Airman with 57th Munitions Squadron secures door on BSU-33 conical fin assembly for BDU-50 inert bomb at Nellis Air Force Base, Nevada, March 13, 2019 (U.S. Air Force/Perry Aston)

The "Next Training Revolution"

Readying the Joint Force for Great Power Competition and Conflict

By Thomas C. Greenwood, Terry Heuring, and Alec Wahlman

After two decades of conducting counterinsurgency (COIN) operations and nation-building in the Middle East, the United States seeks to regain the strategic advantage with its Great Power competitors, China and Russia. The military modernization campaigns that both potential adversaries embarked on after the attacks of September 11, 2001, would make closing this strategic gap a difficult proposition under normal circumstances. The COVID-19 pandemic's devastating effect on the medical, economic, social, and "psychological" well-being of the United States and international community, however, renders this a herculean task. It also forecloses the likelihood that the United States will be able to spend its way out of this geostrategic conundrum.[1]

Thus, instead of a "theory of victory" based primarily on quantitative and technological superiority across multiple domains—land, sea, air, space, and cyber—the joint force will need to ensure that it can create and sustain an asymmetric advantage in human capital in order to achieve a higher degree of military competence than either China or Russia at every level of competition. The path to realizing this goal is for the Pentagon to invest in a new training revolution,

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one that adroitly integrates new technology into a joint force that is far and away more operationally competent than adversaries with similar technology. Such a force could credibly deter during competition and, if deterrence fails, is ready to defeat its adversaries in conflict.

The United States could learn from military history and its own pre- and postwar experiences with adaptation to make this a less daunting task. In their classic work on military innovation, Williamson Murray and Alan Millet describe how a materially inferior Germany was able to integrate the wireless radio, airplane, and tank into the blitzkrieg during the interwar years. But this transformation would have been incomplete without multidivisional exercises during the 1920s that taught German commanders how best to integrate these capabilities by using rapid maneuver to compensate for a discontinuous (that is, nonlinear) front and exposed flanks.[2]

After the Vietnam War, U.S. conventional warfighting capabilities were woefully deficient vis-à-vis the Soviet Union—a mismatch that could not be solved simply by attempting to field more or better weapons systems. Rather, a new operational approach was required, one that focused on the character of an extant military problem, leveraged the combined arms lessons of the past, and maximized the potential of emerging technology. Yet the modernized AirLand Battle force of the early 1980s would have been as hollow as the force it replaced if not matched to readiness levels that could only be achieved through innovative and rigorous training. Consequently, transforming a force capable of fighting AirLand Battle doctrine required creating the U.S. Army National Training Center in California's Mojave Desert.[3] Deemed the "first training revolution" by the Defense Science Board (DSB), this peacetime investment in preparing for future conflict not only contributed to the North Atlantic Treaty Organization (NATO) maintaining a credible conventional deterrent for the Cold War's duration but also helped pave the way for victory in the first Gulf War.[4]

A similar but contextually different form of military adaptation occurred in the post-9/11 era. Following the initial success that U.S. forces enjoyed after invading Afghanistan and Iraq, the forces found major aspects of their organization, concepts, and training ill-suited for complex protracted insurgencies. The nature of these two conflicts, fought largely against nonstate actors who frequently operated in urban areas, demanded heightened tactical proficiency at the small unit level (fire team, squad, and platoon) vice larger formations that were AirLand Battle's focus.

Major General Robert Scales, USA (Ret.), was a key proponent of the post-9/11 training adaptation. He observed that the changing character of warfare required a new training approach to ensure that junior leaders could more effectively cope with uncertainty, decide rapidly, sustain unit cohesion, and adapt to an increasingly complex security environment. Joint warfare and the participants of other elements of military power, according to Major General Scalres, are

increasingly being applied at lower and lower levels to the extent that functions formerly considered the purview of senior commanders are being taken up by combat leaders of much lower rank and experience. The challenge today is to create a second training and education revolution that prepares our military leaders to fight in this new age of warfare.[5]

General Scales thought that focusing the Services on learning was significant enough to call it the "second learning revolution" (the first being after Vietnam). Accordingly, he outlined nine initiatives to help create learning organizations across the U.S. military—initiatives that are not yet fully implemented. Nevertheless, the United States once again finds itself at an inflection point as it seeks to more effectively compete with China and Russia.[6] Both countries continue to skillfully operate below the threshold of conflict, use disinformation, and harness nonkinetic effects to undermine international norms of behavior in support of their own narrow national interests.[7] Thus, the "next training revolution" is essential to ensuring the joint force is ready to meet the new demands of the 21st-century security environment.

The First Training Revolution

There were three catalysts that converged to drive the first training revolution: the end of the Vietnam War, the 1973 Yom Kippur War, and the increasing threat that the Warsaw Pact posed to NATO. Understanding how these three events coalesced is essential to fully appreciating why the United States so fundamentally restructured its training approach, processes, and infrastructure.

Vietnam and Air Combat Performance. The air war over North Vietnam did not produce the same level of American air superiority as previous conflicts. Historically, the United States had enjoyed a kill ratio of greater than 10 to 1, while over North Vietnam that ratio was closer to 2 to 1.[8] In 1968, the Chief of Naval Operations directed Captain Frank W. Ault to investigate this disappointing performance. In addition to technical shortcomings with some of America's aircraft, the report highlighted that U.S. pilots lacked the necessary air combat skills against the Soviet MiG aircraft that the North Vietnamese were using. Ault concluded that a lack of realistic training with too few engagement opportunities was the main cause of poor air-to-air combat performance.[9]

Prior research reinforced Ault's findings by showing that pilot performance greatly increased after surviving 10 engagements.[10] Ideally, these 10 engagements would take place in a stressful training environment before Navy pilots went into combat. Thus, rather than increasing the amount of status quo pilot training on existing facilities, Ault recommended creating dedicated air combat maneuver ranges tailored for instrumented mission evaluations to allow for hard-hitting critiques of pilot performance.[11] The goal was to provide new pilots with their first series of 10 or more engagements in a safe but challenging training environment. Realistic

force-on-force training with credible adversary aircraft on an instrumented range would allow pilots to learn from their mistakes. Three months after the Ault report was published, the Navy established its "post-graduate fighter weapons school," or TOPGUN, in Miramar, California, and began reassigning some of its best pilots from the fleet to teach novice pilots improved gunnery and air combat skills.

TOPGUN training results were almost immediate: the kill ratio for Navy pilots rose from roughly 2 to 1 to more than 12 to 1 within the first year (significantly better than Air Force pilot performance that had not yet reaped the full benefit of that Service's commitment to force-on-force training at Nellis Air Force Base). Convinced of TOPGUN's institutional value to the Service, the Navy continued to support the program that has trained every generation of pilots since the end of Vietnam War.

The Air Force was not far behind the Navy in adapting to the hard combat lessons learned over North Vietnam. Annual gunnery competitions, known as Gunsmoke and William Tell, had allowed Air Force pilots to perfect their air-to-ground and air-to-air gunnery skills dating back to the late 1940s. Yet neither afforded pilots sophisticated air combat maneuvering training against a red adversary.[12] That changed in November 1975, when the first Red Flag exercise was conducted at Nellis.[13]

The 1973 Yom Kippur War. This war focused Army and Air Force leadership on the increased lethality of the modern battlefield, the availability of advanced weapons to third-world nations, and the latter's surprising ability to employ them effectively.[14] Unlike the 1967 Arab-Israeli War when the Israelis won an easy one-sided victory, the Israel Defense Forces now found themselves in the opening gambit of this war unable to employ their airpower in support of their ground forces on account of Egypt's sophisticated air defenses. Additionally, Israeli armor operations proved highly vulnerable to Egyptian and Syrian fielded antitank guided missiles.[15] The attrition levels that resulted from the combined arms battles were stunning: in the early days of the war, the Israelis reported losing more than 500 tanks,[16] and by the war's end, the toll of armor and artillery losses on both sides exceeded the entire inventory of U.S. Army forces in Europe.[17]

The Yom Kippur War's implications were not lost on Pentagon planners trying to reorient U.S. forces from a decade of COIN operations in Vietnam to more effectively face the threat posed by the Warsaw Pact—whose equipment and tactics were given a trial run of sorts in the 1973 war. The correlation of forces and comparative inventory of combat platforms greatly favored the Soviets. Unable to match Moscow's force levels and uncertain about its technological advantage, the U.S military rightly looked elsewhere to solve its operational dilemma.

The DePuy-Starry Transformation. General William E. DePuy, the first commander of the newly created U.S. Army Training and Doctrine Command (TRADOC), was at the center of the Army's post-Vietnam training reform effort. DePuy's combat experience in World War II, Korea, and Vietnam had convinced him that Army training needed to change in order to meet the new Soviet threat. Historically, the Army had relied on national mobilization after a war started—a system that emphasized processing a large number of raw recruits through basic training as quickly as possible, so they could move overseas and reinforce forward-deployed forces. Training, therefore, was measured by man-hours expended rather than proficiency levels attained by both the individual Soldier and the unit to which they were assigned. The result was poorly trained Soldiers and units sent into combat ill-prepared and, consequently, severely bloodied in the early weeks and months of fighting. DePuy had experienced this himself in World War II, when his division suffered massive casualties in the first 2 months of fighting in Normandy.[18] DePuy was heavily influenced by the imperative to reform Army peacetime training so that it would produce combat-ready Soldiers and units *before* they went to war. This would enable them to win their early battles and, ideally, avoid long wars of attrition.[19]

DePuy also went to school on the insights that emerged from the 1973 Yom Kipper War, which he viewed as a prologue for a possible future war between the United States and Soviet Union. In DePuy's mind, the 1973 war revealed major operational gaps and seams across the U.S. Armed Forces that needed to be bridged or eliminated if America was going to fight the Warsaw Pact and win. His remedy was to trade space for time in Europe in order to allow U.S. forces to mobilize and deploy across the Atlantic. DePuy named his warfighting concept *Active Defense*.

As a doctrine, however, Active Defense was relatively short lived given its unpopularity with NATO Allies who saw the United States trading away its territory as U.S. forces moved westward toward the English Channel. In the end, Active Defense proved infeasible; however, DePuy's successor at TRADOC, General Don Starry, continued developing warfighting concepts that focused the Army's efforts on interdicting and destroying the Soviet Union's second echelon forces. This approach was much more palatable to NATO and leveraged both technology and an inherently offensive military culture.

Change was not quick or easy. The evolution from Active Defense to AirLand Battle doctrine took a decade. Writing concepts and inculcating them as doctrine across the force are two distinct challenges. The bridge between them was a new training system. This began with TRADOC developing new training standards called the Army Training Evaluation Program (ARTEP), which enumerated combat skills and tasks that Army formations had to master by meeting exacting conditions and standards.[20] ARTEP ushered in performance-based training across the Army and facilitated progressing to force-on-force training.

Borrowing a page from the Navy's TOPGUN playbook, the Army quickly realized it needed a "training facility where a total combat environment could be simulated for training heavy battalion task forces," with "realistic maneuver

Weapons dropped from Air Force B-1B Lancer bombers and Marine Corps F-35B Lightning II practicing attack capabilities impact Pilsung Range, Republic of Korea, August 31, 2017 (Courtesy Republic of Korea Air Force)

areas, battalion live fire range areas; an opposing force equipped to simulate a Soviet motorized rifle regiment; unconstrained air space; full nuclear, biological, and chemical warfare play; and integration of artillery, attack helicopters, and Air Force close air support."[21] This vision was ultimately realized at Ft. Irwin and became the National Training Center (NTC), with a laser-based scoring system, ample maneuver space to allow for brigade-level, force-on-force engagements, and near Nellis Air Force Base, which enabled integrating offensive and defensive air support into all training evolutions. A dedicated opposing force schooled in Soviet motorized tactics also became a permanent fixture at NTC.[22]

After nearly a decade of Army units training at NTC to win the first fight, the United States went to war in Iraq, where it used AirLand Battle doctrine to win decisively, albeit, over a rather inept enemy. Nevertheless, the first training revolution helped transform the Army into a modern force capable of conducting high-intensity combined arms operations against a larger and more sophisticated adversary. This revolution not only helped U.S. forces achieve unprecedented readiness but also bolstered deterrence by signaling that combat credible forces were ready to ably defend Europe should the Soviets miscalculate and attack the Alliance.

Post-9/11 Training: Adaptation While at War

The initial plans for Operation *Iraqi Freedom* (OIF) envisioned defeating Saddam Hussein's military and rapidly transitioning U.S. security responsibilities to Iraqi forces.[23] Not surprisingly, that plan was reflected in unit predeployment training. For example, the initial elements of 2nd Brigade, 82nd Airborne Division, that trained at NTC had been certified for a range of warfighting skills, but counterinsurgency was not among them.[24]

But a COIN fight is exactly what U.S. forces faced after the collapse of Iraq's conventional military in April 2003. The number of attacks on U.S. and coalition forces and on Iraqi infrastructure continued to increase, reaching more than 13,000 insurgent attacks by mid-2004, many using improvised explosive devices (IEDs).[25] That summer, insurgent attacks turned on Iraq's population, something the thinly spread U.S. forces and immature Iraqi security apparatus was ill-prepared to handle. The civilian fatality

Marine employs bamboo sickle stick to search for buried improvised explosive devices during Joint Improvised-Threat Defeat Agency explosives training, at Twentynine Palms, California, February 13, 2013 (U.S. Marine Corps/William Jackson)

rate climbed, and by 2006 approached levels seen during the major combat operations of March–April 2003.[26] The U.S. and Iraqi forces' inability to provide essential government services and basic security severely undermined the population's support for both the new Iraqi government and the coalition. This led insurgents to concentrate their attacks in urban areas, challenging coalition control for cities such as Ramadi, Fallujah, Mosul, and, most important, Baghdad.[27]

In 2003, major combat operations were still ongoing when the senior U.S. ground commander, Lieutenant General William Wallace, stated, "The enemy we're fighting is different from the one we'd war-gamed against."[28] That same year, General John Abizaid, commander of U.S. Central Command (USCENTCOM), requested that the Department of Defense (DOD) initiate a "Manhattan-like project" to address the growing IED problem. This request led the Army to create a series of organizations that eventually morphed into the Joint Improvised Explosive Device Defeat Organization (JIEDDO) in February 2006 (34 months after the capture of Baghdad).[29]

The DSB also focused its 2004 summer study, titled *Transition to and from Hostilities*, on the many challenges presented by ongoing COIN operations in Iraq and Afghanistan. It presented its findings to the Secretary of Defense on August 31, 2004, and recommended that the Army and Marine Corps incorporate stability and reconstruction capabilities into their premier training events.[30] Nevertheless, U.S. casualties in Iraq continued to rise, and by 2006 conditions in Iraq had reached a crisis that prompted Defense Secretary Donald Rumsfeld to state, "In my view, it is time for a major adjustment. Clearly, what U.S. forces are currently doing in Iraq is not working well enough or fast enough."[31]

Executing Change. While conditions in Iraq were worsening, the NTC adapted its training approach and methodology. By the end of 2004, the more conventional battle scenarios that focused on core warfighting competencies—referred to as *decisive action scenarios*—had been replaced with *mission rehearsal scenarios* that prepared units for forthcoming deployments. NTC personnel ensured the training scenarios reflected real-world operations in Iraq and Afghanistan by staying in contact with units in theater (many having previously rotated through NTC), by monitoring DOD Web sites that covered COIN/stability operations, and by sending NTC personnel into theater to gather lessons learned.[32]

The physical and human infrastructure at NTC changed with the training scenarios. While NTC had four small urban complexes before OIF, by 2006, the number had grown to 13. Each village/town was populated with 25 to 250 Arab-speaking role players; the total number of role players per rotation could reach 1,600 (with 250 being Iraqi-Americans who often role-played as Iraqi police). Seven cave complexes, five forward operating bases, and a mountain stronghold were also constructed. The forward operating bases were equipped with detainee facilities, required security posts to be manned 24/7, and were regularly subjected to simulated mortar and rocket fire. To ensure NTC's training staff (called observer/controllers) remained of the highest caliber, Iraqi and Afghanistan veterans were heavily recruited to fill key positions. By 2006, 80 percent of the trainer positions at NTC were filled with veterans of both wars.[33]

Cultural awareness training was also a major training component of NTC. Soldiers were required to deal with English- and Arabic-speaking members of the press (sometimes played by journalism students), chemically contaminated urban areas, and how best to prudently spend Commander's Emergency Response Program funds.[34]

NTC forged several partnerships to improve training and readiness. In collaboration with the Defense Advanced Research Projects Agency (DARPA), NTC developed software to improve the realism of information dissemination in the scenarios. DARPA also helped build country-realistic structures using building materials from Iraq.

One of NTC's most important partnerships was with JIEDDO. In 2006, then–Brigadier General Robert Cone, NTC's commander, noted that NTC was becoming the home to JIEDDO's center of excellence because it gave training units rotating through NTC access to the latest counter-IED tactics and technologies. That same year, NTC received "conditional accreditation" from U.S. Joint Forces Command for helping Army units become proficient in essential COIN and IED defeat tasks as well as in joint urban operations.[35]

NTC's training transformation predated the broad policy changes in DOD and the Army. New DOD directives on stability operations and irregular warfare came out in late 2005 and late 2008, respectively.[36] The Army published its new field manual on COIN in late 2006 (FM 3-24), and a new overarching training manual in late 2008.[37] These policies and manuals reflected many of the earlier ideas about COIN and stability operations that were being debated across DOD and the Army. Moreover, lessons learned from Iraq and Afghanistan, as well as from NTC, provided much of the tactical and operational grist comprising these publications. Importantly, the NTC did not did not wait for these publications to be released before it began adapting its training curriculum. General Cone, who gave the command vision and stable leadership from 2004 to 2007, deserves much credit for institutionalizing these training reforms. His leadership made this post-9/11 adaptation a success.[38]

Results. NTC's adaptive new approach was well received across the DOD enterprise. A March 2006 DSB report stated that "the members of the task force were uniformly impressed" with the changes made at major Army and Marine Corps training centers. Moreover, Army Chief of Staff General George Casey initially was concerned about the quality of predeployment training, but those concerns were alleviated when he observed training at the Army's major centers.

Training approaches in any era cannot remain static for long, or they fail to keep up with the modern warfare's changing character. A 2010 paper written at the Army's School of Advanced Military Studies noted that commanders had sacrificed training for high-end conventional wars in order to find the training time for COIN and stability operations. This opportunity cost was intentional on the Army's part because it recognized that success in Iraq and Afghanistan required commanders to accept risk and to focus on the current fight given its limited resources.[39]

The Next Training Revolution

As with the post-Vietnam training revolution and post-9/11 training adaptation, the United States in 2020 again needs to pivot its training approaches to relearn how to compete, deter—and if necessary—successfully fight major powers in big wars. However, the COVID-19 pandemic, coupled with its anticipated fiscal fallout, means the U.S. military should try to leverage its competitive advantage in human talent to achieve qualitative superiority over China and Russia rather than only seeking expensive leap ahead, state-of-the-art technologies. The rise of other global economies, near record levels of deficit spending required to help mitigate COVID-19's adverse effect on American society, and likely flat or declining U.S. defense budgets will require the joint force (in concert with Allies and partner nations) to embark on an innovative and rigorous campaign of training and experimentation in order to become competent at conducting joint/combined all-domain operations at scale.[40]

Like the first training revolution and post-9/11 training adaptation that were belatedly guided by official doctrine outlining the tenets of both AirLand Battle and COIN, Joint Staff–approved doctrine on all-domain operations remains a work in progress. However, two other unclassified government publications are available and can act as surrogates so the next training revolution can begin posthaste.

The first publication is the 2012 Capstone Concept for Joint Operations (CCJO) in which the Chairman of the Joint Chiefs of Staff identified increasing cross-domain synergy as one of eight key elements that will allow the joint force to successfully conduct globally integrated operations.[41] The CCJO states unambiguously that:

complementary vice merely additive employment of capabilities across domains in time and space [is essential]. . . . *In the future, emerging capabilities and doctrine will make cross-domain synergy possible at lower echelons. Future Joint Forces will thus be positioned to exploit even small advantages in one domain to create or increase advantages in others, compounding those mutually reinforcing advantages until they overwhelm the enemy.*[42]

The second publication is the 2018 National Military Strategy (NMS), which states:

To achieve military advantage over competitors and adversaries, the NMS introduces the notion of joint combined arms, defined as the conduct of operational art through the integration of joint capabilities in all domains. The joint force and its leaders must be as comfortable fighting in space or cyberspace as they are in the other traditional domains of land, sea, or air.[43]

Regardless of the terminology embraced by the Joint Staff and separate Services—*joint combined arms*, *multi-domain* or *all-domain operations*—the seminal idea both documents convey is that the joint force must be competent operating across all five domains to

include being able to deliver space and cyber effects in real time at all levels of war. Complexity aside, this is not traditional combined arms or simply "old wine in a new bottle."[44] This is a fundamentally different approach to 21st-century warfare—one that has the potential to surpass AirLand Battle and become transformational—as the Service components become interdependent in support of the joint force commander who is integrating force providers to accomplish the following operational tasks:

- agnostically connect sensors with shooters from across different domains and Service formations
- integrate nonkinetic fires—especially cyber and space—with kinetic fires
- conduct decentralized command and control in a highly degraded and contested security environment
- effectively integrate autonomous and unmanned platforms into the joint force
- exploit artificial intelligence/machine learning to accelerate decisionmaking
- enable the joint force to penetrate and effectively operate inside U.S. adversaries' antiaccess/area denial defenses
- harness all elements of national power during competition to render U.S. adversaries' potential use of force costly and politically irrelevant.

Vive la Révolution

Implementing the next training revolution so the joint force can achieve unmatched proficiency when conducting the all-domain tasks cited herein will not be easy. It will require leapfrogging existing combined arms training at the Service level and annual status quo joint exercises—that too often resemble VIP demonstrations and parades—to embrace competitive force-on-force operations against opposing red and blue formations that fight each other across land, sea, air, space, and cyber domains. These mock wars should be rigorously evaluated and graded so leaders who excel at all-domain operations could be promoted more quickly than their contemporaries.

While major U.S. and Alliance Cold War training exercises provide a useful historical backdrop for understanding the potential value of such an approach, fresh thinking needs to be applied in five areas in order to match or surpass the success that resulted from the first training revolution.[45]

First, the joint force must exploit simulation technologies so that joint capabilities are more aggressively integrated into simulated/virtual all-domain combat operations (think an "endless" ad hoc theater-wide campaign against a peer adversary) that could occur *without* formations having to leave home station or while performing routine training missions in the United States. Existing technology permits ground, naval, aviation, space, and cyber assets to perform simulated/virtual mission profiles—all linked into a joint communications network (training or real world) under the command of an actual or role-playing joint force commander. However, much of this architecture is nascent and needs to be expanded well beyond fifth-generation aircraft and Navy surface combatants to include the remainder of the joint force, along with critical intelligence functions, joint fires processes, and other enablers of joint and coalition "kill chains."

Second, any conflict against a peer adversary will require extensive use of nonkinetic systems in a degraded and contested communications environment, which means the joint force will need to conduct distributed/dispersed operations using highly decentralized decisionmaking processes. Thus, tactical commanders will need both the authorities and the means to deliver space, electromagnetic, and cyber spectrum effects inside their battlespace without having to request permission from higher. So the delegation of warfighting authorities that allows for these nonkinetic effects (simulated or real) to be created must become integral to the next training revolution's systems architecture.

Third, a world-class adversary (red team) that goes well beyond the size and capabilities of existing resident red teams at Army combat training centers will need to be established to challenge the joint force across all domains. This will likely require a technical revolution of distributed human-in-the-loop simulations, mobile and adaptable threat emulators, instrumentation systems to capture feedback on leader decisions, and unit execution. The scale and sophistication of this adversary all-domain force will be expensive and require a significant DOD-wide investment if it is to occur.

Fourth, much wider space for experimentation must be intentionally sculpted into every joint training event so that emerging concepts—even more so than technological capabilities—can be operationally examined to see whether they contribute to joint force success. Some portion of every training event and exercise should be devoted to testing the boundaries of concepts, technologies, or human cognition. This information should be captured and added to a continuous campaign of learning activities—and should be as important to the joint force and subordinate commands conducting the training as any other metric now used to assess leadership performance and readiness levels in DOD today.

Fifth, any conflict with a peer adversary will require the United States to effectively fight with its allies and partner nations. So increasing the frequency, complexity, and duration of peacetime exercises and operations with Allies and partners will be an indispensable attribute of the next training revolution. U.S. Indo-Pacific Command is out in front in this area. It is committed to transforming its vast array of disparate bombing ranges and Service-controlled training areas into a networked, state-of-the-art, and instrumented all-domain training complex that will have the capacity to absorb joint and coalition forces at scale. This training complex will allow simultaneous training events for global conflict to occur from Alaska, to Hawaii and the Central Pacific, to Northeast Asia, as well as to Australia.

Conclusion

The effectiveness of emerging warfighting concepts such as blitzkrieg and AirLand Battle cannot be determined from official manuals, no matter how brilliant the authors or insightful the prose. Rather, Soldiers and formations

Soldiers assigned to 1-252 Armor Regiment, 30th Armored Brigade Combat Team, move to safe location after chemical attack by opposing force in Mojave Desert during 19-09 rotation at National Training Center, on July 12, 2019 (North Carolina National Guard/Leticia Samuels)

must stress-test such concepts during repeated peacetime experiments and exercises that are intentionally designed to expose their strengths and weaknesses, as well as the initial ineptitude of forces attempting to master new operational approaches. This was and remains the genius behind the Navy standing up TOPGUN, the Army creating a world class opposing force (OPFOR) at the NTC, the Air Force establishing Red Flag, and other centers of excellence being formed around DOD for electronic warfare, cyber operations, and other warfighting functions. But tying these various centers together into a single network that could fight the same operational scenario under a joint/coalition commander whose headquarters is also being tested remains an unfulfilled possibility. In many cases, U.S. forces aspire to embrace the next training revolution or do so in name only—while continuing to cling to outdated training approaches that may have been appropriate when preparing to fight weaker adversaries but are not tailored for great power competition and conflict.[46]

This situation must change if the U.S. military and its Allies/partners want to be taken seriously by revisionist powers seeking to disrupt and control the international system. The next training revolution must continue much of the good work that began after Vietnam and the attacks on September 11 to increase the operational effectiveness of small infantry units. But tomorrow's training trajectory must move beyond tribal engagements, manning vehicle checkpoints, and countering IEDs to being part of a much broader and integrated joint/combined campaign at the theater level of war. The Chairman's 2018 NMS acknowledges the only way that this can be accomplished: "To prepare the joint force for employment, exercises build readiness, interoperability, and the mutual trust required for a joint combined arms approach to global campaigning."[47] Those exercises are key to building interoperability, relationships, and capabilities of Allies, partner nations, and interagency partners, as well as enabling units and leaders to "punch above weight class" when necessary. Exercises can also facilitate near-term experimentation to rapidly incorporate innovative ideas and disruptive technologies that promote competitive advantage.[48] **JFQ**

Notes

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