disasters, or attacks on power grids in the homeland or theaters of operations. For example, reactor generators infused with sealift recapitalization could power sealift ship enhancements to enable self-defense; conduct joint all-domain maneuver through contested maritime operations; and power directed energy, railgun, and other new weapons systems and platforms secured on sealift ships' weather decks, providing a new level of protection and offensive capability en route. Joint experimentation, training, and readiness exercises should include realistic scenarios requiring Army weapons systems live fire for cross-domain, joint combined arms maneuver, providing general-support/reinforcing fires in and/or from the maritime domain and for ship defense.

Other bolted-on or tied-down offset capabilities should be considered in the near term.[17] Mobile reactor generators could be ship-based or unit-based and power modular, ISO-container-configured life support to give combat-configured Army weapons crews a plug-and-play, scalable capability for contested JIIM-C operations. Increasingly, adversaries with strategic reach will force us to innovate and rethink how we will fight our way to the fights. Mobile reactor generators would also pay dividends if we should ever need to establish or repower portions of electrical power grids or reestablish digital connectivity and a base for stability operations after an electromagnetic pulse attack on the homeland, en route, or in theater during LSCO.

Rethinking strategic mobility would revive U.S. shipbuilding and encourage both innovative, militarily useful modifications, starting with commercial ships that DOD is considering purchasing, and focused efforts to recapitalize America's sealift fleet, industry, workforce, and supply chains. This includes U.S.-based manufacturing industries supplying materiel for strategic mobility. Similar thinking and actions must reverberate among the airlift and prepositioning communities as well.

The Secretary of Defense, Chairman of the Joint Chiefs, Commanding General USTRANSCOM, and service secretaries and chiefs have their work cut out for them. They must influence the prioritizing of precious resources by the JIIM-C enterprise as well as by each other and the National Security Council. The strategic mobility enabling team must be cohesive, self-synchronizing, and motivating with second-order, third-order, and fourth-order stakeholders understanding how to execute a complex joint deployment process effectively in a slim-margin, volatile, and hypercompetitive commercial marketplace. Commercial partners and civilians enable strategic mobility and are a part of the capital and combat loss equation.

As summarized by former Army Lieutenant General Sean MacFarland:

> Acting and reacting at the speed of multidomain warfare, executing cross domain fires and maneuver, will demand an unprecedented degree of integration between the services at multiple echelons, and therein lies the problem.
>
> A coherent force must be integrated across all elements of DOTMLPF-P (doctrine, organization, training, materiel, leadership and education, personnel, facilities and policy). However, since August 2011, when the Joint Forces Command folded its flag, no organization has had sufficient authority and resources to coordinate efforts across the services to develop joint warfighting concepts and support their implementation....[18]

The Joint Staff is continually updating and creating concepts to deal with the anticipated operating environments, but ownership and improvement of the joint deployment process, from concepts to fielded capabilities, has become a shared responsibility extending beyond the Joint Staff's authorities and responsibilities. USTRANSCOM integrates efforts of the "as is" strategic mobility capability set during operations; however, because there is no single conductor of planning, programming, budgeting, and oversight, the services (and other JIIM-C partners) invest individually as they see fit. As a result, the U.S. strategic mobility overmatch is atrophying relative to advances in competitor and adversary capability. Services and interagency and commercial partners and allies prioritize capabilities based on their perspectives, authorities, and perceived return on investment, further adding to the difficulty of capability management.

The point of convergence for action and synchronization for JIIM-C capability development is at the National Security Council level, which implies that consideration should be given to establishing this integrating oversight function at this level of authority as well. Unfortunately (and again), legislation may be the only remedy for the strategic mobility conundrum short of failing militarily against one or more great-power adversaries as ugly scenarios unfold.

Western military strategists and planners seek paths of least resistance and courses of action that minimize capital losses (such as ships, planes, and ports) and combat losses (such as soldiers, sailors, mariners, airmen, government civilians, and contractors) in obtaining military objectives. The military's capital is blood and treasure, and our nation's military conflicts will reap a return on investment commensurate with yesterday's and today's strategic mobility resourcing priorities. Barriers that prevent the rapid provision of combat-ready forces to combatant commanders can increase risks for missions and forces exponentially by allowing adversaries more time to prepare their cross-domain defenses and/or execute offensive strike operations against the U.S. and its partners. A combat multiplier for America's military is working in concert with other strategic planners within other instruments of national power, as well as with multinational partners, and planning for disruptions all along the joint deployment process.

When Congress perceives that the resourcing being provided to project U.S. military

forces to our best advantage is inadequate, it acts—usually cyclically, as it did in the early 1990s given the risks to mission and forces during the Operation Desert Shield force buildup. Another large capital infusion from Congress, however, although critically needed, is unlikely, as are any changes in service authorities under Title 10 of the United States Code. We will therefore have to think our way through reusing, recycling, and repurposing what we have and how we use and maintain it.

In chaotic operating environments, particularly during large-scale deployments in defense of American citizens on American soil, the deployment of military forces in support of America's national security interests can rapidly become complex. Adversary efforts to offset our strategic mobility overmatch could soon manifest themselves in artificial intelligence–infused, machine-blended, bioengineered, quantum-computed, and hypersonically executed operations with effects in all domains. COVID-19 catalyzed our strategic mobility response to a biowarfare scenario in which JIIM-C capabilities were rapidly deployed and sustained in the U.S. and its territories. Deferred investments in our globally focused strategic mobility solution set invite failure in the absence of bold and audacious steps from the Pentagon, which should provide specified guidance with targeted support from the White House and Congress.

From a national power perspective, ensuring strategic mobility is the best way to ensure success in great-power competition, as speed and mobility matter more than ever. Winning rapidly in synchronization within all domains is precisely the issue on which military concept developers and future plans strategists are focusing their time and mental energy. No matter what the executives, think tanks, and concepts and futures elements of joint and military service staffs decide with respect to U.S. strategic mobility, Pentagon programmers and budgeteers must win the prioritization battles with senior leaders to fund myriad, loosely connected, military components of capability woven together with those of other crucial JIIM-C partners. American strategic mobility has always been the differentiator for our military wins and losses, and our investments in its evolution will continue to play an essential role in determining where America stands geopolitically.

Some of the nation's best and brightest minds are applying excellent foresight to America's strategic mobility challenges through the congressionally mandated MCRS. Their work produces our best realm-of-the-possible recommendations with respect to what the nation's strategic mobility solution set needs to get the military to the fight based on combatant commanders' required force-flow timelines and likely scenarios. However, the MCRS must account for U.S. forces fighting their way to the fights and how that changes the required platforms and force structures.

The MCRS could recommend joint war-gaming and experimentation to include underway, Army live-fire, sealift emergency deployment readiness exercises (SEDREs). It could also recommend that DOD expand its demonstrations of concept technology and inclusion of interagency partners such as MARAD and the USCG in bolt-on/tied-down, Army-provided, cross-domain maritime operations. Given the divestment of tanks from the Marine Corps, the Army may want to experiment with a waterborne capability analogous to its current airborne and air assault capabilities. Recent training by Army tactical units through artillery live-fire operations from the well-deck of a small Army watercraft vessel is indicative of the problem sets and solutions in the Pacific that drive fully leveraged maritime-domain approaches to complex problems.

Shifting the armed services' approaches to how they meet their mission sets requires whole-of-government capability development to maximize return on taxpayer investments ahead of audits and accountability office inquiries. Services focus on modernizing "strike" capability within their specific domains of operation, but investments in "lift" or (more important) "movement and maneuver" capability must also keep pace.

The MCRS offers near-term context for a useful USTRANSCOM product that looks into mid-term and long-term prospects: the Future Deployment and Distribution Assessment (FDDA).[19] Senior DOD leaders and their staffs dedicate time and talent to making informed, bold, and audacious decisions to stay ahead of geopolitical waves and the operational implications of near-term, mid-term, and long-term strategic mobility. USTRANSCOM can help to lead thinking about how to improve, but stakeholders invest according to their individual risk-reward calculations and trade-offs based on their funding.

Importance of Assumptions

Assumptions are of fundamental importance to the planning of military operations and can skew the selection of the best course of action to pursue. The concepts, plans, studies, and assessments being deliberated will drive U.S. strategic mobility. In addition, the need to replace obsolescing inventory carries with it the opportunity not only to modernize equipment, but also to reimagine how our strategic mobility capabilities might better support the projection and sustainment of military power in a changed world.

Some assumptions that inform the MCRS, ongoing concept development, war-gaming and experimentation work, and future assessments must also consider the possibility of significant DOD budget austerity. Russia is proof that ingenuity is the product of austerity: Its new icebreaker ship, for example, also furnishes capability as a movement and maneuver (kinetic effect–capable) maritime-based missile launcher. More dual-purpose, covert, and nefarious coopting of traditionally benign transportation and enabling platforms for military utility, including strike capability, are forthcoming, and U.S. strategic mobility conceptualizers and planners should take note.

For Army early deployers like airborne and special operations forces, planning for contested deployments from home station to initial objectives has always been the norm, but that mindset and capability, depending on threats, risks, and windows of opportunity, expand in the force as strategic maneuver becomes scalable. As Major General Steve Farmen has said repeatedly, we will fight by, with, and through our ports. We find ourselves in this new operational reality because our adversaries are positioning themselves for success during competition so that they can prevail if competition evolves into armed conflict. Army planners would be wise to adopt a "home station = line of departure" mindset. In the past, the line of departure in potentially clashing with enemy forces was always drawn on a linear battlefield in a distant theater of operations beyond the unit's tactical assembly area. We no longer have that luxury.

From a survivability-move perspective, agility matters; maritime lift platform recapitalization, development, and fielding must focus on strategic maneuver and multi-domain operations; and mobility will increase the odds of survival in tomorrow's highly lethal environment. Agility matters especially for a maritime nation whose adversaries are astute and dynamic at weaponizing things to affect its economy, a linchpin of which is maritime commerce. More and more, adversaries will garner global reach with hypersonic-enabled warhead delivery, or electromagnetic gun delivery, or high-powered energy delivery, or cyber-delivery, or effects creation in any of the other domains within which we operate.

An example of the coopting of a ubiquitous, global transportation platform for covert missile launches is the innovative Russian Club-K containerized missile system that can be hidden in plain sight, most likely undetected, until it is employed.[20] Imagine the scenarios that could play out with just a few globally prepositioned or mobile Club-K systems leveraging trucks, trains, and maritime platforms.

Increasing Interdependence of Processes

Any evaluation of U.S. strategic mobility and Army deployment and redeployment must account for the effects of increasingly interdependent processes among JIIM-C stakeholder operations that must be planned, coordinated, and synchronized at echelon and scale to meet

contested and ever-compressing combatant commander force-flow requirements. Adversaries use disinformation operations against vulnerable components of military operations, such as the initial phases of deployments, coopting useful conduits on social media to foment social unrest, division, and obstructionism within the U.S. and its partners. They leverage proxy and organic military forces to produce both kinetic and "soft power" effects to interrupt force flows and have positioned themselves to pressure nations economically to hinder U.S. strategic mobility operations, applying all instruments of their national power against our ability to deploy and sustain combat forces rapidly and effectively.

We must rethink strategic mobility, our development of plausible scenarios, and our assumptions with an eye to developing concepts for joint, all-domain command and control. These concepts must anticipate JIIM-C and instantaneously formed and dissolved Combined Joint Task Forces, and they must be considered with a view to the execution of broad ranges of missions, from delivering humanitarian aid, consequence-mitigation rations, and rapidly developed and manufactured vaccines or other life-sustaining supplies and equipment in Air Mobility Command or Civil Reserve Air Fleet aircraft to rapidly forming and executing task forces in support of local law enforcement or LSCO.

Our current operating environment amplifies the importance of national stockpiles, strategic reserves, and prepositioned equipment and supplies as critical enablers of strategic mobility to garner tactical effects expeditiously at global points of need. Our developers of military concepts, particularly those developing the family of joint and service concepts such as the one that will address contested logistics, must account for great-power conflict, military workload for DSCA missions, and attrition in the organic industrial base.

Many American military leaders view strategic mobility as predominantly in the sustainment or logistics portfolio. This is a philosophical error that has negatively affected the focus, readiness, and degree of investment necessary to maintain dominance in strategic mobility on pace with adversary capabilities. Tomorrow's military operating environments will dictate a proper reconceptualization of deployment as a component of movement and maneuver—and therefore as a combat multiplier.

The first component of strategic mobility is deployment, which remains the principal task that underpins the movement-and-maneuver warfighting function, enabling a nation's forces to gain a positional advantage over those of an adversary. The strategic repositioning of the U.S. military's footprint from Europe to the United States after the end of the Cold War has made defending Eastern Europe from Russian military aggression exponentially more difficult.

With the clarity and focus of the National Security Strategy and National Defense Strategy, and given the stark realities that adversaries seek to disrupt deployment and sustainment operations across all domains, strategic mobility must be categorized within the Joint Staff as a movement-and-maneuver and force-application issue with prioritized requirements and investments commensurate with the criticality of the task. This necessary philosophical shift is resonating in the Pentagon as the realities of joint all-domain operations in great-power competition take root, and it has the potential to shape the next iterations of joint concept development.

The Joint Staff must renew its efforts to codify strategic mobility and deployment conceptually within the J/G-3 (plans and operations) staff sections rather than under the J/G-4 (logistics) staff section. Logisticians play a key, supporting role, but ownership and alignment of the "deploy" task, as a commander's first mission-essential task, must reside in the maneuver plans and operations staff sections of organizations.

Conclusion

I believe that we are training the next greatest generation of Americans not to storm distant beaches (though some levels

of amphibious assaults might be necessary), but rather to be experts in understanding and mastering the complex, interwoven "battlespace" of tomorrow's conflicts (and the condition-setting that is occurring during competition). Military planning for the next battles must take into account all of the tools and domains available to the U.S., as well as all of the ways by which they might be countered by the most sophisticated opponents.

American preeminence in the ability to deploy, employ, and sustain our military globally in concert with synchronized actions by other instruments of our national power underpins our position as a global superpower. Clausewitz tells us that "[w]ar is not merely a political act, but also a real political instrument, a continuation of political commerce, a carrying out of the same by other means."[21] Enhancement of our strategic mobility offers us a unifying, pressing, and foundational issue upon which JIIM-C stakeholders, both in America and in other like-minded nations, can move forward. It also will have widespread benefits across all aspects of American military power and extend into and across a broad range of industrial sectors—a win-win in anyone's book and a reasonable first step to ensure America's success in great-power competition.

Endnotes

1. *National Security Strategy of the United States of America*, The White House, December 2017, https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf (accessed July 11, 2020), and James Mattis, Secretary of Defense, *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge*, U.S. Department of Defense, https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf (accessed July 11, 2020).
2. U.S. Department of Defense, Joint Chiefs of Staff, Joint Publication 3-35, *Joint Deployment and Redeployment Operations*, January 10, 2018, p. I-7, https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_35.pdf (accessed July 11, 2020).
3. U.S. Air Force, Air Mobility Command, "About Us," https://www.amc.af.mil/About-Us/ (accessed July 11, 2020).
4. Fact sheet, "C-130 Hercules," U.S. Air Force, Air Mobility Command, June 14, 2017, https://www.amc.af.mil/About-Us/Fact-Sheets/Display/Article/977514/c-130-hercules/ (accessed July 11, 2020); fact sheet, "C-17 Globemaster III," U.S. Air Force, Air Mobility Command, May 14, 2018, https://www.amc.af.mil/About-Us/Fact-Sheets/Display/Article/977489/c-17-globemaster-iii/ (accessed July 11, 2020); and fact sheet, "C-5 A/B/C Galaxy and C-5M Super Galaxy," U.S. Air Force, Air Mobility Command, December 18, 2017, https://www.amc.af.mil/About-Us/Fact-Sheets/Display/Article/977534/c-5-abc-galaxy-and-c-5m-super-galaxy/ (accessed July 11, 2020).
5. U.S. Department of Transportation, Maritime Administration, "Vessels of the Maritime Administration," last updated March 22, 2019, https://www.maritime.dot.gov/history/vessels-maritime-administration/vessels-maritime-administration (accessed July 11, 2020).
6. Associated Press, "China Home-Built Aircraft Carrier Tests Weapons at Sea," *Defense News*, June 1, 2020, https://www.defensenews.com/training-sim/2020/06/01/china-home-built-aircraft-carrier-tests-weapons-at-sea/#:~:text=BEIJING%20%E2%80%94%20China's%20Defense%20Ministry%20said,enhance%20training%20of%20the%20crew (accessed July 11, 2020).
7. Loren Thompson, "How the U.S. Navy's Aging Sealift Fleet Could Lose America's Next War in Eurasia," *Forbes*, January 21, 2020, https://www.forbes.com/sites/lorenthompson/2020/01/21/how-the-us-navys-aging-sealift-fleet-could-lose-americas-next-war-in-eurasia/#66a22f8027f6 (accessed July 11, 2020).
8. USTRANSCOM J37, *United States Transportation Command Comprehensive Report for TURBO ACTIVATION 19-PLUS*, December 16, 2019, Executive Summary, https://www.globalsecurity.org/military/library/report/2019/ustranscom_turbo-activation19-plus_aar_20191216.pdf (accessed July 11, 2020).
9. Richard Boudreaux and Amberin Zaman, "Turkey Rejects U.S. Troop Deployment," *Los Angeles Times*, March 2, 2003, https://www.latimes.com/archives/la-xpm-2003-mar-02-fg-iraq2-story.html (accessed July 11, 2020).
10. "American Merchant Marine at War: U.S. Merchant Marine Casualties During World War II," http://www.usmm.org/casualty.html (accessed July 11, 2020).
11. News release, "'Made in China 2025' Plan Issued," People's Republic of China, State Council, updated May 19, 2015, http://english.www.gov.cn/policies/latest_releases/2015/05/19/content_281475110703534.htm (accessed July 11, 2020).
12. Loren Thompson, "Coronavirus Highlights U.S. Strategic Vulnerabilities Spawned by Over-Reliance on China," *Forbes*, March 30, 2020, https://www.forbes.com/sites/lorenthompson/2020/03/30/coronavirus-highlights-us-strategic-vulnerabilities-spawned-by-over-reliance-on-china/?utm_source=Sailthru&utm_medium=email&utm_campaign=EBB%2003.31.20&utm_term=Editorial%20-%20Early%20Bird%20Brief#324ff1f69a1c (accessed July 11, 2020).
13. Kenneth Wykle, "The US Armed Forces Have a Mobility Problem," *Defense News*, August 14, 2018, https://www.defensenews.com/opinion/commentary/2018/08/14/the-us-armed-forces-have-a-mobility-problem/ (accessed July 11, 2020).
14. Kirk Moore, "Former U.S. Navy HSV-2 Swift Wrecked in Yemen Missile Attack," WorkBoat, October 7, 2016, https://www.workboat.com/news/bluewater/hsv-2-swift-wrecked-yemen-missile-attack/ (accessed August 21, 2020).
15. Mattis, *Summary of the 2018 National Defense Strategy of the United States of America*, p. 7.
16. "Power Conductor," interview with General Darren W. McDew, *Airman Magazine*, June 25, 2018, https://airman.dodlive.mil/2018/06/25/power-conductor/ (accessed July 11, 2020).
17. An example is the use of Marine Corps weapons platforms embarked aboard U.S. Navy amphibious ships to provide ship defense as in the case of the USS *Boxer* (LHD-4) during a recent deployment to the Persian Gulf. Ryan Pickrell, "Marines Sailed Through the Strait of Hormuz with an Armored Vehicle on the Boxer's Flight Deck," *Marine Times*, August 15, 2019, https://www.marinecorpstimes.com/news/your-military/2019/08/15/marines-sailed-through-the-strait-of-hormuz-with-an-armored-vehicle-on-the-boxers-flight-deck/ (accessed July 11, 2020).
18. Sean MacFarland, "Joint Operations Need a Guiding Hand," Association of the United States Army, February 25, 2020, https://www.ausa.org/articles/joint-operations-need-guiding-hand (accessed July 11, 2020).

19. Patrick McLeod, "Future Deployment and Distribution Assessment," Military Operations Research Society, MORS Symposium, January 26, 2011, https://apps.dtic.mil/dtic/tr/fulltext/u2/a540695.pdf (accessed August 20, 2020). See also "Far-Term Technology Focus: Future Deployment and Distribution Assessment (FDDA)," in U.S. Transportation Command, "Research, Development, Test, & Evaluation (RDT&E)," *USTRANSCOM Handbook* No. 60-2, July 22, 2016, p. 26, https://www.ustranscom.mil/cmd/associated/rdte/references/HB60-2.pdf (accessed August 20, 2020).
20. Michael Stott, "Deadly New Russian Weapon Hides in Shipping Container," Reuters, April 26, 2010, https://www.reuters.com/article/us-russia-weapon/deadly-new-russian-weapon-hides-in-shipping-container-idUSTRE63P2XB20100426 (accessed July 11, 2020).
21. Carl von Clausewitz, *On War*, trans. Col. J. J. Graham (London: Kegan Paul, Trench, Trubner & Co., 1918), Vol. 1, Ch. I, https://oll.libertyfund.org/pages/clausewitz-war-as-politics-by-other-means (accessed July 11, 2020).