Marine with Marine Rotational Force–Europe 19.2, Marine Forces Europe and Africa, fires M240B machine gun during exercise Sea Breeze 2019, in Chabanka, Ukraine, July 11, 2019 (U.S. Marine Corps/Williams Quinteros)

Reconceiving Modern Warfare

A Unified Model

By KC Reid

The U.S. military has numerous ways it describes, conceives of, and organizes for war. Added capabilities and new technologies continually spur new terms and efforts, even new warfare types, to describe operations in a way that is helpful for organization, planning, and execution. These definitions and paradigms are useful in disaggregating the challenge or technology to understand it better, but they work in opposition to a comprehensive understanding of 21st-century warfare, even while attempting to further it.

Joint warfighting requires a new model that enables integrated thinking across the many disparate capabilities, technologies, and applications of the tools, concepts, and personnel used today and in the future, while simultaneously enabling tactical planning, operational design, strategic discussion, and execution. This article proposes a unified model of warfare, tailored for modern technologies and emerging concepts as well as strategic thought, which bring together several existing paradigms in use today. Unifying these models enables broader consideration, integration, and

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innovation in warfare, but most important, allows discussion of, planning for, and prosecution of modern warfare to be simple and mission-focused.

What is *war in the 21st century*? Often, this phrase expresses a warfare that is more complex, multifaceted, faster-paced, and more human-centric and/or more dependent on technology than warfare in earlier centuries. As used here, 21st-century warfare is simply warfare as prosecuted in the 21st century. It includes every weapon or tool from the most basic to the most advanced; state and nonstate actors as adversaries, third parties, and partners; and military, paramilitary, and ad hoc forces. It is not relegated to two irreconcilable wills; there can be many.

Existing Models

Most existing paradigms rise from a Clausewitzian championing of conventional force-on-force warfare. Carl von Clausewitz declares that "[physical] force . . . is thus the *means* of war; to impose our will on the enemy is its *object*."[1] Problematically, many newly emphasized warfighting technologies and capabilities either are not physical in nature or have a debatable physical nature—is a cyber capability part of physical warfare if the result is merely different data? What if the result is temporarily incapacitating a computing capability?

Interpreting the means of war as physical force restricts thinking to the physical realm, when the focus should be, as Clausewitz points out, "To secure that object we must render the enemy powerless; and that, in theory, is the true aim of warfare."[2] To this end, the frame used to think about, plan and prepare for, and prosecute war should focus on accomplishing the mission rather than another aspect of the fight, such as where it is prosecuted or what capabilities are used. Instead of restricting thinking about how to fight, the model should free thinking to enable integration and innovation.

This model overlays several predominant warfare models, each with a different focus area and original intent, to identify a unified paradigm that is comprehensive yet simple to understand and work within to enable mission-focused planning and operations. These models are domains, Marine Corps forces, joint functions, the continental or general staff system, and information-related capabilities. The existing models are not necessarily unsound, but each frames warfare such that new models must be generated as modes of war develop and change. The result is many models, all of limited utility, and a resulting inability to discuss modern warfare in clear, concise language that can be shared among strategic, operational, and tactical levels.

Domains. Domains for warfighting—land, maritime, air, space, and cyberspace in joint doctrine—pose three problems when considering 21st-century warfare.[3] First, discussions of new domains needed to keep the model relevant are nearly continuous. Pundits in 2017 discussed the domain of the mind or the individual, while the special operations community discusses the human domain.[4] Military doctrinaires debate whether the electromagnetic spectrum should be a domain. In 1998, generals discussed information as a domain, as some still do today.

Second, attempts to integrate the domains succeed mostly in subordinating to one domain all the others. A white paper jointly developed by the Marine Corps and Army, though signed only by the Army, defines *multidomain battle* (MDB) as "an approach for ground combat operations," clearly emphasizing the land domain over others.[5] Although it does discuss capability integration and acknowledges the need for superiority in other domains, the MDB nevertheless focuses on how other domains can support the land domain. Vice Admiral Charles Richard, USN, former deputy commander of U.S. Strategic Command, put forward the concept of *multidomain integration*, noting, "Whether you're guiding ships, jets, drones [or] missiles, space is the domain that enables all the others."[6] One domain's dominance is not an issue in itself, but when the model focuses on how other domains support one, it skews thinking toward that predefined relationship—in support of land or space, for instance—rather than true integration.

Third, the domain structure anchors thinking in where the fight occurs, rather than what needs to be accomplished. It is useful for understanding what capabilities can accomplish in each domain, but it more often inspires a mine-theirs mentality relating to capabilities based on where they have effects. It also gives fighting locality primacy over the capability in terms of importance and thinking. When discussion focuses on "What domain are we fighting in?" rather than "What capabilities do we have to prosecute the mission?" the domain focus impedes not only integration but also innovative capability combinations.

Forces Model. The forces model used in Marine Corps Doctrinal Publication 1 (MCDP-1), *Warfighting*, is broad and encompasses many warfare aspects, such as moral and mental capacities, which are not present in most other models. In MCDP-1:

- The physical characteristics of war are generally easily seen, understood, and measured—for example, equipment, capabilities, supplies, physical objectives seized, force ratios, losses of materiel or life, terrain lost or gained, and prisoners or materiel captured.
- Moral forces are difficult to grasp and impossible to quantify, including national and military resolve, national or individual conscience, emotion, fear, courage, morale, leadership, and esprit.
- Mental forces provide the ability to grasp complex battlefield situations; to make effective estimates, calculations, and decisions; to devise tactics and strategies; and to develop plans.[7]

A key drawback, however, is that it pushes the user to focus on the physical, given that it openly states an entire aspect of war cannot be understood or measured. In a superficial cost-benefit analysis of exploring or thinking about moral forces that are "difficult to grasp and impossible to quantify," the effort hardly seems worth it.

Given the vernacular definition of *physical* meaning "tangible" rather than "governed by physics," the line

between what is physical and what is not in 21st-century warfare becomes blurry, in particular with cyberspace, cyber security, and electromagnetic spectrum operations.

Joint Functions. Defined in Joint Publication (JP) 1, *Doctrine for the Armed Forces of the United States*, and JP 3-0, *Joint Operations*, the *joint functions* are "related capabilities and activities grouped together to help Joint Force Components integrate, synchronize, and direct joint operations." They are often used in planning processes to form the planning cells and develop courses of action. They include:

- command and control: exercising authority and direction over assigned or attached forces in the accomplishment of a mission
- maneuver: employing forces in the operational area through movement in combination with fires to achieve a position of advantage in respect to the enemy in order to accomplish the mission
- fires: using weapons systems to create a specific lethal or nonlethal effect on a target
- intelligence: providing the commander with an understanding of the adversary and the operational environment and identifying the adversary's centers of gravity and critical vulnerabilities
- logistics: all activities required in moving and sustaining military forces
- force protection: the measures taken in preserving the force's potential so that it can be applied at the appropriate time and place[8]
- information: managing and applying information and its deliberate integration with other joint functions to influence relevant actor perceptions, behavior, action or inaction, and support for human and automated decisionmaking.[9]

The joint functions are helpful in forcing planners and operational planning team (OPT) members to consider various capabilities and requirements of warfare during the joint planning process (JPP). Even if intended as a paradigm to serve as a checklist, over time checklists shape and usually limit thinking to only those things on the checklist. In practice, therefore, its categories also limit thinking about capabilities. As an example, logistics usually includes health services, but the personnel accountability aspect for which personnel staff would be responsible is rarely part of the discussion. Personnel functions are required for actual warfighting, and participation in exercises enhances skills, knowledge, and experience for seasoned staff and is especially important for less experienced staff.

General Staff System. While the joint functions are used to plan for military operations and exercises, day-to-day functions in garrison are compartmentalized differently despite the fact that those same joint functions are executed in and by these same staff organizations in garrison and combat. The JPs and doctrine follow this organization in their numbering and categorization:

- J1, Personnel
- J2, Intelligence
- J3, Operations
- J4, Logistics
- J5, Plans
- J6, Communications.

Many staffs use additional sections to cover the range of activities that they engage in. While application varies widely, often the military activities included are training, finance, and civil affairs. The organization varies over time as a function of personality, activity, leadership requirements, and functional emphasis.

The staff sections coincide partially with joint functions. J1 (Personnel) is not included as a joint function, whereas J2 (Intelligence) and J4 (Logistics) are explicitly and directly such. J3 (Operations) is divided into joint functions of maneuver, fires, force protection, and (often) information. J5 (Plans) typically orchestrates the longer term planning efforts for all the functions and staff sections both in garrison and deployed environments. J6 (Communications) only roughly correlates with command and control. The J2, J3, J5, and J6 sections all have a role with the newly added information function. In fact, regarding "support for human decisionmaking," every staff section could be said to have a role in executing the information joint function, greatly complicating the actual inclusion of this in a planning process.

In garrison, as well as in operations, the general staff system is used to organize forces, yet in exercises and sometimes operational planning, not all the staff sections participate. Personnel, training, and finance staffs rarely participate in JPP applications while remaining critical in preparing for and prosecuting war. If included in operational planning, those sections may be better able to identify creative, innovative ways to enable operations.

Left out of the joint functions altogether, though addressed nominally by the "Green Cell" that is tasked with playing transnational groups, human factors are so important that some are considering an entire domain dedicated to civil affairs. Civil affairs can serve an important role in preconflict, postconflict, and fighting stages of both counterinsurgency and major contingency operations by demonstrating U.S. intent to nearby populations, engendering good will, undermining adversary efforts, engaging with groups in the vicinity of friendly forces, and liaising with international and other nongovernmental organizations.

Information-Related Capabilities. Information-related capabilities (IRCs) are a key part of information operations (IO) doctrine, which includes the physical attack and physical protection IRCs. This acknowledges that a missile on target sends a message simultaneously with the target's physical destruction. It also brings conventional physical fires into the IO tent as an IRC. Physical ways of communicating are included in IO doctrine and, if applied accurately, are integrated with it. Doctrinally, IRCs are tools, techniques, or activities that affect any of the three information environment dimensions (physical, informational, and cognitive). JP 3-13, *Information Operations*, includes fires, targeting, physical security, legal, and counterintelligence along with J4, J5,

J6, and J7 in the notional information operations cell, but specifies 14 IRCs:

- strategic communication
- joint interagency coordination group
- public affairs
- civil-military operations
- cyberspace operations
- information assurance
- space operations
- military information support operations
- intelligence
- military deception
- operations security
- special technical operations
- joint electromagnetic spectrum operations
- key leader engagement.

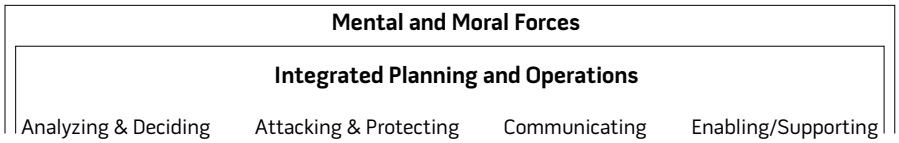
If taken as a modern warfare model—which is possible when aspects like physical protection and joint fires from the doctrinal, notional IO cell are included—this not only expands consideration of capabilities focused on undermining the enemy's will but also runs the danger of overemphasizing IO's communication aspects at the expense of the more tangible physical aspects.

A Unifying Paradigm

Aligning the models reveals four key elements of any military operation, while providing enough flexibility within each to enable analysis of new and emerging concepts and technologies without having to create a new warfare type or model with each technological development or change in era. This model can be used for tactical planning, operational design, strategic discussion, and execution. World War II, Cold War, and post–Cold War eras fit as easily into this model as the post-9/11 era. It addresses actions to be taken, audiences to address, capabilities to apply, approaches and perspectives to maintain, and even processes to incorporate.

This alignment of models is domain- and Service-agnostic, freeing thought about military operations from limitations, such as where it is prosecuted or by whom, and enabling focus on missions and capabilities. It can be used, perhaps, in place of all the paradigms examined above. In short, it simplifies warfare enough to understand it easily, while enabling much more detailed discussion and integration of capabilities and technologies not yet conceived.

Figure 1. Unified Model of 21st-Century Warfare



There are two element types in this paradigm: foundation and application. *Foundation elements* are those that underlay military actions, specifically moral and mental forces and integrated planning and operations. *Application elements* are those that focus on specific actions to be taken, namely analyzing and deciding, attacking and protecting, communicating, and enabling/supporting. They are not arranged in any particular order, but are equal in their importance and contribution. Each element is defined below to enable an in-depth understanding of them. In most cases, doctrinal definitions are used because they are good, known, and relevant. Where definitions deviate from doctrine, they are defined and justified.

Foundation Element: Moral and Mental Forces. These are almost the same as in MCDP-1. *Moral forces* are national and military resolve, national or individual conscience, emotion, fear, courage, morale, leadership, or esprit. *Mental forces* are the ability to grasp complex battlefield situations; to make effective estimates, calculations, and decisions; to devise tactics and strategies; and to develop plans.[10] As used in MCDP-1, these forces exist and can be affected, but most focus is placed on undermining the adversary's mental and moral forces. Usage here differs in that it emphasizes that these mental and moral forces can be undermined as well as enhanced for enemy, friendly, and third-party personnel. Included here are activities that may not reside in the general staff system, such as enhancing individual resilience, teaching critical thinking and decisionmaking skills, monitoring behavioral health, and so forth. Mental and moral forces—including force resilience—underpin not only the entire mission but also the entire battlespace including adversaries and third-party actors.

Foundation Element: Integrated Planning and Operations. This incorporates the J5 and J3 roles. J5 conducts, and is responsible for, integrated planning to achieve the four categories of action in support of the mission. J3 is responsible for the execution of those categories to achieve the mission.

Application Element: Attacking and Protecting. Lacking a joint definition, *attack* is, as defined in Marine Corps Reference Publication 1-10.2, *Marine Corps Supplement to the DOD* [Department of Defense] *Dictionary of Military and Associated Terms*, an offensive action characterized by movement supported by fire with the objective of defeating or destroying the enemy. *Protection* is defined in the 2019 *DOD Dictionary of Military and Associated Terms* as active and passive defensive measures to ensure preservation of the effectiveness and survivability of mission-related military and nonmilitary personnel, equipment, facilities, information, and infrastructure deployed or located within or outside the boundaries of a given operational area. This includes overcoming an adversary's attempts to negate them and to minimize damage if negation is attempted.

Application Element: Analyzing and Deciding. The term *analysis* included in the DOD dictionary relates only to intelligence. Therefore, this model leans on facilitation and instruction theory to define *analyzing* as drawing connections among ideas through various means, including but not limited to differentiating, organizing, comparing and contrasting,

Combat medic assigned to 2nd Combined Arms Battalion, 69th Armor Regiment, 2nd Armored Brigade Combat Team, 3rd Infantry Division, mentally prepares to engage in M249 squad automatic weapon and M240B general-purpose machine gun qualifications for Best Warrior Competition, May 3, 2018, at Fort Stewart, Georgia (U.S. Army/Arjenis Nunez)

distinguishing, and examining available information. *Deciding* is making a decision; a *decision* is defined in the DOD dictionary as, in an estimate of the situation, a clear and concise statement of the line of action intended to be followed by the commander as the one most favorable to the successful accomplishment of the assigned mission. In this paradigm, analysis is done specifically in informed decisionmaking.

Application Element: Communicating. *Communicate* was removed from the DOD dictionary in its 2019 revision, but the definition included in earlier versions is retained here: to use any means or method to convey information of any kind from one person or place to another. In this model, it includes communication internal to, and external communication from, the operating forces to any audience including the adversary, third-party actors, internal forces, and other commands.

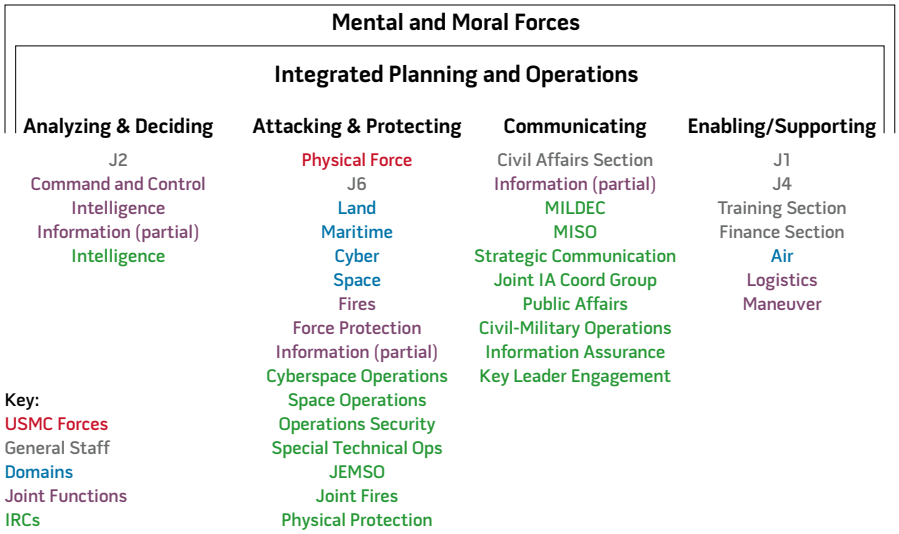
Application Element: Enabling/Supporting. The DOD dictionary does not include a definition of *enabling*. This model modifies the legal definition of *enabling* as conferring new powers, capacities, means, abilities, competences, capabilities, or authorities on an element of the force to enhance mission accomplishment. *Supporting* modifies the dictionary's definition of *support* as providing a force or element of a command that aids, protects, complements, or sustains another force in accordance with a directive requiring such action. This definition replaces "the action of a force that aids" with "providing a force or element of a command that aids" in order not only to address the different verb form but also to expand the concept to incorporate the idea of giving resources to another force or element.

With the model elements defined, this overlay can assist thinking about this new model by showing how the older models fit within its construct. Each model is indicated by different text type or color. For instance, portions of the forces model are red text. Note the information joint function must be divided among the application elements; this speaks to the

premise of this article, that the existing models fall short and therefore inhibit the ability to discuss warfare in a holistic, broadly applicable yet flexible and nuanced manner.

This paradigm will be applied to different areas of planning, organization, and execution in the next sections to illustrate the ways in which it alters thinking and enables, encourages, or enhances coordination, integration, and innovation in warfare. These applications are neither comprehensive nor conclusive; there may be many other ways this paradigm can be applied to enhance warfighting. The intent is both to spur and to challenge ways the U.S. military describes, conceives of, organizes for, and prepares for war.

Figure 2. Unified Model of 21st-Century Warfare with Other Model Overlay



An Enduring Model

Military thinkers propose new warfare types and models when discussing changes in prosecuting war under certain circumstances, even when the change is simply different combinations of existing technologies and capabilities. Russia's heavy use of information operations and social media, combined with guerrilla tactics and heavy artillery to annex Crimea while managing to avoid a military response from Ukrainian allies, is labeled "hybrid warfare" or "operations in the gray zone," somewhere between peace and war. These efforts merely categorize a specific combination of capabilities but do little to enhance the ability to integrate, coordinate, and innovate in warfare.

Drones, robots, cyberspace operations, and artificial intelligence create different effects on the battlefield and should change thinking about force protection, signature management, and electronic countermeasures. Appreciating the changes that new technologies bring is critically important to shaping expectations, planning for operations and acquisition, countering effects, application, and exploring the ways friendly and adversary forces may use them. Yet introducing a new lexicon every time this occurs obscures the key elements of warfare as well as the mission.

At the core, warfare is accomplishing a mission with the resources and capabilities available. Constantly inventing new types of warfare—or new labels for application of new and old technologies and capabilities—distracts from the mission and from innovation. This model can be used to talk about warfare during the Cold War and also in an era of precision-guided munitions, drones, offensive cyberspace operations, and anti-satellite weaponry. It is technology independent, while still enabling discussion of any kind of technology within its elements.

Impact on Planning and Operations

Overlaying this model with the JPP highlights some key differences in thinking as it is now and as it would be using this model. The model does not alter the key steps in JPP—mission analysis, course of action (COA) development, COA analysis and wargaming, COA comparison and approval, and plan or order development. This model does alter the way in which these steps are executed by adjusting the frame used to engage with JPP and design. Moreover, it can be applied to friendly forces as well as enemies, adversaries, and third parties, making it useful as a check for Intelligence Preparation of the Battlespace (IPB), as well as monitoring friendly forces' readiness, which typically falls outside the JPP.

Design. This involves understanding the current and desired future states and the problem set, producing an operational approach, and reframing. It is really part of the first phase of the JPP but is continuous and always subject to revision. Using this unified model of warfare provides a more comprehensive and integrated framework within which to deconstruct (and reconstruct) the current and desired future states. In addition to standard brainstorming for current and desired conditions, the application elements are good testers to ensure that key areas are considered and included. For instance, they inspire questions such as, "How are we and the enemy analyzing and deciding?" or "In what ways are we and the enemy communicating to different audiences—friendly, enemy, third party, and so forth," and "Where might we use deception, and where might it be used against us?"

Mission Analysis. This model brings to the forefront the moral and mental forces at play in the scenario. Applied to friendly forces, what is the moral and mental status of friendly troops? How do they view the conflict in general, and what are external influences conveying about the conflict that might affect friendly force morale at the individual, unit, and commander levels? Do friendly forces have the resilience needed to take

Airman with 38th Air Defense Artillery Brigade assembles omnidirectional line-of-sight antenna to enable communication with aviation assets during unilateral joint training exercise on Sagami General Depot, Sagamihara, Japan, September 17, 2019 (U.S. Army/Raquel Villalona)

on a clever, insightful adversary who adjusts to changing situations rapidly and does not follow laws of war? Have friendly forces been adequately educated to problem-solve, innovate, and fulfill their functions at the time and place required?

For all actors—enemy, third party, host nation, partner nation, other U.S. Government organizations in the situation—what is their resolve? How does their culture view this conflict and armed conflict in general? What kinds of actions are seen as honorable or unacceptable in warfare, both overtly and covertly? How determined or committed to the cause is the enemy as a whole, and how determined or committed is it at a given unit level? What are the strengths and weaknesses of key leaders on all sides? These and other similar questions would provide insight into the moral and mental status of adversaries and third-party actors as well as regional or international groupings relevant to the scenario.

While some of these questions are often answered through IPB, not all are. Questions (and answers) related to the cultural perspectives of varying groups, levels of commitment or determination, and morale are often left unanswered, if they are even asked, because they are difficult to measure and evaluate. They are also not solely the purview of intelligence; rather, some of these questions are answered through other resources entirely, such as culture-focused organizations, civil affairs, or even other departments or agencies. They are rarely included as part of exercises because doing so requires deep expertise on adversaries or other parties at many levels, and they are even more difficult to measure, quantify, and apply with any rigor in a fictive scenario than a real one.

Each of the elements (foundation and application) can be used to frame IPB and enable deeper analysis and better understanding of adversaries and the environment as systems, rather than discrete parts. Rather than focusing on examining an adversary with PMESII-PT (political, military, economic, social, infrastructure, information, physical environment, time) or another similar tool, PMESII-PT could be used within each element. This would mean that enemy moral and mental forces are examined with PMESII-PT, but so would their planning and operations, how they attack and protect, their surveillance and decisionmaking processes, all aspects of their communication, and enabling/supporting their forces.

Using the application element of attacking and defending in mission analysis enables thinking about friendly or enemy capabilities as a whole, rather than offensive and defensive. This can help prevent assumptions about how a capability could be applied, which assumptions limit military planners' ability to conceptualize how the enemy might act or react in a given circumstance, resulting in unpleasant surprises. Similar results could come from using the other application elements in other areas of problem-framing, such as identifying implied tasks, assumptions, centers of gravity analysis, and more.

COA Development. Development can benefit from this paradigm by ensuring that all aspects of warfare and ways to target the enemy's will are addressed within the commander's intent and mission statement. Typically, when moving into COA development, OPTs will break into working groups along the lines of the joint functions to dig deeper into the capabilities each joint function can bring to the mission. Rather than aligning to joint functions, OPTs can divide into groups that are aligned with the application elements of this paradigm, which force greater cohesion and integration across military capabilities than the joint functions.

Analyzing and deciding brings together intelligence and the ability to control operations and forces from the initial planning stages, enabling better streamlining and integration of intelligence and friendly knowledge management for the commander's advantage.

In attacking and protecting, fires and force protection assets can work together, perhaps identifying areas in which one capability can fill two functions. Fires, cyberspace operations, space, special technical operations, and network exploitation and protection are all present,

truly integrating lethal and nonlethal (and/or kinetic and nonkinetic) capabilities to the commander's best advantage in the battlespace. Operations security and force protection are together, able to leverage mutual gains from the outset of planning, rather than as a result of deconfliction later in the process.

Communicating brings together all the capabilities that play a role in this element, synchronizing overt and covert communications for all the various audiences—friendly forces, adversaries, third-party actors, and various external audiences.

Given that maneuver is dependent on logistics, it makes sense that these two capabilities be in lockstep from the beginning phases of planning in the enabling/supporting group. Likewise with aviation capabilities, finances, personnel, and training, which are used for logistics and as enablers for all the other application elements. Training is not usually included in exercises because that staff is busy preparing units actually deploying. Having a training representative in exercise design could leverage training's expertise to identify efficiencies where mission-essential tasks for existing and potential future missions can be developed or planned for simultaneously.

COA Analysis and Wargaming. Foundation elements are particularly useful during COA wargaming, when the plan is examined in order to identify issues, shortfalls, and other challenges. While the pieces and parts of the plan will be discussed and perhaps mapped out on a table, this is a key part in which to ensure the foundation elements are consciously addressed. Is the COA truly integrating various friendly capabilities? When the staff walks through what a unit will do, are they discussing the physical impact on the enemy *and* on friendly mental and moral forces?

COA Comparison and Approval. Each mission and each commander will have a unique set of circumstances that evaluation criteria will spring from. Both foundation and application elements can be used as part of the evaluation criteria for COA comparison and approval, either as subsets of commander-established criteria or in framing those criteria. For instance, commander-provided criteria might include speed of operation, level of risk to forces (or mission, or both), and likelihood of residual resistance after the core mission is accomplished. The staff using the foundation and application elements in their COA analysis and wargaming would better support its commander's decisionmaking by being able to discuss as part of the criteria assessments for key decision points, how communicating to different audiences will impact the likelihood of residual resistance, logistical options that can speed or slow the operation, and how integrating certain capabilities undermine the enemy's mental and moral forces, saving friendly forces and resources.

Conclusion

As an institution, the U.S. military should continually seek to improve its understanding of war. Such efforts typically result in complicating an already cumbersome vernacular and dialectic, creating new silos of expertise only understood by a small portion of the forces and losing sight of the mission. This is the result of both inadequate models and the misuse and misinterpretation of models.

We have an opportunity with this model to unify and simplify that landscape without losing the ability to apply new technologies and combinations of capabilities. Although this is a new way of looking at warfare, it is also a highly flexible one that can be enduring and therefore would not have to be adjusted with the rise of yet-to-be-conceived-of technologies and capability combinations.

It is not yet clear what the most beneficial and effective application of this model is—whether it is operationally, as in the Joint Operations Planning and Execution System application; analytically, as in the problem-framing in planning; or another. Experimentation with this model will illuminate the benefits and challenges it presents when applied to different areas such as planning, handling emergent technologies, and conducting operations. **JFQ**

Notes

[1] Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1989), 75.

[2] Ibid.

[3] Joint Publication 3-0, *Joint Operations* (Washington, DC: The Joint Staff, January 17, 2017), xiv, available at <www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_0ch1.pdf?ver=2018-11-27-160457-910>.

[4] Ray Alderman, "Domains of Warfare and Strategic Offsets," Military Embedded Systems, January 31, 2017, available at <http://mil-embedded.com/guest-blogs/domains-of-warfare-and-strategic-offsets/>.

[5] "Multi-Domain Battle: Combined Arms for the 21st Century," white paper, U.S. Army, U.S. Marine Corps, February 24, 2017, available at <www.dupuyinstitute.org/blog/wp-content/uploads/2019/03/U.S.-Army-Marine-Corps-Multi-Domain-Battle-Combined-Arms-For-The-21st-Century-2017.pdf>.

[6] "U.S. Vice Admiral Calls for Code of Conduct for Space, VOA News, March 29, 2017, available at <www.voanews.com/science-health/us-vice-admiral-calls-code-conduct-space>.

[7] Marine Corps Doctrinal Publication 1 (MCDP-1), *Warfighting* (Washington, DC: Headquarters Department of the Navy, 1997), 15–16, available at <www.marines.mil/Portals/1/Publications/MCDP%201%20Warfighting.pdf>.

[8] Marine Corps Warfighting Publication 5-10, *Marine Corps Planning Process* (Washington, DC: Headquarters Department of the Navy, May 2, 2016), B1–B2, available at <www.marines.mil/Portals/59/Publications/MCWP 5-10 FRMLY MCWP 5-1.pdf?ver=2017-08-28-140131-227>.

[9] Ibid.

[10] MCDP-1, *Warfighting*.

U.S. Marine Corps recruits with November Company, 4th Recruit Training Battalion, complete obstacles during Crucible at Marine Corps Recruit Depot Parris Island, February 21, 2019 (U.S. Marine Corps/Bobby J. Yarbrough)