



A Japan Ground Self-Defense Force 1st Airborne Brigade member records the U.S. Army's 377th Parachute Field Artillery Regiment firing a M119A3 howitzer during Red Flag-Alaska 19-2, 14 June 2019, at Yakima Training Area near Eielson Air Force Base, Alaska. Red Flag-Alaska is an annual U.S. Pacific Air Forces field training exercise that focuses on executing multi-domain operations while sharpening lethality and readiness. (Photo by Airman 1st Class Taylor Phifer, U.S. Air Force)

# Retooling the Factory

## U.S. Army Training and Doctrine Command for Multi-Domain Operations

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The mission of the U.S. Army Training and Doctrine Command (TRADOC) is to “recruit, train, educate, develop and build the Army; (and to) establish standards, drive improvement, and lead change to ensure the Army can deter, fight, and win on any battlefield now and in the future.”<sup>1</sup> Simply put, TRADOC is a factory for the production of U.S. military power in the form of soldiers, doctrine, and organizations. It is a monumental task, a task made more challenging by a dynamic security environment that requires the product of this effort to not only compete in the global arena but to dominate so convincingly that U.S. strategic interests are secured without even having to resort to armed conflict. Like all factories, TRADOC exists within a larger economy that is influenced by resource constraints, politics, competition, social change, and disruptive forces such as technological innovation, natural disasters, and black swan events.<sup>2</sup> All of these have the potential to erode TRADOC’s comparative advantage and render it obsolete. In recent years, these forces have combined to call into question the very character of war, and by extension, the nature of the training “industry.” This environment has presented TRADOC with a real dilemma about how to deliver on its contract with the American people and produce the most efficient and effective fighting force in the world.

People from Michigan, like I am, are familiar with the struggle to remain competitive in a dynamic and hostile environment. Industrial centers in the United States, such as my hometown of Detroit, were once referred to by President Franklin D. Roosevelt as the “Arsenal of Democracy” and were the critical factor in both the United States’ economic power and its ability to wage war on an immense scale.<sup>3</sup> Unfortunately for the citizens of my state, a failure to recognize threats and change to meet the requirements of a new environment saw these sources of American might eclipsed, and in some cases bankrupted by external competition, stifling bureaucracy, poor stewardship, and obsolescent design. Every year, Detroit produced new models of cars which were only incrementally different than previous generations without any real innovation. The “Big Three” automakers played it safe for decades as they lost market share abroad to competitors who saw opportunities in areas where U.S. manufacturers were weak, like fuel economy, safety, and labor costs.<sup>4</sup> The decline of the U.S. auto industry was predictable and entirely avoidable, had

the United States and those manufacturers had foresight and taken appropriate steps to avoid it.

Fortunately, unlike Detroit, and partially because of overtly aggressive acts of competitors, the Army appears to be waking up to the danger and is taking active steps to address the challenge.<sup>5</sup> The release of TRADOC Publication 525-3-1, *The U.S. Army in Multi-Domain Operations 2028*, was a watershed moment in this regard, as it laid out a vision for how the Army could overcome the challenges of the contemporary environment and support a third-offset strategy.<sup>6</sup> This third competitive strategy, like its predecessors in the 1950s (which focused on nuclear superiority) and in the 1970s (which focused on standoff, precision targeting, and stealth) again intended to leverage American technological superiority to qualitatively offset its opponents’ quantitative advantages and areas of parity. In so doing, the Army sought to remove all questions as to its ability to perform its strategic role as part of the joint force in accordance with Title 10 of the U.S. Code, the legal basis for the military’s existence.<sup>7</sup>

What remains to be seen, however, is how fast and how well TRADOC will deliver on this concept across its training, doctrine, and education enterprise. More succinctly put, is TRADOC nimble enough to make the in-stride transition while continuing to support a very active strategic force? In Detroit, when a new, radically different design is presented, the factories shutter for a few

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weeks in the summer to “retool” the assembly lines so they can transition from one model to another. Using this same analogy, and given that it doesn’t have the luxury to be able to halt production entirely, what steps should be taken for TRADOC to functionally retool for multi-domain operations (MDO)? This is a daunting challenge, since the emerging operating concept is such a vast departure from its predecessors that it

through cross-domain synergy and multiple forms of attack all enabled by mission command and disciplined initiative.”<sup>8</sup> In identifying how the future TRADOC enterprise, oriented on delivering convergence, should look and function, there is clearly a lot to unpack based on this definition. First, there is an expectation of enhanced command and control that will achieve decision dominance. Beyond that, contextual clues suggest that the

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rivals anything the organization has experienced since its inception when it navigated the transformation to an all-volunteer force that quickly adopted of AirLand Battle as its guiding approach to large-scale combat operations. As it stands, it is my belief that TRADOC can no longer fulfill its purpose under the concept of MDO. Its processes, practices, and methods are arcane and put us at risk of the inability to adequately field a force capable and knowledgeable enough to integrate joint capabilities and information at a speed and scale sufficient to offset our adversaries’ recent expansion and own technological advances. To overcome this deficiency, TRADOC must retool its organizational concept, acquire and reallocate resources, and refocus its efforts on comprehensive integration to include considering forward deployment of institutional assets.

The implications for the organization are both broad and deep, and while impossible to address comprehensively in a single article, the remainder of this piece will endeavor to highlight several areas of possible change, which will require vision, resources, and partners to facilitate.

## Refining the Vision for TRADOC

As envisioned, the operational cornerstone of the Army’s MDO concept is the tenet of converged effects, which TRADOC defines as “the rapid and continuous integration of capabilities in all domains, the Electro-Magnetic Spectrum (EMS), and the information environment that optimizes effects to overmatch the enemy

organization that delivers this capability must be more integrated and more connected than ever before. To accomplish this, TRADOC must break down the barriers that separate the operational from the institutional, the service-specific from the joint, and the national from allied. Based on this imperative, there are some structural, philosophical, and technical efforts that TRADOC could undertake to become more connected and better able to promote convergence.

Structurally, one way to accomplish this might be to forward posture elements of the centers of excellence into the theaters containing pacing threats defined by the *National Defense Strategy*.<sup>9</sup> The most recent version, published in 2018, clearly identifies the People’s Republic of China and the Russian Federation as the greatest threats to American strategic interests and therefore suggests that positioning in Europe and the U.S. Indo-Pacific Command area of responsibility represents the greatest opportunity to understand and anticipate the training and educational requirements necessary for operating in those theaters. In this way they could work more closely with the combatant commanders who fundamentally represent their prioritized “customers.” This has the added benefit of enabling cooperation with the institutional frameworks of our regional partners and allies. Shared understanding about training requirements and threat considerations from the field will be increasingly critical going forward as the TRADOC enterprise develops and evolves scenarios to replicate adversary capabilities,



A soldier with the New Jersey National Guard's Company D, 1st Battalion, 114th Infantry Regiment (Air Assault), trains with a heavy weapons simulator at the Observer Coach/Trainer Operations Group Regional Battle Simulation Training Center on Joint Base McGuire-Dix-Lakehurst, New Jersey, 8 February 2020. (Photo by Master Sgt. Matt Hecht, U.S. Air National Guard)

even as our response to those threats is still under development. It can reduce the reaction time between identifying emerging theater-specific threats and delivering appropriate training and doctrinal responses, in a development-operations-style approach similar to that employed by much of civilian industry.<sup>10</sup> Ironically, by moving away from the center, TRADOC would revisit a key concept of one of its founders, Gen. Donn A. Starry, whose focus on decentralization pushed initiatives out of the TRADOC headquarters and to the integrating centers and schools where they could be under more focused stewardship closer to the point of application.<sup>11</sup>

Philosophically, TRADOC can enable joint integration by increasing and prioritizing its commitment to Army support for joint and allied enterprises, both in terms of manning and funding. Joint schools and doctrinal development programs, such as the Air

Land Sea Application Center, increase awareness about Army and joint capabilities, expand capacity for working on joint problems, and enable greater throughput for joint instruction.

From a technical standpoint, TRADOC can enable connectedness by accelerating the adoption of network-based distributed learning, training, and collaboration methods that enhance soldier interaction, instruction, and education across a broad spectrum of subjects and tasks. This will provide soldiers with a twenty-first-century approach to achieving a superior training, academic, and educational experience. In this regard, TRADOC can capitalize on its COVID-19 pandemic experience by evolving its current bifurcated approach to resident versus distributed learning and embrace the opportunities presented by the expanding metaverse, a virtual reality space in which users can interact within a computer-generated environment

alongside other users.<sup>12</sup> Recently popularized by Facebook and the online gaming industry, the concept of a metaverse has been around for several decades in science fiction and could be broadly defined as a synthetic immersive 3D environment produced by the nexus of social media, digital modeling and simulation, and enhanced sensory technology that allow an avatar of an individual to exist and interact in an alternate

idea will be key to the Army's ability to attain its concept of convergence.

## Resourcing to Retool TRADOC

No real change ever occurs without investment. To retool TRADOC into the type of organization that can produce MDO soldiers, formations, and doctrine, the Army will have to allocate resources in the form of

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constructed reality. By capitalizing and applying the enhanced capabilities virtual reality can provide to military instruction and collaboration, an entirely new world would be opened, both figuratively and literally. While initially expensive, such a world would have numerous advantages for the military that would more than offset the cost of the effort. Exploitation of the metaverse could, for example, create a vast reduction in the requirement for travel, present an infinite variety of realistic immersive training environments and scenarios, and enable global collaboration with a variety of operational partners. Beyond the metaverse, and at the individual level, TRADOC's enhanced technical connection should extend into traditional social media as well, which will continue to play an important role in the Army's ability to provide leadership, enable the free flow of ideas, and counter malign influences.

While these suggestions are by no means all-inclusive, to be successful in the current environment, a retooled TRADOC must get out of its “prepared positions” at the COEs and connect in a more meaningful way than ever before. Regarding training, Gen. H. Norman Schwarzkopf once said, “The more you sweat in peace, the less you bleed in war.”<sup>13</sup> Thirty years later, the modern corollary of that idea may be “the more you connect in peace, the less the enemy will be able to separate you in war.” While slightly less pithy, the

personnel and funding. Given the current resource-constrained environment characterized by sharp competition between the services for funding to meet the threat posed by China, and the enduring operational requirements following Afghanistan, that investment will have to come from within the Army's current allocation of the overall defense budget. Furthermore, since the Army can no longer sacrifice modernization without crippling the concept of MDO, it is left with little recourse than to reallocate resources from within the force structure. While this reallocation need not be permanent, it will initially be significant. That said, TRADOC's history again can provide us with a guide for what types of investments might be made to facilitate a transition of this scale and how much they might cost.

The late 1970s and early 1980s was a period of profound change and investment for TRADOC as it came to terms with the consequences of Vietnam, the advent of the all-volunteer Army, and the replacement of the “Active Defense” operating concept with the “AirLand Battle” concept.<sup>14</sup> One such outcome of that era, the establishment of the National Training Center (NTC) at Fort Irwin, California, was a direct result of the training studies conducted post-Vietnam and was a significant investment on the part of the Army into its training apparatus.<sup>15</sup> Budgeted between 1980 and 1984 at \$1.3 billion, adjusted for inflation, and developed



M2A3 Bradley Fighting Vehicles from 5th Squadron, 7th Cavalry Regiment, road march back to their tactical assembly area after completing a situational-training-exercise lane as a part of Combined Resolve VI at Hohenfels, Germany, 16 May 2016. Combined Resolve VI was a squadron-level decisive-action rotation at the Joint Multinational Readiness Center that trained the unit on cavalry and reconnaissance tasks. (Photo courtesy of Ralph Zwilling)

as a cooperative project between U.S. Army Forces Command and TRADOC, NTC was a landmark in terms of its impact on future readiness and enabling the adoption of the AirLand Battle concept. Envisioned to provide a realistic venue approximating the vastness of “extended battlefield” espoused by Starry, NTC was also an effort to improve commanders’ ability to quantitatively assess the readiness of the force through groundbreaking instrumentation in support of the Army’s Training and Evaluation Program.<sup>16</sup> The results of that investment, and others like it, would pay dividends in the sands of Iraq ten years later and set conditions for effective deterrence and U.S. domination of the land domain for the next thirty years.

As we sit at the threshold of another major change in our operating concept, the question could rightly be asked what the NTC will be for this generation. Given the transition from an “extended battlefield” to an “expanded battlefield” that will now incorporate cyber, space, and a greater appreciation for strategic depth, will the modern equivalent of NTC still even be in the

physical world?<sup>17</sup> In a perpetually resource-constrained environment, TRADOC must get this right the first time. To ensure that happens, part of the investment must include funding for essential market research to generate the type of studies that guided the development of NTC and other such training and education innovations in the 1980s. Examples like the 1978 *Review of Education and Training for Officers* provide a model for how to better appreciate both the shortfalls in our current training apparatus and the opportunities presented by advances in training methods and technologies applicable to our problem set.<sup>18</sup> They also will assist in bridging the generational divide that characterizes a cohort of soldiers who were brought into the Army focused on counterinsurgency (Generations X and Y) and the Generation Z soldiers that will be expected to execute MDO. This future generation of soldiers will not only be digital natives but will also have been raised under the social and educational shadow of the COVID-19 pandemic. Regardless of the outcome of this study, it is unlikely that previous training

methods will work for the future force. To remain relevant in an era of MDO, TRADOC will have to invest heavily in the infrastructure of training and education. As it does so, as with NTC, it should enlist the support and assistance of the U.S. Army Forces Command. Failure to invest in change would be the Army equivalent of Detroit continuing to crank out last year's car when the driving public has already moved on.

## Partners and Allies: The Guiding Coalition for MDO Training

As TRADOC seeks to “retool the factory” for the Army, it must seek out partners and allies to help it in this effort. That support can come from across the Army; from the other services, whose training enterprises will be similarly challenged; from foreign allies and their training and educational institutions; or from the civilian arena, both governmental and nongovernmental. In his 2012 seminal book, *Leading Change*, John Kotter provides a blueprint for TRADOC's transition. He discusses establishing coalitions, identifying change agents, conveying urgency, and marginalizing resistance.<sup>19</sup> This approach is exactly what is needed to create the momentum necessary to accomplish transformative change, which TRADOC needs to do to bust out of its entrenched bureaucratic processes and make this transition to facilitate MDO. TRADOC has the potential to achieve synergistic effects in training and education for MDO if, as part of building the requisite “change coalition” it works more closely with external organizations like Air Combat Command, NATO's Allied Command Transformation, or the United Kingdom's Land Warfare Center who have similar requirements, despite divergent equities. Even in circumstances where the services compete for resources, there are opportunities for complimentary efforts. In much the same way the Macys and Gimbels worked together in the holiday classic *A Miracle on 34th Street*, the Army and the other services training enterprises make their personnel better for MDO when they pool their expertise and knowledge in a collaborative fashion utilizing trusted agents.<sup>20</sup> This collaboration needs to extend to all aspects of training and education, from exercise scenario design to doctrine development and instruction, to instructional techniques. With the MDO concept, if a relevant partner or ally has not peer-reviewed a particular training course of action

or product, the result lacks credibility and will not hold up to the scrutiny of joint operations when single services equities and responsibilities are not the lone consideration. The concept of convergence requires us to set aside our service bias and open our eyes to the opportunities and challenges presented by our joint activities in other domains. While there should be no limits to collaboration, there should still be priorities, and a TRADOC partnership strategy should delineate that based on a variety of criteria such as the relative importance of joint interdependence to operations in the land domain, probability of future operational engagement, and the criticality of the relationship to the success of TRADOC MDO initiatives.

## Conclusion

*You go to war with the army you have, not the army you might want or wish to have at a later time.*

— Secretary of Defense Donald Rumsfeld<sup>21</sup>

For TRADOC, the clock is ticking on adapting the multi-domain operating concept into a training, doctrine, and education enterprise that is already facing significant pressure to keep pace with the challenges presented by China and Russia. The growing conflict in Ukraine and the increased potential for conflict with an emboldened China in the Pacific should reiterate that the time for significant investment and change in our approach to training is now.<sup>22</sup> Returning to the industrial example I used earlier, the physical, functional, and political standoff employed by those peer adversaries is disruptive to the American way of war in the same way that foreign competition in the last century disrupted the automobile industry. The emergence of disruptive technologies and approaches is historically inevitable and should be considered part of the fabric of competition. Even in the current environment, companies like Tesla continue to disrupt the auto industry through its innovation in electric vehicles in ways that provide highly competitive viable alternatives to the status quo. The question therefore remains, now that the Army has recognized the disruption, will our response be swift enough and dramatic enough to make a difference? Will TRADOC follow the example of its civilian counterparts in Ford and General Motors that, in late 2021, committed to phasing out the internal combustion engine in favor

of all-electric vehicles, thus ending 120 years of status quo? Or will it continue to pursue its new mission with an old design and old methods? If it hopes to avoid the trap of irrelevancy, TRADOC's reaction to the disruption it faces and the associated scale and speed of its pivot to MDO should be no less dramatic.

Looking ahead, if TRADOC is to successfully accomplish its mission in the coming decades it must adapt, and it must do so with a vision oriented on convergence, the resources to accomplish that vision, and the willingness to work with partners and allies to guide it through the challenges that lie ahead. ■

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