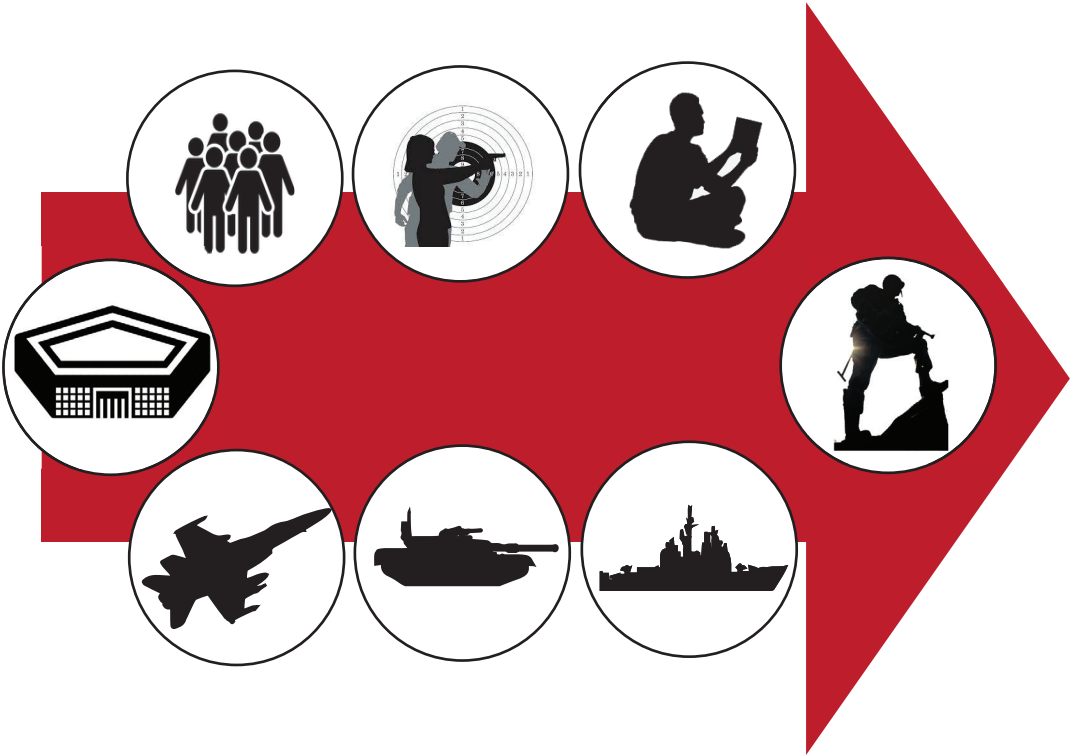# NATIONAL PREPAREDNESS AND MILITARY READINESS

PRIMER FOR SENIOR LEADERS

1ST EDITION

DEPARTMENT OF COMMAND, LEADERSHIP, AND MANAGEMENT

UNITED STATES ARMY WAR COLLEGE

National Preparedness and Military Readiness

Primer for Senior Leaders
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Tom Galvin

With Foreword by Michael Lynch

Department of Command, Leadership, and Management

School of Strategic Landpower

U.S. Army War College, Carlisle PA

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Foreword

Mike Lynch, U.S. Army War College

Readiness is a common theme in Army units, so common that most leaders could describe readiness without referencing any sources. Moreover, when presented with the option of preparedness versus readiness, they are likely to assume that these are synonyms. However, that assumption is inaccurate, and so are many of the "off the cuff" descriptions of readiness.

The concept of readiness, as we comprehend it today, traces its roots back to the pre-World War I Preparedness Movement. This was a time when a large portion of the US population believed that the nation should avoid European conflicts and that preparing for war would lead to ruin. The argument held that if the nation bolstered its defenses, it could provoke its enemies to attack in response under the guise of self-defense. While this argument was more prevalent before World War I, echoes of it can still be heard today.

As war clouds gathered over Europe and finally broke in 1914, the United States sought to remain neutral, adopting an isolationist outlook. Many of the nation's political and military leaders were loath to get involved in a European conflict, invoking George Washington's admonition to avoid "entangling alliances." Yet some more forward-thinking leaders, such as former President Theodore Roosevelt and his San Juan Hill superior, former Army Chief of Staff General Leonard Wood, realized that the danger was not the so-called entangling alliances but rather not being prepared to respond to a crisis if necessary. Roosevelt and Wood launched a preparedness movement focused not just on the readiness of military units based on their manning, training, and equipping levels, but on preparing American society for a protracted conflict. They focused their efforts on training young, upper-class men in basic military skills so those men could then provide the cadre for a larger Army if necessary. The movement failed, primarily due to political opposition, but the loss of American lives with the sinking of the *Lusitania* in 1915 and the invasion of Columbus, New Mexico, in 1916 began to blunt that opposition.

In this primer for senior leaders, Tom Galvin explores the complementary yet differing concepts of readiness and preparedness. He also describes various components of readiness, demonstrating that its seemingly uncomplicated definition is not that simple in practice. The foundational perspective, the operational readiness of the small unit, demonstrates this. Small unit leaders may be excused for focusing

exclusively on what they must do to get their units out the door, out of the motor pool, down to the railhead, or over to the green ramp. They carry a small green book that doubtless includes the unit's weapons qualification status, collective and individual training status, maintenance status, and personnel status. That leader also carries in the front of his or her mind a shortlist of critical requirements to be demanded immediately upon alert, informed by their critical equipment and personnel shortages. The Army depends on those small unit leaders to focus on these critical tasks.

But it is not the small unit leaders' responsibilities to solve all their own readiness problems. They depend on senior leaders to focus on more significant systemic issues that are complex and affect the readiness of the whole force. This study asks senior leaders to consider how current readiness is measured, the capacity of the force to expand, the resilience of the force to sustain itself through protracted conflict, and most important, the stewardship of the profession of arms. Senior leaders must also assess the nation's preparedness through its government processes, resource availability, and home front resilience.

Tom poses some critical questions that every military leader should consider and consistently analyze, revise, and answer. Those questions are, in fact, more important than a unit's readiness ("C" or "A") rating:

- *Preparedness for what?*

- *Preparedness for when?*

- *Preparedness of what?*

Without answering these questions first, simple readiness ratings are meaningless.

Every war the United States enters is the "war to end all wars" in popular conception, with the postwar peace leading to an overall reduction in the military's readiness and the nation's preparedness for another war. History reveals, however, that peace is fleeting … and the nation inevitably finds itself unprepared when war comes again.

Preface

Throughout my military career, "readiness" was everything. As a platoon leader at an overseas location, I was required to carry my entire unit's "readiness" information in a binder everywhere I went. I was expected to know which soldiers were present and ready for duty based on training statistics, schooling, progress in their professional education, powers of attorney, and so many other matters. I was also expected to know who had deficiencies in such matters and what was being done by the squad leaders to address it. I was also expected to know exactly what was wrong with every piece of equipment I owned, where it was, and what parts were ordered to fix it. But this was not just a matter of immediate recounting of facts and figures, it was a demonstration of leadership in the form of showing that I knew my people and equipment and knew to what extent they were "ready" for when the so-called "balloon went up" as we used to say.

"Readiness" was a simple concept. The assessments were effectively binary – one was ready or one was not. There was no in-between, that meant there was a deficiency to fix. So, managing readiness was algorithmic and the system was elegant. Aggregation to the unit level made sense because it followed a percentage formula that codified how well leaders were doing everything they could to alleviate discrepancies. Anything below C-1 was unsatisfactory, and anything below C-1 with deficiencies that platoon leaders or company commanders had not acted upon was seen as a failure of leadership. When things worked, the pressure was shifted to the support units to provide the parts or take corrective actions. It was simple, albeit an intense one as no one wanted to be the one whose "readiness" dipped below and for whom no corrective action proved feasible.

Since those days, my understanding of "readiness" became increasingly complicated, and I found myself frustrated by it. In a subsequent assignment to another division, I was an assistant S-3 in a continental US post whose collateral duties included Unit Status Report (USR) Officer-in-Charge. Sadly, this job taught me another side of the "anything below C-1" story that I did not enjoy. The division's leadership was tough on reports of lowered states of readiness, leading to desires to prevent the battalion commanders from looking bad. I was taught how to be creative with the readiness statistics, especially the comparatively subjective T-rating, to justify higher "readiness" numbers without breaking the reporting rules. I was assured that this was normal by my immediate supervisors, but it also taught me why most senior lieutenants hated being USR officers.

After company command, I found myself consistently in situations where the meaning of "readiness" got fuzzier and fuzzier, the purposes of reporting it less clear, and its relationship to decisions being made were more obscure. A unit commander I served under was convinced that the quantitative ratings were ignored by "big Army" and the only thing that mattered was the commander's narrative. Another unit comprised a handful of soldiers and a massive number of contractors performing the mission; but readiness ratings only pertained to the soldiers' individual training and the problems of the severely under-resourced contract was out of bounds. A command I served in was directed to create cadre units consisting of a commander, guidon, and a handful of staff officers and nothing else – the unit was C-1 even though it had no capacity to do anything. In both joint and service component commands, I encountered incompatibilities in meanings of "readiness" across the joint-service boundary and that "readiness" was being used as much as a signaling device to higher headquarters as it was an objective assessment of the forces assigned to it. This was even more problematic in the multinational force I served in later, where politics and national interests played roles in the establishment of "readiness" metrics and their reporting.

I also had questions that reflected what the "readiness" reports did *not* address. How does one measure the "readiness" of capabilities that were always in use and never given time to train, like information technologies? How does one measure the "readiness" of capabilities that the military outsources to contractors or host nations? If the US had to mobilize again like in World War II, could it? I recalled all too well watching GEN Gordon Sullivan's famous talks about "No More Task Force Smiths," which was his warning about the perils of not being ready for war. Task Force Smith originated as a constabulary force in Japan that was called upon to stem the North Korean advance of 1950. But the Task Force was ill-prepared and fared poorly.

To this point, you probably noticed the extent to which I quoted the word "readiness", and you might have even found it distracting. This was quite intentional, of course, because each use of the word "readiness" above meant something different from every other use. Moreover, it was too often used as a catch-all feel-good term, used as one vocal critic during a civil-military relations conference put it, an *excuse* to avoid making hard decisions, as in *we cannot do ____ because it will harm "readiness."*

Beginning around 2015, I undertook this effort to understand "readiness" from an organizational perspective. In the process, I found that many of the concerns I expressed were also expressed by other scholars back in the post-Cold War 1990s who saw the meaning of

readiness devolve from the clarity of sustaining comparative advantages on known fronts to the epistemological morass I just described where "readiness" means many different things. Moreover, the national responsibilities for maintaining the military's "readiness" and the specific requirements of the defense enterprise to manage it have been left off the table.

Fast forward to the post-pandemic 2020s and questions about the military's true "readiness" for major combat operations became once again front and center. For the past several years teaching Defense Management, I have made it a point to engage students in the meaning behind readiness and the decisions that identified readiness shortfalls should drive. I try to bring the conversation back to a simple question, "What will it take for the US *and* its partners to win the next big war?" and to discourage students from allowing complexity to get in the way of delivering clear and defensible answers.

Over time, I found that there was no text that one could use to capture the comprehensive meaning of "readiness" as a measure of both what is available on hand and what can potentially be generated if needed. Plus, no text integrated the military's internal responsibilities with those of the civilian leaders responsible for providing the resources and capabilities that the military depends on to initiate and sustain the fight. In exploring that half of the equation, I came to the conclusion that the national responsibilities are qualitatively different from those of the military, and therefore one should avoid talking about the "readiness" of the defense industrial base, for example, because its status reflects a different construct comprised of a whole different set of variables. Hence I needed to bifurcate the term "readiness" into separate constructs for the military and national levels. The title of this book, *National Preparedness and Military Readiness*, reflects that separation.

The distinction between "preparedness" and "readiness" has been a tough sell because many officers have been brought up treating them as synonymous. I probably did myself no favors as the faculty papers that I prepared during the development phase of the theories introduced here presented contradicting views of where the line was drawn between "preparedness" and "readiness." So, as I wrote this text, I was cautious to use *national preparedness* as a term to reflect the unique perspective and responsibilities of the nation-state and avoid using "preparedness" as a stand-alone term. *Readiness* could then assume its traditional role as a general measure of a military's capabilities and capacity to fight.

I am indebted to all those who helped me and guided me through the nearly decade-long journey of making sense of this complicated idea. I first wish to thank Col Rick Sheffe who had the responsibility for the

This text should not be considered a final product like other books. It is intended as an educational tool and a conversational starter, and therefore I am certain that it is incomplete. I encourage readers to reach out to me with corrections, suggestions, and ideas. It is far less important to me that this book is right. Instead, I will be far more satisfied with the book being used successful to help improve the nation's preparedness to fight and win its future wars.

PART ONE: ARE WE PREPARED FOR THE NEXT BIG WAR?

What will it take to win the next war? This is the question that should be first and foremost on our minds as military professionals. To fight and win is the expectation, one that will require significant commitment of resources over a potentially indeterminate amount of time. But too often this is not the question we wind up answering. Instead, we focus on the immediate – the state of operational readiness of the equipment and personnel on hand for the next rotation, big exercise, or other near-term requirement. These are important, to be sure, but to what extent do these requirements get in the way of the ultimate purpose – to win the next war, however long it takes. Not being prepared, as a military **and as a nation**, could be very costly.

In the past, leaders have probably been accustomed to talking about readiness as the key measure of an organization's ability to do the mission. Indeed, at the tactical level, leaders devote most of their energy to ensuring unit readiness by answering some simple questions. *Are the unit's prescribed numbers of people and equipment on-hand? Are they available, trained, ready, and equipped for mission? When the answer is no, what is being done to correct it?*

At higher echelons, things can get more complicated. Consider everything that each military unit depends upon to fight that is not organic to that unit. *Intelligence, sustainment, communications, etc. – are they ready to go, too? Are they ready to provide the support where and when needed?* Higher still, leaders want to know if land, air, sea, cyber, and space components are ready to work together as a joint force. The terms for this may change over time – joint readiness and strategic readiness among them – but the idea is the same. It is not enough for a single unit or capability to be ready; it must also be interoperable and ready to be assembled as a joint force.

But at the enterprise level, the joint force's dependence on non-military capabilities becomes quickly apparent. Consider sustainment. Most of what the joint force consumes--food, fuel, maintenance, repair parts—is produced by private sector firms. Many services established and provided at forward bases—e.g., medical, information technology, facilities & infrastructure—depend on the private sector. Thus, the readiness of the defense industrial base is important. What about our interagency partners like the Department of Homeland Security for homeland defense, the Department of State exercising the diplomatic element of national power, or other U.S. government agencies setting conditions for the joint force's success? What about various programs

that are activated in times of war like the Civil Reserve Air Fleet and Merchant Marine? Can we count on the support and contributions of partners and allies? Can we adequately mobilize the nation and exercise Selective Service in the event of a future major combat operation?

In short... Is the nation *prepared* for war?

Part One comprises three chapters. Chapter 1 answers the question of why this topic is important, using historical examples and prior discussions about national preparedness and military readiness from the post-Cold War period to the present day. Chapter 2 lays out the guiding principles and foundation concepts shared between national preparedness and military readiness. Chapter 3 presents the framework covered in the rest of book concerning military readiness (Part Two) and national preparedness (Part Three).

1. The Price of Not Being Prepared

Military preparedness *demands personnel, weapons, equipment, and supplies of adequate quality in the proper mix and in sufficient quantities to accomplish assigned missions wherever and whenever directed. Preparations take present and projected requirements into account. Perceived threats, doctrines, plans, programs, military infrastructure, the industrial base, and budgets strongly shape results. Problems develop whenever any aspect becomes deficient.*
--John M. Collins (1994)[1]

There is probably little controversy in the above passage, but the highlighted term may give some pause. Why "preparedness" and not "readiness"? After all, most other books, doctrine, concepts, senior leader statements, Congressional hearings, and other communications talk "military readiness." What is the difference, assuming a difference exists?

Well, there is, and it is a significant one. In this chapter, I will separate two perspectives that tend to get conflated into one that is typically called "military readiness." One covers the military's responsibilities and the other covers the nation's responsibilities, and these are qualitatively different. I will separate these responsibilities through historical examples of national and military failures and conclude with definitions of two terms – *military readiness* and *national preparedness*. Until then, I will use Collins' term of military preparedness to mean the combination of both.

1.A. Vignette I: "No More Task Force Smiths" (1951)

Chief of Staff of the Army Gordon Sullivan's mantra[2] evoked the painful lessons of the Korean War's early days. Most of that pain was felt on the units in Japan unexpectedly pressed into service and thrust into a conflict with poor weapons and untrained soldiers. But while Sullivan focused on the failures to maintain operational and structural readiness in peace that led to near disaster in war, this version of the story focuses on the nation's failures.

The Korean war's lessons extend beyond the state of defense enterprise and reflect the state of a nation dealing with the fresh memories of World War II and the consequences of a developing Cold War with the Soviet Union. Con Crane and a team of AHEC historians studied the onset of the Korean War and examined a wide range of

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[1] John M. Collins, *Military preparedness: Principles compared with U.S. practices*, Report #94-48 (Washington, DC: Congressional Research Service, 1994), summary page.
[2] Gordon Sullivan, "No more Task Force Smiths," *ARMY Magazine* (January 1992), 18.

national problems that contributed to the inability of the *nation* to prepare for the war it ultimately fought. Beyond the political considerations and domestic priorities that led Truman to fiscally constrain the military, Lynch et al. (2019) showed that the following were major challenges facing the enterprise in the late 1940s:

- *Skilled Personnel*. The military was competing with the private sector for talent as the economy recovered and unemployment went down.

- *Strategic Minerals*. The U.S. depended on global production of raw materials for equipment but was also competing with the rapidly expanding industrial sector.

- *Industry.* The industries themselves had made the shift to consumer goods and were not prepared to restart wartime production of munitions, etc.

- *Support to Allies.* Not only did the U.S. struggle to satisfy the needs of its own military, but she also must help support the collective defense posture by contributing military items to allies.

- *Mobility and Transportation*. Military forces did not have adequate mobility assets to move themselves within and across theaters, and the national transportation infrastructure was still immature (the U.S. Interstate System was not established until after the Korean War).[3]

Each of these areas were (and still are) beyond the control of the defense enterprise (hereafter also "enterprise"), but defense leaders do have avenues to provide advice and influence national leaders toward plans, programs, and policies that enhance access to and responsiveness of these kinds of resources at the onset of war. *Access* and *responsiveness* comprise two facets of what is known as *mobilization readiness*, the combined state of the defense enterprise for large-scale operations beyond its organic capacity and the nation's ability to transition out of a peacetime standing and into a war footing.[4]

It is useful to further subdivide this form of readiness to *civil mobilization* and *force mobilization* as these reflect two different phases of

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[3] Michael E. Lynch (project lead), *"Come as you are" war: U.S. readiness for the Korean conflict* (Carlisle, PA: Army Heritage and Education Center, 2019).

[4] Richard K. Betts, *Military readiness: Concepts, choices, consequences* (Washington, DC: Brookings Institution, 1995), 42.

the transition of resources from civilian to military hands and involve distinct entities performing different functions.[5] Civil mobilization refers to non-DoD entities, such as "the transformation of industry from its peacetime activity to the industrial activity necessary to support military objectives,"[6] mobilization of national and foreign infrastructure such as ports or bases used for power projection,[7] and civilian hospitals and medical services.[8] Civil mobilization involves everything involving the identification, activation, and distribution of national assets (personnel, materiel) to the defense enterprise.

Force mobilization involves defense enterprise actions to convert those resources to forces trained and ready for employment.[9] It is more comprehensive than readiness at echelon because it includes the capacity to provide the additional training, configure entities with required manning and equipment, and deploy them in the designated sequences and quantities.[10]

1.B. Vignette II: America's first battles (1986)

Charles Heller and Bill Stofft's 1986 book *America's first battles: 1776-1995* examined the performance of the U.S. Army in its first battles of major wars, and the news here is not good. Historians Charles Heller and William Stofft presented an assumption that "it makes a great deal of difference how the [military] prepares in peacetime, mobilizes for war, fights its first battle, and subsequently adapts to the exigencies of combat."[11] The nature of warfare is that one can never know with certainty that a force is ready until the war's onset. John Shy, in the same edited volume, suggested this is the case because the only realistic standard by which readiness can be measured is in comparison to the actual enemy faced, and that no idealized or general-purpose measure of readiness can ever be reliable. Therefore, any measures of readiness used during peacetime are mere indicators.[12] The true state of readiness can

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[5] S. Craig Moore, Jack A. Stockfisch, Matthew S. Goldberg, Suzanne M. Holroyd, and Gregory G. Hildebrandt, *Measuring military readiness and sustainability* (Santa Monica, CA: RAND Corporation, 1991), 74.

[6] Moore et al., *Measuring military readiness*, 53.

[7] Lawrence B. Morton, Mark R. Lewis, and John R. Brinkerhoff, "The Global Status of Resources and Training System (GSORTS)," in John C. F. Tillson (Project Leader), *Independent review of the DoD's reporting system*, IDA Paper P-3569 (Alexandria, VA: Institute for Defense Analyses, 2000), Appendix C, C-35. Hereafter "GSORTS."

[8] "GSORTS," C-36.

[9] Moore et al., *Measuring military readiness,* 81 and Figure 8, page 85.

[10] Moore et al., *Measuring military readiness*, 80.

[11] Charles E. Heller and William A. Stofft, *America's First Battles: 1776-1995* (Lawrence, KS: University of Kansas, 1986), ix.

[12] John Shy, "First battles in retrospect," in Heller and Stofft, *America's first battles,* 339; Collins, *Military preparedness*, 7 said that "peacetime and wartime standards are dissimilar."

only be known after the war begins and the force faces the enemy on the battlefield, upon which the force may experience a round of "frantic improvisation" to adapt the force's design to the situation.[13]

1.C. Vignette III: V Corps to CJTF-7 in Iraq (2003)

Following IRAQI FREEDOM, V Corps served as an operational headquarters leading the fight while the Combined Force Land Component Command (CFLCC) had responsibility for managing the theater. Due to expectations that post-combat stability (so-called "phase IV") operations would be brief and that a smooth transfer to a new Iraqi government was forthcoming, the decision was made to pull CFLCC out of the theater and hand responsibilities for phase IV over to V Corps, which would be renamed CJTF-7.[14] However, it was clear by May 2003 that combat operations ("phase III") were not over. Therefore, CJTF-7 would have to lead both phase III and phase IV operations simultaneously, which created some confusion over authorities and rules of engagement.[15] At the same time, the U.S. was always redeploying forces out of Iraq.[16]

Army doctrine established that a corps headquarters could serve as a joint task force if suitably augmented with personnel. However, the new task force would have to simultaneously operate at tactical, operational, and strategic levels. Augmentation would not only have to be quantitative (i.e., fill all the necessary positions for a joint task force), it would have to provide the skills, expertise, and knowledge necessary for the task. CJTF-7 leaders noted that strategic plans, operations, intelligence, and strategic communication were severely understaffed through the first year and the available skills and expertise were oriented for the conventional fight more than conducting phase IV operations.[17]

Despite these difficulties, CJTF-7 was able to develop and implement its own (unnamed) campaign plan from the summer of 2003 through January 2004. It nested within the strategic guidance and direction issued from the combatant command and other headquarters in theater. It was also necessarily a full-spectrum campaign plan, designed for "simultaneous emphasis on combat and stability operations."[18] There were five lines of operation identified, although these were more

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[13] Shy, "First battles," 339.

[14] Donald P. Wright and Timothy R. Reese, *On Point II: Transition to the new campaign – The United States Army in Operation IRAQI FREEDOM, May 2003-January 2005* (Fort Leavenworth, KS: Combat Studies Institute Press, 2008), 144-150.

[15] Wright & Reese, *On Point II*, 148.

[16] Wright & Reese, *On Point II*, 163.

[17] Wright & Reese, *On Point II*, 157-161.

[18] Wright & Reese, *On Point II*, 163.

descriptive that prescriptive in terms of required outcomes and actions: (1) security, (2) establishment of essential services, (3) governance, (4) restoration of the economy, and (5) information operations.[19] This campaign plan would eventually be instituted as a fully-developed operations order by early 2004 before CJTF-7 transferred responsibilities to the Multi-National Forces-Iraq later that year.[20]

Lieutenant General Ricardo Sanchez would remember the work of the CJTF-7 staff as preventing a difficult situation from becoming a complete disaster based on hard work and determination:

> *As ugly as it was and as difficult as it was, it was their individual efforts, their ingenuity, their adaptability, and it was the leadership that just went out and say, 'hey, this has got to be done. We will figure it out.'"*[21]

1.D. Vignette IV: USAHEC Case Studies (2022)

In the 2010s, the Army Heritage and Education Center at Carlisle Barracks developed a series of case studies to illustrate the complexity of land warfare and risks of the U.S. not being militarily prepared when the war began. Below is a sample of the cases explored:[22]

- *World War II Mobilization* – After World War I and amidst calls for a "return to normalcy," the Army suffered under benign neglect – skeletonized, structured with little modernization, tied down with numerous constabulary missions, and lacking a suitable industrial base for equipping. In short, the will to be militarily prepared was absent. WWII demonstrated the importance of maintaining adequate capacity of forces and of national war materiel to enable the regeneration of forces as casualties and equipment losses mounted.

- *Urgent Fury, Grenada* – Significant problems of conventional-special operations and joint interoperability plagued this operation, demonstrating the criticality of being ready for unplanned contingencies at any time. Thus, maintaining joint (and therefore also interagency, multicomponent, and coalition) capabilities requires continuous practice.

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[19] Wright & Reese, *On Point II*, 163.
[20] Wright & Reese, *On Point II*, 164.
[21] Wright & Reese, *On Point II*, 164.
[22] Con Crane, et al., *Military unpreparedness and the complexities of land power, 1917-2010* (Carlisle, PA: Army Heritage and Education Center, 2022), https://media.defense.gov/2023/Apr/21/2003205506/-1/-1/0/3267.PDF

- *Reserve Integration, Desert Storm* -- The challenges of transitioning reserve component combat units from a strategic to an operational reserve -- pre-mobilization training, activating personnel, training units at the collective level, and professional development were all problematic. The enduring lesson learned was the importance of interoperability, a key goal in the Army Transformation that followed.

- *Task Force Smith* -- In post-World War II, the 24th Infantry Division occupied Japan as a constabulary force but was poorly equipped, badly understrength, and insufficiently trained for a conventional fight; still, the US sent it into battle in response to the North Korean invasion of the South. The difficulties and heavy casualties experienced showed the risks involved with employing units that were neither designed nor sufficient for the mission.

In every case, the researchers found that strategic decision makers accepted risks to national preparedness in peacetime to conserve resources. This was partly because of underestimating enemy capabilities or due to strategic or technological surprise when the enemy used an unanticipated method or approach to initiating the conflict.[23] But of greater concern are instances where the U.S. overestimated its own capacity to fight or allowed past victories to hide the difficulties in getting the force up to fighting standards at the beginning of the war, or assumed that being militarily prepared was unnecessary or too expensive.[24] An overconfident MacArthur, for example, allowed rapid success at Inchon to convince himself of the lack of will and capabilities of the Chinese, whose subsequent counteroffensive took advantage of American vulnerabilities in the mountainous terrain.[25]

1.E. Implications

In the 2020s, DoD finds itself in a similar position as global strategic competition intensifies. The 2022 Russian invasion of Ukraine, the 2023 Israel-Hamas conflict, and the "pacing challenge" of China show that state and non-state actors are becoming more willing to confront the

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[23] Crane et al., *Military unpreparedness*, 4.
[24] Crane et al., *Military unpreparedness*, 37.
[25] Crane et al., *Military unpreparedness*, 30.

international order.[26] Meanwhile, the U.S. military finds itself facing significant recruiting challenges and negative perceptions from society due to sexual harassment and assault, suicides, post-traumatic stress disorders, political extremism in the ranks, a smaller recruiting base, and overall decreasing confidence from U.S. society.[27]

While militaries have always focused on the proper balance between being able to respond to today's crises while developing the right capabilities for future warfare, the military cannot and could never conduct operations on its own. There has been insufficient theorizing about what it requires to consider a nation, with its military, to be prepared. The remainder of this book seeks to close that gap.

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[26] Remarks of Chairman of the Joint Chiefs of Staff General Charles Q. Brown, summarized in Joseph Clark, "Brown: Joint force must continually drive change as threats evolve," U.S. Department of Defense, April 17, 2024, https://www.defense.gov/News/News-Stories/Article/Article/3744218/brown-joint-force-must-continually-drive-change-as-threats-evolve/

[27] Richard Sisk, "The military recruiting outlook is grim indeed," Military.com, January 22, 2024, https://www.military.com/daily-news/2024/01/22/uphill-battle-boost-recruiting-military-faces-falling-public-confidence-political-attacks-economic.html

2. Foundational Concepts

In terms of planning and many administrative activities, national preparedness and military readiness reflect two separate but complementary domains of action. When one asks the simple question *Can we defeat <fill in the blank>?* the answer includes both. The military cannot win on its own and certainly cannot consolidate victory unless the nation does its part. In times of prolonged major combat operations, national support is a must as the military will require an influx of personnel, weapon systems, supplies, and other resources to replace or supplement what combat has consumed. The military may have some visibility on the nation's capacity, but it is limited. Moreover, a nation's will to sustain a war effort is uncertain and depends on the character of the conflict, the nations' political aims, and the will of the public – the last of which can change in unforeseen ways.

What about a humanitarian mission, disaster relief, peace operations, building partner security capacity, <or other mission below combat>? If the nation deems it important but the military has not trained on it, the mission could be in doubt and any failures may influence other important national security interests. Because of their immense capabilities and adaptability compared to other options, militaries tend to be used for missions unrelated to warfighting like fighting wildfires or repairing levees in the U.S. Thus, national preparedness and military readiness represent a dialogue over requirements, strategies, resources, and risk. Harmonizing them at a conceptual level is hard enough, doing it in practice is the sort of thing that keeps leaders up at night.

This chapter addresses some of the foundational concepts that allow one to understand and analyze both national preparedness and military readiness. It begins with descriptions of what national preparedness and military readiness mean, followed by three sections presenting choices or available options for senior leaders. The first concerns the strategy and Betts' (1995) three questions – *readiness for what? For when? And of what?* The answers can produce a wide range of force planning options and translate the strategy into military force structures and posture. The second presents the measures of national preparedness and military readiness, what Collins (1994) called the *principles of preparedness* but updated for the 2020s. What does being "prepared" or "ready" mean in terms of metrics and analysis? The final section covers risk and recurring tensions and tradeoffs common to both the national and military perspectives.

2.A. What are the separate responsibilities of the nation and its military to be prepared for war?

This is an important question. Obviously, nations and their militaries should strive to close gaps between the conditions of peacetime preparations and the conditions of war. National strategies and military plans must accurately delineate the interests and objectives of the nation. The military must be designed properly to satisfy the objective of that strategy. Then, the military must implement realistic and immersive training and posture itself to deter or dissuade aggression and to fight and win if needed.

All the while, the nation should grant the necessary resources for staffing, training, and equipping its military as the military cannot provide such resources organically for itself. The military depends upon a national recruiting base that can provide enough volunteers (or in the absolute worst case, draftees) with the requisite physical, mental, and spiritual competencies to serve so to overcome the ordinary turnover of personnel that militaries experience. The military also depends on access to special capabilities that may be too expensive or rapidly changing for the military to maintain on its own — cyber, military doctors, military intelligence, combat engineers, power projection, and so many others. Nations might depend on partner capabilities as well, such as additional combat capabilities, access to ports and roads, and real property. But the nation also must pay attention to its homefront. In the past, the U.S., for example, has asked a lot of its citizens to ensure the optimal flow of resources to the soldiers in battle such as rationing and reconfiguring the industrial base. Nations must also assume that domestic troubles may accompany any future war, and the probability exists for adversarial actors and domestic threats to engage in misinformation and disinformation campaigns, sabotage against domestic capabilities, terrorism or criminal activities, and other actions to distract combat forces. And even if the strategies and plans are right, the enemy gets a vote. One must assume that a future adversary will do everything in its power to exercise strategic surprise and catch a nation flatfooted, setting conditions to repeat the unpreparedness experiences of the past.

General responsibilities of a nation

Of course, without a shared understanding of the respective responsibilities of the nation and its military, it is difficult to analyze to what extent national preparedness and military readiness problems exist, and who needs to remediate them, and how. First, I will offer the following as a descriptor of a nation's responsibilities relevant to military

readiness, a construct of *national development*.[28] From ancient times, societies existed to protect its people from strife such as war, famine, pestilence, and internal discord.[29] Regardless of which form the society structured itself, there are generally four functions that its governing body performs: (1) providing an economic surplus, (2) maintaining economic and social order, (3) supporting national cultural integration, and (4) educating the people.

Providing an economic surplus is the true aim of maintaining an economic system. Developed societies normally consume more than they produce, so are rarely self-sufficient. They must acquire additional goods and services externally through trade or conquest or from among its own people through tax systems or stockpiles. The surplus is necessary for a nation to invest in its own protection and failure to do so risks accumulating debt, becoming stagnant, or losing comparative advantage against other societies.

Maintaining economic and social order includes establishing law enforcement and judicial systems, plus the relationships between what responsibilities a society's government holds versus what is left to the individual citizen. Governments establish and sustain social contracts with its citizens and recognized subgroups (e.g., government subdivisions such as states, provinces, localities; corporations and other private entities; government agencies), which includes establishing expectations and rules regarding military service.

National cultural integration involves the reception and on-boarding of people inside and outside the society. The nation promotes a common identity with associated symbols, myths, and shared understandings; along with rules and norms that govern to what extent the citizens must follow them. Because of their important role of national defense, militaries can become an important instrument of cultural integration.

Finally, *education* is about much more than schooling, it is the overall process of managing and disseminating information vital to the identity and the abilities of citizens to be productive members of society and contribute the other functions above. In addition to schooling, this includes systems of apprenticeship or professionalization, instilling and

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[28] John Boswell, lecture to "Ideas and Issues in Education," course EDU 8110, Executive Leadership Doctoral Program, The George Washington University, June 2012.

[29] Specific reference was made by John Boswell to the "four horsemen of the apocalypse" which is a Christian metaphor derived from the Bible's Book of Revelation, however the lecturer presented them as universal challenges facing all societies.

sustaining societal values,[30] and participating in governance.[31] Fulfilling this responsibility contributes to a viable national recruiting pool of citizens or individuals who, should the nation require, can serve in the military or support it as civilians in government roles.

General responsibilities of a military

A military is but one government agency that contributes to nations' advancing their interests. It also embodies one of the so-called instruments of national power alongside diplomatic, information, and economic that nation's develop through the conversion of resources into capabilities.[32] The military instrument of power is used to threaten or exercise organized violence against a nation's adversaries, foreign and domestic, to provide for the common defense.[33] However, among democratic nations the preference is that exercising violence should be as a last resort, with the desire to restore a better peace afterward. Hence, militaries include among their roles and missions deterring adversaries from aggression, compelling them to take beneficial actions, reassuring allies and partners and, if necessary, defeat adversaries.[34]

Militaries typically fulfill these responsibilities at two levels. First, militaries continuously dissuade, deter, and compel adversaries while reassuring allies and partners through the conduct of day-to-day shaping operations. Second, when necessary and authorized by national leaders, militaries deploy to, fight, and win wars and ideally establish a better peace afterwards. The implication is that in times of war, nations continue to require their militaries to continue some degree of shaping operations concurrently with the war, to preclude a war's spread or to prevent another war from starting.

Note that these responsibilities are described very broadly, and it is national leaders who directly or indirectly establish the military's specified responsibilities. Through strategies or other strategic guidance, each nation establishes outcomes that determine or inform what militaries are permitted to do or forbidden from doing to shape the environment in peace and prosecute a given war. Each nation also

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[30] Boswell said this would include membership in civil, religious, volunteer, veterans, charitable, and other organizations promoting a nation's goodwill.

[31] Boswell said this would include running for office, lawful protest, jury duty and other mandatory duties specified in law by a national government.

[32] Craig W. Mastapeter, *The instruments of national power: Achieving the strategic advantage in a changing world* (master's thesis, Monterey, CA: Naval Postgraduate School, 2008), 180.

[33] Paula Thornhill, "'Beyond the beltway' – what's the civil-military crisis?" *War on the Rocks* (blog), June 17, 2020, https://warontherocks.com/2020/06/beyond-the-beltway-whats-the-civil-military-crisis/

[34] John F. Troxell, "Military power and the use of force," in Boone Bartholomees (ed.), *Volume I: Theory of war and strategy* (Carlisle, PA: Strategic Studies Institute, 2012), 219-224.

establishes the boundaries of the military organization, such as imposing constraints on its size, cost, or commitments required of the citizenry.

Crisis as a disruptor

Crisis is anything that disrupts the ordinary pursuit of national development. They can include environmental disasters like earthquakes, tsunami, or hurricanes or monsoons; social emergencies such as epidemics, famines, and rioting or other discord; and man-made disasters such as chemical spills, terrorist attacks, economic depressions, or cyberattacks.[35] Similar words that will be treated here as synonyms include *disasters* and *emergencies.*[36] One rarely thinks about applying the term crisis to individual events that constitute only a routine response, however it is also important to think of the mass accumulation of similar events as potentially representative of a threat to economic and social order, cultural integration, or the ability to provide a surplus. The COVID-19 pandemic provides an excellent example. Tragic as any premature loss of human life can be, it was the aggregated threats of widespread contamination, disruption to daily life, and the associated fear and uncertainty among the population that turned it into a significant crisis.

Each nation establishes its own framework for responding to national crises. It is beyond the scope of this book to describe the components of such frameworks in detail, but the US example is useful for illustration. Its National Preparedness Framework includes five "mission areas" that reflect disparate activities oriented around different phases of a potential crisis – (1) prevention, (2) protection, (3) mitigation, (4) response, and (5) recovery. These align with one pre-crisis phase to preclude a crisis from occurring, three phases associated with countering the crisis *in toto* or limit its effects, and one post-crisis phase to restore to the maximum extent possible the *status quo ante.*

Each nation determines the division of responsibilities associated with its crisis response capabilities. This includes assignment of agencies serving as proponents for responses to particular types of crises,

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[35] Federal Emergency Management Agency (FEMA), *National Preparedness Goal,* 2md ed. (Washington, DC: Department of Homeland Security, 2015), 4-5, https://www.fema.gov/sites/default/files/2020-06/national_preparedness_goal_2nd_edition.pdf

[36] FEMA treats them differently as matters of scale rather than the type of situation. One source, "Livestock in disasters," Unit 4, (training pamphlet, Washington, DC: Federal Emergency Management Agency), https://training.fema.gov/emiweb/downloads/is111_unit%204.pdf says that "Emergencies are usually small-scale, localized … disasters are typically large-scale and cross geographic, political, and academic boundaries," but that emergencies can escalate into disasters "when there has been inadequate planning and wasteful use of resources," pages 4-4 & 4-5.

establishment of standing or on-call organizations to provide capabilities needed across the five phases, and the capability to tap into national resources more widely to address crises that are beyond the nation's organic response capabilities.

War as a significant form of crisis

Rather than define war precisely which is difficult,[37] I will use a general description of it to serve present purposes for describing the components of national preparedness and military readiness. The description focuses on two points – what activities it encompasses and its impact on those undertaking it. War is defined in the Oxford Dictionary as a "state of armed conflict between different nations or states or different groups within a nation or state."[38] The Encyclopedia Brittanica adds an additional element, that the armed conflict involves "hostilities of considerable duration and magnitude" and is disruptive to the combatants involved, exercising a "profound influence" on life.[39] It is probably not feasible to specify a timeframe that constitutes a "considerable duration" but suffice to say that wars either prolong themselves longer than either combatant desires or at least one of the combatants must prolong the war in hopes of winning by attrition if swift victory is not in the cards.[40]

Thus, one expects that the resources committed to the establishment and sustainment of a military during peace are insufficient for prosecuting a war. The nation would need to pool its resources (e.g., personnel, materiel, and real property) and redirect them toward a war effort. It disrupts lives and livelihoods before, during, and after the war. Natural resources can become depleted. Facilities and infrastructure may be destroyed. War may also result in a permanent (or long-term temporary) rearrangement of the economic and social order, particularly for the vanquished.

However, war can also be an enabler of national development, though it depends on the political outcomes sought among the combatants. For example, according to the theories of *resource wars*, many wars since industrialization have begun on the premise of one nation needing or wanting resources withheld by another nation or perceiving an existential threat such as that of a potential invading or infiltrating

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[37] A useful discussion of the difficulties of defining war is given in Emile Simpson, "Clausewitz's theory of war and victory in contemporary conflict," *Parameters* 47, no. 4 (2017): 7-18, 10-11.

[38] Oxford Languages, s.v. "War," via Google English Services.

[39] Encyclopedia Brittanica, s.v. "War."

[40] Ralph Peters, "In praise of attrition," *Parameters* 41, no. 4 (Winter 2011): 24-32.

nation or group. [41] The conquering of another nation or part of its territory can make resources available extend one's economic or social order onto another group of people, and alter a nation's standing in the global order. Why any war starts is beyond the scope of this book. Rather than focus is on how prepared a nation is should a war begin.

National preparedness, like military readiness, is not just a peacetime function that ends when the fighting begins. The need to pursue or posture for an economic surplus (or avoid crushing deficits), sustain economic and social orders, sustain the people's will and support, and continue (or alter) education remains to some extent. As the war continues, the nation must evolve its war posture in anticipation of the cessation of hostilities while also ensuring continued support to the fighting forces. After the war, whether firmly resolved via a treaty or armistice or simply a cease-fire that pauses the conflict, the nation must determine to what extent it will enact a peacetime footing while accounting for a possibility of renewed hostilities.

Implication

National preparedness is the sum of the nation and its military each meeting its respective responsibilities to ensure both what is required (on-hand or in reserve) in the proper condition for military operations as specified or implied in the strategy. All shortcomings must be assessed for their risk to the strategy. The very meaning of military readiness depends on the nation's strategic aims and objectives and the extent to which the military is postured and resourced to satisfy them.

However, nations have many concerns and military readiness is but one. Collins (1994) wrote at a time when the likelihood of war seemed greatly reduced, saying "U.S. policymakers in the past allowed military [readiness] to lapse after every major war," [42] and applied this same concern as the U.S. prepared for the significant drawdown following the collapse of the Soviet Union and end of the Cold War.

The implication is that the military may be ready, but if the nation is not prepared, it will be difficult for the military to fight, win, and secure peace afterwards. So national leaders must ask, *what do we expect our military to do?* In times when there is a clear adversary making direct threats against the nation, it may be simpler to answer that question –

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[41] Daron Acemoglu et al, "A dynamic theory of resource wars,' *The Quarterly Journal of Economics* 127 (2012): 283-331,
https://economics.mit.edu/sites/default/files/publications/A%20Dynamic%20Theory%20
of%20Resource%20Wars.pdf

[42] Collins, *Military preparedness*, 1.

deter and defeat that adversary if necessary. When the threat is less clear, the requirements passed to the military can get rather broad.

Therefore, *military readiness* is defined as the capacity of a nation's military to fight <u>as designed</u> to satisfy national strategies and plans. It also includes the capacity to manage these capabilities so they can be effectively and efficiently mobilized, employed, sustained, redeployed, and regenerated for military operations.

2.B. What are the essential questions?

Managing national preparedness begins with the question of how a nation confronts its internal and external threats. Nations must make assumptions about how their adversaries or competitors operate and plan to fight. These assumptions change as the global environment changes. For example, during the Cold War, the U.S. Army included Soviet doctrine in its professional military education to ensure its leaders understood the likely ways that Warsaw Pact nations would fight in central Europe. However, since the end of the Cold War, the U.S. has faced many different threats ranging from near-peer competitors to violent extremist groups.

The nation therefore uses strategies (or *strategy documents*) to express the nature and character of the threats it faces. These strategies are thus translated into plans that drive enterprise decisions regarding the capabilities required. Naturally, any assessment involves assumptions about both the friendly and threat environments and capabilities. Yet, conditions at the onset and conduct of the war may differ from expectations set in the strategies and plans or by political leaders. A prime example regards assumptions about the duration of a conflict, which has historically gone longer than expected. Claims that a conflict will be short and that the troops will be "home by Christmas" were made by General MacArthur about Korea.[43] and similar artificial deadlines and promises have been used in other conflict to assuage public fears of protracted commitments, only to see them become protracted anyhow.[44]

Ken Betts explains in his seminal book on *Military Readiness* (1995) that the aftermath of the Cold War created expectations inside and outside the military that the nation had to be prepared for any mission at any time. As a result, the U.S. assigned high values on rapidly deployable

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[43] Douglas MacArthur, "'Home by Christmas' statement," *Washington Evening Star*, November 28, 1950, https://www.trumanlibrary.gov/public/MacArthur_DocumentSet.pdf.

[44] For example, Amber Philips, "Why no American president followed through on promises to end the Afghanistan war — until now," *Washington Post*, August 18, 2021, https://www.washingtonpost.com/politics/2021/08/18/why-no-american-president-followed-through-promises-end-afghanistan-war-until-now/ chronicled the efforts of four Presidents to end the conflict in Afghanistan.

and expeditionary capabilities. But Betts asked if a nation prioritizes such rapidly deployable forces, would there be enough resources invested in the follow-on capabilities that would hold terrain?[45]

Betts was concerned about both capabilities and time when defining the state of the military. In his views, a nation is prepared "as long as the time needed to convert potential capability into the actual capability needed is not longer than the time between the decision to convert and the onset of war,"[46] and is not prepared "when a gap between its actual and potential capability causes a gap between the supply of capabilities and the demand for it."[47] He asked three very important questions that determines how a nation manages preparedness over the long term.

Readiness for what?

This question produces answers that begin to distinguish what roles and missions a nation assigns to its military in its strategy and what it assigns to other agencies. A nation should be prepared for a wide range of emergencies of which war is but one. Each of the instruments of national power (which for present purposes I will use DIME-FIL[48]) respectively align with various crisis situations. The following are representative examples of crises against each instrument of power. Crises can vary in intensity from mild or routine to severe:[49]

- *Diplomatic* – conflict or tension between nations or between a nation and a multinational organization, severance of ties/expulsions of diplomats

- *Informational* – failures of public diplomacy, intelligence failures, ideological conflict (internal or external)

- *Military* – war, breach of the homeland, international terrorism abroad, breakdown of peace or renewed hostilities

- *Economic* – response to natural and man-made disasters or crises, humanitarian assistance (e.g., refugee flows), domestic terrorism, exposure or theft of critical intellectual properties,

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[45] Betts, *Military readiness*, 43-44.
[46] Betts, *Military readiness*, 27.
[47] Betts, *Military readiness*, 27-28.
[48] Cesar Augusto Rodriguez, Timothy Charles Walton, and Hyong Chu, "Putting the 'FIL' into 'DIME': Growing joint understanding of the instruments of power," *Joint Force Quarterly* 97 (2nd Quarter 2020): 121-128.
[49] Stephan Gundel, "Towards a new typology of crises," *Journal of Contingencies and Crisis Management* 13, no. 3 (2005): 106-115. Also note that just because military assets are sometimes used is not to equate that with the military instrument of power.

severance of access to vital raw materials or other resources, supply chain failure

- *Financial* – market crash or depression, interference from outside market forces

- *Intelligence* -- exposures/theft of sensitive or classified materials, strategic surprise

- *Law Enforcement* – critical border security breach, civil disorder, operation of large criminal organizations

Different national agencies or ministries exercise responsibilities for preparedness against these and other national crises. Some crises may require the mobilization of resources aligned with other instruments of national power, such as how the U.S. military could be asked to provide personnel and equipment in support of a disaster relief operation. In the U.S., preparedness also involves the divisions of authorities and responsibilities at federal, state, and local levels. For example, some crises are initially the responsibilities of the states who then in turn would formally request federal assistance. Earthquakes and hurricanes are examples where states or local governments may sustain a combination of on-hand assets and individual volunteers depending on the propensity for such events, with the ability to seek federal help should an event exceed local capacity. Thus, like military readiness, each instrument of power may have readiness metrics specific to that instrument.

As the strategy is translated into roles and missions for the military, the military can then design and implement the forces needed. An important consideration is whether the force planning is threat-based or capabilities-based, as these result in two vastly different approaches to establishing and using readiness metrics.

Threat-based is the simpler case. One designs the force around specific mission requirements to confront each threat, and readiness measures are founded on calculating the expected differences between friendly force capabilities and those of each adversary. In a Cold War-style environment with a known adversary X, if the mission is to deter and defeat X, then the force should be designed such that friendly forces are superior to X. If so designed, forces are measured regarding how much of their capabilities are on-hand and ready, as having their full complement assures the nation that the military has enough to deter and defeat X. The challenge is determining what is meant by "superior." If "we" and "they" have the same type of ship and "we" have one hundred while "they" only have seventy-five, "we" can make the claim that we

are superior. Or the difference could be that "our" airframes are fifth generation and "theirs" are only fourth generation. As the principles of preparedness will show, measuring superiority is more complicated than it appears.

The other type of strategy is *capabilities-based*, also known as conditions-based, and is generally not preferred by military planners but often cannot be avoided. This covers conditions of greater uncertainty where there is not a clear adversary or the potential type of war to be waged is unknowable. Rather than planning against known adversaries, planners design the force around national expectations expressed in the strategy regarding the ranges of anticipated crises and military responses to them. Assumptions must be made about the most likely and most dangerous contingency situations, leading to a force posture that is optimized against those situations and the many other possibilities in between in hopes that actual crises that eventually occur are as close as possible to what force planners anticipated.

Force planning should therefore inform national leaders of the requirements placed upon the nation for resources and support. What agreements and authorities may be needed with the help of diplomacy? What access to critical infrastructure is needed, particularly if it involves conversion for military use? What about having enough people, or having the capability and capacity to nationalize assets in the worst case?

Readiness for when?

This question is about the time needed to get the force from its peacetime posture to a warfighting posture.[50] Betts explains that an important part of the calculus is the adversary's actions or the emerging conditions that require political decisions that lead to employment of the military in response.[51]

Threat-based and capabilities-based planning lead to quite different ways of approaching time. The European theater during the Cold War is an example of threat-based posturing. Forward units were at high readiness so to blunt the anticipated Soviet advance. This allowed additional forces to mobilize and deploy from the continental U.S., to fall in on prepositioned stocks in a forward location and take the positions to relieve the engaged forces. The *when* was counted in days that the forward forces had to hold the ground.

The nation's support requirements were straightforward and predictable to a point. It could be anticipated how quickly contractors

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[50] Betts, Military Readiness, 33.
[51] Betts, Military Readiness, 33.

had to secure and open ports, when a selective service system had to be activated or reserve component elements mobilized, or when legislative action was needed to provide wartime funding and resources.

In contrast, capabilities-based planning translated into a more expeditionary force design where small units were designated as "ready companies" and placed on high continuous alert for short periods of time. They were ready to be "wheels up" within a set number of hours, however they might deploy without knowing much in advance about what the mission was or where. Their purpose was taking immediate ownership of the situation while tailored force packages were prepared to follow. The nation's support requirements were essentially the same, but the uncertainty around when and where forces would be needed made it challenging to sort out in advance who needed to be prepared to do what.

Readiness of what?

Combined with the above two, this concerns how much capability must be at high readiness and how much of it can be mobilized later from the reserves or through a national mobilization. Military capabilities can only be kept at high readiness for a period of time until equipment begins to degrade, and soldiers wear out. If one postures forces forward to directly confront a threat, one must consider how to replace those forces over time by rotating personnel and equipment, relieving whole units with replacements, or occasionally taking risk and temporarily downsizing forward presence.

There are various tools that force planners use to optimize the force design with available resources. *Force mix* is the balance of capabilities placed in the active and reserve components. It is one way of systematizing preparedness for when. Another way is through outsourcing – conserving military assets for core warfighting tasks while preserving access to critical support capabilities that are too expensive or impractical for the military to maintain organically.

Implication

Of course, answering these questions in peacetime involves many assumptions. Even when an adversary is well-known and understood, strategic surprise is always a possibility. The adversary may exercise deception regarding its ends, ways, and means. The nation *and* its military must therefore exercise agility to adapt to the war being fought which may differ from the one expected (e.g., different location, type, intensity, or duration). Therefore, the national and military postures -- how many of what types of capabilities, where located, and at what condition – could prove disadvantageous in unpredictable ways.

Military readiness is also stratified at two levels. *Unit readiness* reports how well a unit is resourced and trained to meet its given mission. Partly, it measures what Harrison (2014) calls the *inputs* of readiness – such as quantities or percentages of personnel, materiel, training capacity, flight hours, and so on compared to how the unit was designed.[52] *Strategic readiness* aggregates unit readiness and assesses more of Harrison's (2014) *outputs* of readiness, such as a service's capacity to perform assigned missions, whether it is the general purpose mission or mission list specific to an operation.[53]

Meanwhile, *national preparedness* is the capacity of the nation to provision personnel, materiel, real property, and (most importantly) the will of both the government and the people. As preparedness is not defined in joint doctrine, this book proposes the following, "the actions taken to plan, organize, equip, train, and exercise to build and sustain the capabilities necessary to prevent, protect against, mitigate the effects of, respond to, and recover from threats to national security interests."[54] For clarity, I will use the term *national preparedness* from now on in the book. The word "preparedness" will not stand alone, and "military preparedness" as expressed in Collins (1994) will no longer appear in this book.

As stewards of the military profession, defense leaders straddle the boundary between national preparedness and military readiness. They advise national leaders on the strategies based on their diagnosis of the current and future security environments and judgments regarding the needed forces (types and quantity) to best protect the nation, along with rational assessments of the risk assumed if those forces are not provided. They develop plans to convert resources into capabilities, and then monitor the state of those capabilities as readiness reports.

In the next chapter, I will present a series of foundational concepts that underpin both national preparedness and military readiness. It

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[52] Todd Harrison, "Rethinking readiness," *Strategic Studies Quarterly*, Vol. 8, No. 3 (Fall 2014).

[53] For example, the core mission essential task list (CMETL) and directed mission essential task list (DMETL) of the 2008 revision to Department of the Army, *Training for Full Spectrum Operations*, Army Field Manual 7-0 (Washington, DC: Department of the Army, 2008). The DMETL construct was a second mission task list that units preparing to deploy would train on, while the CMETL was in effect at all other times. The current version, Department of the Army, *Training*, Field Manual 7-0 (Washington, DC: Department of the Army, 2021) modified the construct to simply *METL* and *assigned mission METL* that addresses additional tasks conferred by a unit's higher commands which may or may not be associated with a deployment.

[54] Definition is loosely based on the definition of preparedness used for national emergencies in Barack H. Obama, *National Preparedness*, Presidential Policy Directive 8 (Washington, DC: Department of Homeland Security, 2011). http://www.dhs.gov/presidential-policy-directive-8-national-preparedness

includes factors related to the strategy documents, the fundamental questions that military planners must answer to bridge strategies to forces, and the measures by which both the nation and its military should use to determine to what extent they are prepared and ready.

2.C. What are the different ways to describe and measure one's preparedness?

The question then becomes whether the response capacity, whether on-hand, on-call, or to be mobilized is adequate. Unfortunately, national preparedness and military readiness are difficult to quantify.[55] Answering Betts' questions involves forecasting and judgment about what the nation and its military need to be prepared for.

Therefore, the approach taken here is a first-principles approach to measurement initially presented in Collins (1994). His nine *principles of preparedness* constituted a companion to the principles of war from U.S. Army doctrine published the year before.[56] These would help "U.S. planners, programmers, and budgeters [sic] fashion ready, sustainable armed forces, at reasonable costs."[57] These principles are updated for the present day and will be used to describe what being prepared for war means.[58] They also constitute a taxonomy of a military's comparative advantage (or disadvantage) against an adversary.[59]

Alignment of Roles and Missions

Collins' original principle was called purview, defined as follows: *Armed forces perform best when organized, equipped, and trained to fulfill particular responsibilities*.[60] The principle was founded on the idea that military organizations needed clarity of their roles, functions, and missions, which in turn should determine their structures and states of readiness. His focus was on the services, in part to ensure that units and commands had clear responsibilities and that redundancies were minimized. Preparedness was a matter of the capabilities in total

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[55] Harrison, "Rethinking Readiness."

[56] Department of the Army, *Operations*, Field Manual 100-5 (Washington, DC: Department of the Army, 1993), https://cgsc.contentdm.oclc.org/digital/collection/p4013coll9/id/49/. Collins also considered similar doctrine from the other services, but his focus of study was on the Army.

[57] Collins, *Military preparedness*, 41.

[58] For example, I consolidated a couple of them that overlapped significantly. Thomas P. Galvin, "A '*first principles*' approach to readiness," *ARMY Magazine,* 66, No. 8 (August 2016): 16-18.

[59] Thomas P. Galvin, *Leading change in military organizations: Primer for senior leaders* (Carlisle, PA: Department of Command, Leadership, and Management, 2019), 42-43, drawing from the nine principles of preparedness expressed in Collins, *Military Preparedness*, 41-49.

[60] Collins, *Military preparedness*, 41 called this "Purview."

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equaling or exceeding the amounts needed to fight and win the expected war.

This principle is expanded to a broader sense of alignment as it accounts for the roles, missions, and functions being properly defined. If the national strategy and associated war plans call for the services to perform roles and missions they lack capabilities for, this is a potential vulnerability that adversaries might exploit. As new domains (e.g., cyber) and new technologies arise, the defense enterprise must reassess the divisions of roles, functions, and missions to mitigate such gaps until the needed capabilities can be developed and incorporated.

The advantage of alignment would theoretically go to the force who can limit the gap between the expected and actual war. This would be the likely advantage of the aggressor, who initiates the conflict on their terms. Knowing the timeframe and capabilities required allows them leverage to ensure the force's preparedness.

Qualitative overmatch

Per Collins, armed forces perform best when manpower, weapons, equipment, and supplies are superior to those of the most capable prospective opponents.[61] Overmatch is a relatively simple measure to describe – 'our' capability qualitatively exceeds 'theirs' or vice versa. In other words, 'we' can do something 'they' cannot, and this provides 'us' a measurable comparative advantage. There are many ways to describe the overmatch. For example, 'our' capability could be more effective (better), more efficient (faster or cheaper), less harmful or wasteful, or negate an opponent's capabilities.

Overmatch cannot be assumed at the onset of war. Adversaries will try to shield their actual capabilities to either show greater advantage than available (i.e., bluff) or hide it so to encourage friendly forces to overcommit or err.

Quantitative sufficiency

Per Collins, armed forces perform best when manpower and materiel are numerically sufficient to fulfill assigned roles, functions, and missions in designated regions.[62] The raw numbers of ready units are only part of the answer, and it is easy to narrow the focus on combat units alone.[63] Rather, sufficiency governs all capabilities that a force would employ to conduct or support operations. While serving as Chief of Staff

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[61] Collins, *Military preparedness*, 45 called this "Qualitative Superiority."
[62] Collins, *Military preparedness*, 44 called this "Quantitative Sufficiency."
[63] Andrew A. Hill (Ed.), *The Root report: The Total Army*, Report of the Carlisle Scholars Program (Carlisle, PA: U.S. Army War College, 2016), 63.

of the Army, General Mark Milley's readiness guidance included that available capabilities must be sufficient to "shape the security environment," "set the theater," and "project national power."[64] Thus, in addition to having adequate combat formations, the force requires sufficient intelligence, communications, cyber, sustainment, medical, and others in adequate quantities to sustain the fight.

It is not guaranteed that having more of a capability is an advantage. For example, the capabilities may be stationed in the wrong places if the war occurs at a different location than planned. For example, the Army may have ten divisions, five aligned for war in a European theater and five for the Indo-Pacific. If war breaks out in a third theater, the potential diversion of divisions to that theater may create gaps in preparedness in the two main theaters.

Regionally expert

Collins said that *armed forces perform best when organized, equipped, and trained to accomplish missions in particular geographic regions.*[65] In peacetime, a force allocated to a specific war plan who trains and exercises in the expected theater of operations alongside their anticipated allies and partners should be more prepared than a force that lacks any experience or knowledge of that theater. Partner security capacity building and cultural awareness activities enhance preparedness, help preclude future conflict, and strengthen friendly resolve to win.

Consider how combat forces such as infantry, armor, or artillery may gain greater advantages through familiarity with the territory. During the Cold War, forces stationed in Europe enhanced their preparedness by leaders walking the ground and fully familiarizing with their assigned sector of operations during peacetime training and exercises.[66] In the previous example of the European division diverted to a fight in South America, that division may find itself at a strong disadvantage due to a lack of understanding of the terrain, weather, and available resources.

However, not all expected theaters of operation will be as available to friendly forces for such familiarization. Many nations discourage the presence of foreign forces on their soil except for limited occasions such

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[64] Mark A. Milley, *Army readiness guidance, Calendar year 2016-17*, Memorandum to U.S. Army Leaders (Washington, DC: Office of the Chief of Staff of the U.S. Army, January 2016).

[65] Collins, *Military preparedness*, 42, called this "Regional Peculiarity."

[66] The "terrain walk" as an examination tool was a primary technique of General Donn Starry through his career as both a corps commander in Europe and subsequently as Commander of the U.S. Army Training and Doctrine Command. Lewis Sorley (ed.), *Press On! Selected Works of General Donn Starry*, Vol. I (Fort Leavenworth, KS: Combat Studies Institute Press, 2009), xi.

as combined training. Regional expertise would have to be accumulated through other means.

Regional expertise is also perishable. The natural complexity of the strategic environment means that the political, economic, and social conditions in any given theater, including the domestic theater, are subject to change. To maintain competitive advantage, it may be necessary to invest resources in sustaining this expertise through partnership activities.

Interoperability

According to Collins, armed forces perform best when the mix maximizes the strengths and minimizes the weaknesses across components and among joint, interagency, and multinational partners. [67] As a principle, interoperability is about pursuing plug-and-play capabilities versatile enough to adapt to any situation with any force mix on the battlefield. In addition to components, joint, interagency, and multinational partners, one must also consider the public-private boundaries given the likelihood of contractors on the future battlefield, and domestic agents (e.g., state and local governments, private firms, publics) that the military would cooperate with in a homeland defense action.

Interoperability can be measured in several ways, but the overall approach is to gauge to what extent individual capabilities can cooperate and coordinate on the battlefield so they perform significantly better as a cohesive whole, rather than the summed performances of the individual capabilities in isolation from each other. Interoperability takes on different meanings at echelon. For example, at the tactical level, the measures will be more structural and technical. Can a given set of differing capabilities work harmoniously to achieve a common goal? One example is the symbiotic relationship needed between a ground unit and its close air support. Another is the complex make-up of the brigade combat team with its various organic capabilities, its adjacent brigades or units on the battlefield, and its support structure provided by higher echelons. [68]

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[67] This combines "Complementarity" (Collins, *Military preparedness*, 46) in reference to active-reserve differences with "Compatibility" (Collins, *Military preparedness*, 48) referring to joint interoperability.

[68] A project with the Carlisle Scholars Program produced the following four questions as expressing different types of interoperability, and further research is being done to clarify these questions. (1) "Can you hear me?" which is a *technological* issue of the innate ability for two entities to cross-communicate; (2) "Are you listening to me?" which is a more *procedural*

At the operational and strategic level, however, the measures may be less tangible and possibly more political. For example, a combined force may need to consider to what extent like capabilities from different sources cooperate – such as U.S. and coalition units working side-by-side in battle. Certainly, one may presume that if all units were from the same nation that they might be more tactically interoperable than a coalition force. But. the presumed risks in tactical interoperability (e.g., to what extent U.S. and coalition partners fight differently) may be overcome by strategic interoperability measures such as the continued strong relationships between the U.S. and its partners and will to stay engaged in the fight. Another example is measuring how combined or joint command and control ensures unity of purpose and effort while allowing the exercise of mission command.

Mobilizability

Paraphrasing Collins, armed forces perform best when the enterprise infrastructure is adequately postured to generate additional capabilities or capacity as required by the mission.[69] Collins was primarily concerned with the capabilities and capacity of the standing force posture – bases, camps, posts, stations, and included facilities. This paper expands Collins' ideas to cover the enterprise's capacity to generate capabilities that do not exist at the war's onset. Mobilizability includes units' conversions from lowered readiness to full readiness for employment, the creation and employment of new capabilities, and the expansion of the enterprise installation itself.

The principle seems obvious – the defense enterprise must be able to generate capabilities where and when needed, ostensibly faster and better than the adversary. However, measuring it is difficult because it can only rarely be tested experientially. Exercising the full mobilization infrastructure in a realistic scenario is both complex and expensive, meaning that simulations or tabletop exercises may serve as substitutes. The defense enterprise may have to rely on outside agencies to provide the necessary capabilities. A strong and flexible industrial base provides additional generating capacity to satisfy emerging operational needs, but

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question of whether cross-communication is active and therefore capable of processing traffic; (3) "Are you allowed to tell me?" which is termed as a *legal* or *restrictive* form by which the authority to send information is the focus; and (4) "Do you understand me?" which is termed *cultural* or *linguistic* and reflects the shared understanding brought through acts of cross-communication. Although conceived as a way of modeling interoperability challenges in multinational settings, it is not hard to consider similar questions being salient in the context of ordinary supporting-supported unit relationships.

[69] This principle is loosely based on what Collins, *Military preparedness*, 47 called "Infrastructure."

measuring the posture of the industrial base to support a national mobilization is also difficult.

Measuring mobilizability is also difficult because it is context-specific. For example, performance in mobilizing pre-determined slates of units for regular cycles of rotational deployments may not accurately reflect the enterprise's capacity to mobilize a different type of force for a novel conflict.

Sustainability

The above principle of mobilizability is related to this principle because both reflect the capabilities and capacity of enterprise infrastructure, albeit in different ways. The principle is this: *armed forces perform best when the enterprise infrastructure is adequately postured to re-generate and sustain the capabilities employed over the duration of the mission.* Sustainability is a multi-level principle – individual capabilities must be sustainable, but so too must be the force as a whole. Measuring the capacity to sustain individual capabilities is comparably more tangible than measuring sustainment of a full force, especially should its composition change over time. There are also potential assumptions regarding the continuous capacity of the supply chains. Should access to a critical component or resource—e.g., a precious or rare mineral, fuel, potable water, specially-made part--become lost during the conflict, this could have a significant impact on the force.

Like mobilizability, sustainability may have to be measured using proxy indicators such as simulations or the presence of agreements. For example, existing contract vehicles may include provisions to handle increased demand during contingencies. It may not be practical to test these provisions experientially. Also, sustainability is context-dependent. Sustainability of a force deployed to a location with robust infrastructure will differ from that of a landlocked or isolated location. Access to the available infrastructure may not be assured until the war's onset—it could be damaged or degraded since the agreement was made, or access could be denied due to enemy action or host nation decision. [70]

Foresight

Per Collins, *armed forces perform best when actions to ensure present and future preparedness proceed concurrently in proper balance.* [71] In peacetime, the defense enterprise must balance short-term with long-term requirements. Proper manning and equipping to satisfy current

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[70] Raymond A. Millen, *Reconfiguring the American military presence in Europe* (Carlisle, PA: Strategic Studies Institute, 2004), 2-3.

[71] Collins, *Military preparedness*, 48.

requirements may compete for resources against the need for modernizing for future needs. This principle speaks to risks associated with trading current preparedness for the future or vice versa.

Measures of foresight are challenging to develop in part because it is context-sensitive and in part because it often reflects an enterprise decision to prioritize current readiness (i.e., operational readiness, described in Part Two) and assume risk in future readiness (i.e., a combination of structural, mobilization, or long-term sustainability readiness, also described in Part Two), or vice versa. Measures of foresight constitute the extent to which the actual resources and efforts expended align with the stated prioritization or the security environment. These measures must be clearly articulated, however. For example, if current readiness constitutes the enterprise's "#1 priority," [72] the target balance of expenditures could be as varied as 51% current to 49% future or 90% current to 10% future. Also, if current readiness is prioritized, it is possible for proponents of future readiness activities (e.g., modernization) to reinvent themselves to appear more "current" and therefore more capable of protecting its resource streams. Doing so may cause the enterprise to deviate from its own stated priorities.

The principle of Foresight is also influenced by other actors. Adversaries may emerge as threatening on a faster timeline than anticipated. Or adversaries may exercise a longer-term strategy that aims to exhaust the resources of friendly forces, perhaps by triggering overreactions.

Will

Finally, Collins said that armed forces perform best when funds are sufficient to acquire, operate, maintain, and otherwise support the military establishment that foreign policies, military strategies, roles, functions, and missions required. [73] First, the military's internal culture and climate must foster adequate readiness of the force. Second, national leaders, including the defense enterprise, must be willing to invest the resources necessary to ensure national preparedness and be willing to employ the force as required to complete missions. It includes all peacetime diplomatic, economic, and institutional enablers from international agreements to strong civil-military relations that communicate how the nation is committed to uphold its strategic

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[72] Timothy Hale, "CSA Milley: 'Readiness is my number one priority'," *Army.mil*, May 18, 2016, https://www.army.mil/article/166838/csa_milley_readiness_is_my_no_1_priority.

[73] Collins, *Military preparedness*, 49 included the principle of "Financial Sufficiency." This paper expands this principle to encompass other expressions of national will to provide both physical and moral support to the military.

interests and will employ military means if necessary. National leaders should also avoid assigning missions to military forces that unnecessarily detract from preparedness.

The principle of Will is thus measured in the consistent and reliable resourcing of defense enterprise activities and the trust and confidence that service members have in their national leaders to employ military capabilities properly when the situation calls for it. Of course, these measures are often intangible and unreliable. To what extent is it knowable how leaders will respond as a complex situation develops? Or, to what extent would leaders recognize what level of commitment is too much or not enough? To what extent do other factors, such as domestic political concerns, come into play? Thus, determining some measures for the Will to be Ready may carry political ramifications that preclude objective assessment.

2.D. What are the tensions and trade-offs?

The standards of preparedness – i.e., satisfying all nine principles to meet a particular mission – are remarkably high. A shortcoming in fulfilling any principle presents risk to the mission, but some of these principles will often come into conflict. The relationship between Overmatch and Sufficiency is one common example – rarely is a nation postured to have and sustain both overmatching capabilities and extensive capacity. Budgetary constraints are more than likely to present the need for trade-offs of procuring a few high-quality systems or many lesser-quality ones. Overmatch and Interoperability can also conflict when cutting-edge capabilities make it difficult to coordinate and control combined operations with allies and partners lacking such capabilities. Foresight can become a tension with other principles whenever budgets constrain the abilities to satisfy both current needs and needed future investments.

The complexity of future warfare demands a sustained and holistic preparedness posture to ensure the joint force can get to the fight where and when needed. That complexity, however, makes enterprise decisions difficult. In a commentary on the future of warfare, H. R. McMaster identified four fallacies he encountered in strategic discourse.[74] His fallacies highlight the unnecessary risks that one assumes when trading one principle for another:

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[74] H. R. McMaster, "Discussing the continuities of war and the future of warfare: the defense entrepreneurs' forum," *Small Wars Journal* (blog), October, 13, 2014, http://smallwarsjournal.com/jrnl/art/discussing-the-continuities-of-war-and-the-future-of-warfare-the-defense-entrepreneurs-foru.

- His "Vampire Fallacy" of "promising victory from standoff range" that, for example, produced the "Shock and Awe" concept from Operation Desert Storm, allowed Army leaders to ignore Sufficiency in favor of Overmatch. Decision makers often assume that lots of standing capacity is unnecessary, but this assumption has been proven wrong time and again.

- McMasters' "Zero-Dark Thirty" fallacy expresses how taking risk in Sufficiency and Will for Mobilizability is similarly flawed. His complaints about raids being elevated "to the level of a defense strategy" shows how a quick tactical action does not lead to lasting results because they "are often unable to effect [sic] the human and political drivers of armed conflict."

- Both the "Wild Kingdom" fallacy of relying on proxies (external forces or groups working on the U.S.'s behalf) and "RSVP" fallacy of opting out of conflict forsake most of the principles – demonstrating a lack of Will while assuming away Regional Expertise by losing touch with the strategic environment and Interoperability to plug-and-play with partners in theater.

Recognizing such fallacies is helpful when engaging in civil-military discourse. The urgency of the situation may drive the discourse toward taking shortcuts or assuming unnecessary or unacceptable risk.

The implications are that the overall question, "Are we prepared?" is fraught with tradeoffs. Strategies should prioritize tradeoffs at the enterprise level, but defense enterprise leaders must *design the force* and *design the methods of measuring* the military readiness envisioned in the strategy. The rest of the solution involves management and stewardship of those resources devoted to defense, whether military or otherwise. What capabilities will the military need that are too expensive, fragile, or uncertain for the military to own and maintain organically? What are the risks if those capabilities are given to the civilian sector? And the adversary gets a vote.

3. A Proposed Integrative Framework

This chapter provides the framework presented throughout the rest of the book. The first two chapters have argued that such a framework is needed to help nations analyze and communicate the conditions and needs of their militaries to fight and win future wars. But what are the specific responsibilities of any given nation and its military to prepare for war? How should they operationalize national preparedness and military readiness given the constantly evolving threats they face?

The framework is depicted in Figure 1. It presents the answer to the above question as the outcome of a continuous negotiation. The nation's desire is (assumed to be) that the military is suitably manned, trained, and equipped to defend the nation and its interests, but this may be too expensive for a nation to sustain and therefore the nation must assume risk in establishing a military that is likely smaller in some way (e.g., fewer service members, fewer systems, less capability). In effect, the nation pledges to fill, augment, or expand the military when needed so it has the capacity to fight and win, or at least achieve the political outcomes.

For its part, the military assumes the responsibility of converting whatever resources it gets into the needed capabilities and being prepared to receive, on-board, and integrate added resources to either replace or regenerate capabilities or expand them to grow the force. Military readiness is thus the measure of to what extent the military's capabilities on-hand satisfy the assumed levels of readiness based on what the nation has already organically provided.

3.A. What are the components of national preparedness?

Therefore, national preparedness is a measure of how well postured a nation is to respond to the initiation of hostilities and all phases of the war that follow. The proposed framework here includes three broad categories of measures, many of which may be unmeasurable in peacetime and instead analyzed according to the strength of any agreements and provisions in place to facilitate the nation's move to a war footing. These measures generally align with the functions of national development and can be considered at least somewhat independent of each other, thus their depiction in Figure 1 as three separate arrows. Each are explained in more detail in Part Three.

Government preparedness – legal and regulatory posture

The nation's first responsibility is *government preparedness*, which includes the establishment and sustainment of the necessary structures – agencies, laws and regulations, roles and missions -- and access to funds and resources that allow the nation to shift from a peacetime stead-state posture to a crisis posture and back.

National Preparedness

Government Preparedness

Legal frameworks
Authorities
Interagency Coop.
Strategic Comms

Resource Preparedness

Recruiting pools
Raw materials
Real property
Data & Funding

Homefront Preparedness

Civil society
Civil defense
Communications
War support

Military Readiness

Enterprise Readiness
Prosecuting the war
Stewarding the Profession

Operational Readiness
Ready forces
"just in case"

Structural Readiness
Ready forces
"just in time"

Mobilization Readiness
Capacity to
Expand the military

Long-Term Sustainability Readiness
Force resilience

Figure 1. National preparedness and military readiness[75]

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[75] Original graphic by author.

To mitigate against the possibility of war, the nation establishes its defense enterprise that includes the military services, civilian oversight functions, and all non-military entities (e.g., auxiliaries) that are to be aligned with the military when needed. The nation assigns roles and missions to the defense enterprise and all other government agencies and prioritizes the expenditure of national resources accordingly. It also establishes the regulatory framework necessary to maintain the defense enterprise in peace, convert it to a war footing when required, sustain it through the war, and revert to a new (and better) peace afterwards. While the preparedness of the defense enterprise is mostly objectively measured as military readiness, government preparedness of the rest of the nation may be intangible and conditional based on the character of the assumed war expressed in the strategy. The legal and regulatory posture also covers the succession of national leadership and contingency plans in the event of having to vacate the national, state, or provincial capitals.

Resource preparedness – people, raw materials, etc.

Can the nation access an adequate flow of resources and convert them for use in the war effort? There are several levels to resource preparedness. First is the mobilization of the organic defense enterprise – its conversion from peacetime to war, its deployment and employment, and its internal sustainment. The nation's responsibilities include the non-organic means of facilitating mobilization such as access to road, rail, air and seaports, communication networks, and various global commons. The second level involves expansibility of the defense enterprise to match the war effort required, such as the US had to undertake in World War II. This included nationalization of private resources and instituting a draft. However, other parts of society may remain to some extent isolated from war and the nation's responsibilities to sustain its development (e.g., sustain a functioning economy, provide social order) remain intact. The third level is total mobilization whereby all assets of the nation are eligible to be pressed into service.

The resources in question include but are not limited to the following: personnel, materiel, real property, facilities and infrastructure, the national legal and structural framework, communications networks, and the global commons of each domain (e.g., ground, aerospace, maritime, and internet). War could potentially exhaust a nation's organic resources and therefore may necessitate their acquisition from others such as allies and partners, neutral parties, or through conquest. Meanwhile, the nation may also impose restrictions on the expenditure of resources such as rationing to reduce waste and push resources to where most needed. This is especially true for resources that may be

competed over between military and civilian use, such as doctors and other highly skilled personnel or food and potable water.

Homefront preparedness – sustaining will, defending homeland

The nation naturally incurs a responsibility to defend its citizens and its resources over the course of the war. In instances where the war is fought in the nation's own territories, this is a given, however it is also true when the war is fought in foreign lands. The potential for sabotage, civil discord, and clandestine operations within the nation's home territories can take a toll on the popular will to sustain the fight to a favorable conclusion. Popular will may also suffer should the war become prolonged with no clear path to victory.

It may not be possible for the nation's government to provide security even when mobilized and the nation must continue to protect its economic and social orders and optimize the integration of all public and private activities toward the nation's sustainment and eventual return to peace.

3.B. What are the components of military readiness?

Military readiness largely centers on the military's organic capabilities granted to it by the nation and organized within the defense enterprise. It is not only the capabilities to fight, of course. It also includes capabilities to receive and convert additional resources of the nation for military use such as replacement personnel and equipment. There are five components of military readiness introduced below and these are fully interdependent, which is how they are shown in Figure 1. Part Two of the book explains each in greater detail.

Enterprise readiness – readiness to manage the force and steward the profession

This first type of readiness is the hardest to quantify but represents the greatest force multiplier. *Enterprise readiness* measures the capacity of the force to develop and implement effective and efficient strategies and plans at echelon. There are two associated sub-measures: (1) the enterprise's capacity for planning against the expected war, and (2) the individuals' collective capacities for implementing the actual war. The *expected war* is the war that informs peacetime national security strategies and the development of capabilities by the defense enterprise. The *actual war* is the war being fought. Naturally, it is desired that the expected and actual wars should be close enough together such that the force fights and wins as originally designed. However, the enemy will endeavor to exercise strategic surprise and exploit friendly vulnerabilities to negate any competitive advantages. A high state of enterprise readiness

provides the necessary agility to assess the environment and adjust the force.

Enterprise readiness is a measure of the military's capacity to operationalize its expert knowledge. This capacity is built through professional military education, training, and work experiences. These result in the development of competencies that allow leaders to better exercise their professional judgment and adapt their units at echelon to the situations facing them. These competencies include: (a) analyzing the environment and forecasting, (b) development of practical, feasible, and suitable concepts and doctrine, (c) designing organizations, (d) establishing and articulating requirements, and (f) exercising outreach to sustain access to domains of relevant expert knowledge outside the military. These competencies are perishable through non-use or suppression from bureaucratic and other external pressures.

Operational readiness – readiness for right now, just in case

Per Betts (1995), *operational readiness* "pertains to the relation between available time and needed capability."[76] Given a forthcoming mission, leaders would need to know the state of each unit identified for mission and take necessary steps to correct shortcomings (e.g., personnel, training, equipment) prior to employment. Betts refers to this as, and this typically comports with the common use of the term "readiness" at unit level.[77] These appraisals determine what is necessary to bring an *entity*, defined as "individuals, teams, sections, flights, companies, squadrons, battalions, ships, groups, wings, divisions, task groups, air forces, fleets, corps, expeditionary forces, armies, major commands, Services, defense agencies, and military departments, to the Department of Defense as a whole"[78] from pre-mobilization to a warfighting standard to deliver the capabilities for which they were designed.[79] Readiness reporting is nested, such that readiness reporting of larger entities incorporates reporting of subordinate entities.

This type of readiness is the one probably most familiar to War College students and it is the simplest to understand. It is the measure of how ready a force is right now. Unit status reports measure to what extent personnel are on-hand and trained, to what extent equipment and facilities are on-hand and serviceable, and to what extent current mission

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[76] Betts, *Military readiness*, 27.
[77] Harrison, "Rethinking readiness," 56.
[78] John C. F. Tillson (Project Leader), *Independent Review of the DoD's Reporting System*, IDA Paper P-3569 (Alexandria, VA: Institute for Defense Analyses, 2000), 8.
[79] Moore et al., *Measuring military readiness*, 79.

requirements or commitments (e.g., borrowed military manpower) detract from the ability to employ the unit now.

Operational readiness measures the force as designed, which is not necessarily the same as being ready to fight the actual war. A well-trained and fully equipped tank battalion will be considered highly ready, even if the nation has no actual need for tanks. Managing operational readiness involves answering questions concerning the force having enough of the capabilities it is expected to have. Shortfalls in the prescribed capability or capacity levels should trigger immediate corrective measures to acquire or replace personnel or equipment.

Structural readiness – readiness for short-term, just in time

Betts (1995) also said that a nation is prepared if "the time needed to convert potential capability to actual capability is not longer than the time between the decision to convert" and they must be employed.[80] Betts referred to this as *structural readiness* in that the forces must be able to grow, reorganize, and adapt for the mission.

This form of readiness should also be familiar to War College students. It represents measures to preserve capabilities at lower levels of readiness with the expectation that they can be brought to full readiness in a short period of time. It is called structural readiness because it involves having the structures in place now so that the only requirement to achieve full readiness is to fill the structure – populate the missing faces, gather the needed equipment, and train the unit for the mission.[81]

Force generation models are one form of structural readiness. It is too expensive and risky for the defense enterprise to keep all units at full readiness, so the enterprise programs in systematic opportunities to bring units to lowered states of readiness for equipment fielding, high-level maintenance, professional schooling, health and welfare, and other purposes. Force generation models come in many forms, including conceptions of 'tiered readiness' where part of the force is maintained at higher readiness while others are perpetually maintained at lower levels, or 'cyclic readiness' where units rotate through pre-planned periods of alternating high and low readiness. These models save money and resources, prevent degradation of equipment due to overuse, and preclude burnout of personnel. However, the risk is the ability to reconstitute units in full when called upon within the expected time limit built into the force generation model.

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[80] Betts, *Military readiness*, 28.
[81] Betts, *Military readiness*, 28.

There are other ways to sustain structural readiness, such as placing capabilities in the reserve components, establishing cadre headquarters (i.e., a full staff headquarters but with no subordinate units), creating incomplete units (a brigade with only two battalions vice three), and other methods. Each has advantages and risks regarding the time and mechanisms required to fill out the unit and bring it to full readiness before employment.

Mobilization readiness – readiness to expand and surge

Next, a country is *not* prepared if "the gap between actual and potential capability causes a gap between the supply of capability and the demand for it."[82] One can generally assume that some capabilities will simply never be on-hand in sufficient quantities during peacetime. Perhaps it is located in one of the reserve components or must be accessed via a contract vehicle or through agreement with another nation. The question is therefore to what extent does the nation have the ability to generate those capabilities within the required time – whether at the onset of war or when a new requirement arises during the war? Betts calls this *mobilization readiness.*

Mobilization readiness appraisals measure the capability and capacity to "assemble and organize national resources to support national objectives in time of war or other emergency,"[83] and functions to convert structural readiness to operational readiness by filling resource gaps and making final preparations for employing the force. What makes mobilization readiness unique is the *required national decision to declare said emergency*, without which the defense enterprise lacks authority to begin the conversion. Because emergency declarations are political decisions, they will occur according to a political timeline, one that military commands may not favor. Hence, mobilization readiness is like the sprinter who is on the block awaiting the starting gun, except that the gun may not fire for an intolerable period of time and once fired, the sprinter may find that the direction of the race may have suddenly changed.

Mobilization readiness is a measure of the defense enterprise and its capabilities which include but are not limited to accession commands, individual training centers, combined training centers and ranges, distribution of materiel stockpiles, and materiel production.[84] This also includes non-DoD entities, defined as "those civil organizations that

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[82] Betts, *Military readiness*, 28.
[83] Betts, *Military readiness*, 52.
[84] Betts, *Military readiness*, 74.

contribute to the ability of DoD entities to accomplish their tasks" [85] that may include infrastructure such as road, rail, airports, and seaports. It also includes the capacity of *pusher units*, which are operational units pressed into service in support of mobilization. An example is when an immediate ready company mobilizes for deployment within hours of recall, the remainder of a battalion may be called upon to assist as a pusher unit. When doing so, the battalion converts its own operational readiness back to structural readiness as it assumes pusher duties, which may include giving up resources to the deploying company.

Expansibility is true expansion of the military to gain capabilities above and beyond its organic or peacetime design. For example, let us assume that a fighting force finds at the onset of war that it requires the construction and manning of ten additional ships. What facilities and infrastructure must expand to accommodate the basing, training, and sustainment of these new ships, and where will those resources come from? To what extent must the standing military divert organic resources to provide the onboarding, training, and employing of the new personnel, and of integrating the crews into the force?

Therefore, the capacities of the government, the population, and the private sector become especially important. What is the state of the recruiting pool and the accession programs? The capacity of the All-Volunteer Force to fight and win in a quick decisive war has been shown multiple times, but it has not been truly tested in a large-scale conflict. The U.S. relied on conscription to provide adequate forces for World War II, Korea, and Vietnam. The Persian Gulf war, JUST CAUSE in Panama, peacekeeping in the Balkans, and extended operations in Iraq and Afghanistan did not require national mobilization. There are plenty of questions surrounding the preparedness of the nation to provide the additional personnel required to grow the force at the onset of the next large-scale conventional fight.

Of course, these personnel must also be equipped, and therefore the state of the defense industrial base is crucial. In World War II, industry was partly nationalized and the tremendous capacity the U.S. has was refurbished for building planes, trucks, and other war needs. This excess capacity no longer exists to the same degree, and some industries have moved their manufacturing elsewhere. Raw materials are also a concern as many electronic items and cutting-edge technologies depend on rare earth minerals and other resources that are predominantly outside the U.S. Are the risks to those supply chains adequately considered?

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[85] Tillson, *Independent review*, 8.

Long-term sustainability readiness – readiness to sustain and re-generate

Moore et al. (1991) addresses *long-term sustainability readiness* as the ability of the nation to sustain the fight over a protracted period of time, beyond the effects of the initial mobilization. How might the nation handle another World War II-like scenario where resources and industries may have to be nationalized, the population continuously tapped into for recruits, and the people constantly having to be reminded of the war's purpose and necessity and therefore put their own needs aside. Key inputs to measuring sustainability include stockpiles, facilities and infrastructure associated with mobilizing forces, systems of production and distribution, and organizational modeling to shift supplies to meet ever-changing demands.[86]

Long-term sustainability readiness addresses the scenarios that nations may not wish to address. The capabilities of concern become important when the nation's war effort extends across all segments of society. Most if not all resources, public or private, are eligible to be redirected to the war effort as the defense enterprise shifts from mainly generating capabilities to regenerating them. As casualties are brought back from the battlefields, equipment is damaged beyond repair, and lines of communication disrupted, the nation may need to pull deeper into its resources to keep the fight going while also continuing to develop other capabilities that might provide the decisive edge.

Long-term sustainability readiness is measured in peacetime as the combination of having the legal and procedural frameworks in place to exercise such extraordinary measures and demonstrating the will to exercise them. What measures will be taken to ensure needed resources are nationalized and pushed forward while not unduly burdening the populace? Rationing is but one example. How will leaders keep the public informed in ways that will garner and sustain their support for the war despite continuous requests for their sacrifice? U.S. publics are generally wary of communications that are akin to propaganda, e.g., disinformation campaigns from leaders meant to hide negative information or obscure the facts.

Long-term sustainability readiness also addresses matters of preparing for post-war peace that places demand on resources over and above what is available to the defense enterprise. This includes the roles and capacities of the other instruments of national power – diplomatic, informational, economic, financial, intelligence, and law enforcement. These may be less of a consideration in smaller conflicts where available

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[86] Moore, *Measuring military readiness*, ix.

national resources are adequate to securing peace without additional burden to the nation. In larger or protracted conflicts, which may not be the case. Post-conflict stabilization may require significant investment from defense, law enforcement, medical, judicial, financial, and other sectors. The requirements may not be knowable in advance, even forecasting them may be difficult. War fatigue may also influence the will to devote the necessary resources as nations may wish to bring the troops home as soon as possible.

An overall "formula" for military readiness

Given the disparate natures of the five components of readiness, it is worth exploring how they integrate to form a holistic and comprehensive understanding of the state of the force. The aim is not to provide an unassailable formula for calculating readiness but to explain the different trade-offs and the effects of favoring one form of readiness over another. The "formula" below is therefore metaphorical and descriptive:

$$R_{military} = (R_{opnl} \times R_{struct} \times R_{mob} \times R_{sustain})^{R_{enterprise}}$$

The relationship of the operational, structural, mobilization, and long-term sustainability components of readiness is depicted as a product rather than a sum. If a sum, one could invest entirely in one form of readiness and presume that it would be sufficient compared to spreading the investment across multiple areas. For example, too much focus on immediate concerns (operational and structural) at the expense of the other two may lead to a force that has little staying power. Too little focus on the immediate and assuming that mobilization will be adequate to cover the gaps may risk being too slow and unresponsive and losing the war before the force has assembled. Thus, the message is that a balanced force should prevail over an unbalanced one, all else being equal.[87]

Showing enterprise readiness as an exponent means that it has significantly more impact, and this is sensible because the enterprise determines the interface between the nation and the military. To illustrate, I will describe three values of enterprise readiness as "low," "moderate," and "high" corresponding to 0, 1, and 2, respectively.

The first case represents low enterprise readiness, expressed notionally as $R_{enterprise}$ = 0, eliminates the meaning of the other readiness values. One can consider the Iraqi forces during the Persian Gulf War as

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[87] Consider a case where one force is C-2 across the board while another one emphasizing mobilization and employing only a small operational force. So operational and structural readiness may be C-3 while the others might be C-1. Multiplying the C-ratings alone shows that the balanced C-2 force should be better.

an illustration. Despite the high quantities of forces and capabilities, the apparent lack of agility to respond to the build-up of forces nor anticipate and confront the coalition's advances from the west led to decisive defeat in mere days.[88]

The second value represents limited enterprise readiness, expressed as $R_{enterprise}$ = 1. In this instance, the level of enterprise readiness does not increase or enhance the other readiness values. Agility is narrowly limited, and in effect the force is fighting the war with the force it has. Should the actual and expected wars be similar in character such that agility is not vital to success, the force will do OK. However, such a force would be susceptible to strategic surprise.

High enterprise readiness, the third value, is thus a true force multiplier, where $R_{enterprise}$ = 2 or more. Through the flexibility and courage instilled by enhanced capabilities to analyze the environment, conceptualize ways of fighting, rapidly design and re-design organizations, and establish clear requirements; the force is highly adaptive, interoperable, and better prepared to sustain prolonged operations against a determined adversary.

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[88] William T. Allison, *The Gulf War, 1990-91* (New York: Palgrave Macmillan, 2012).

Part Two: Five Constructs of Military Readiness

Even under best-case conditions, the metrics that the defense enterprise would use for measuring and reporting readiness are imperfect. Unfortunately, these are not the only limitations as the design of the metrics themselves can mislead unwary decision makers.

Traditional readiness measures rely heavily on quantifiable metrics such as percentages or ratings applied to the inputs of readiness such as people and equipment.[89] These allow leaders to identify problems immediately and prioritize resources to correct them. However, this works well when assumptions hold that capabilities can be measured on meaningful scales to render basic assessments, such as high versus low readiness.[90] For platforms, such as tanks and aircraft, such measures can be easy to develop. Given two platoons with four tanks each, one would rate the platoon with three serviceable tanks at higher readiness than the platoon with only two. But this does not guarantee that the platoon with three would win in direct combat. The platoon with two may be better trained or more innovative and cunning, therefore performing better.[91]

Chapter 4 looks at the defense enterprise's overall responsibilities. *Enterprise readiness* measures the capacity of the defense, joint, and service staffs to develop and implement effective and efficient strategies and plans at echelon. There are two associated sub-measures: (1) the enterprise's capacity for planning against the expected war, and (2) the individuals' collective capacities for implementing the actual war. The *expected war* is the war that informs peacetime national security strategies and the development of capabilities by the defense enterprise. The *actual war* is the war being fought. Naturally, it is desired that the expected and actual wars should be close enough together such that the force fights and wins as originally designed. However, the enemy will endeavor to exercise strategic surprise and exploit friendly vulnerabilities to negate any competitive advantages. A high state of enterprise readiness provides the necessary agility to assess the environment and adjust the force structure.

Chapter 5 covers *operational readiness*, which measures the condition of the force as designed, which is not necessarily the same as being ready to fight the actual war. A well-trained and fully equipped tank battalion will be considered highly ready, even if the nation has no actual need for

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[89] Harrison, "Rethinking readiness," 42.
[90] Betts, *Military readiness*.
[91] Harrison, "Rethinking readiness," 44.

tanks. Managing operational readiness involves answering questions concerning the force having enough of the capabilities it is expected to have. Shortfalls in the prescribed capability or capacity levels should trigger immediate corrective measures to acquire or replace personnel or equipment.

Chapter 6 is about *structural readiness* which addresses the ordinary challenges militaries face of not being capable of always sustaining full operational readiness of all capabilities. Methods of sustaining capabilities at lowered readiness allow the enterprise to reconstruct those capabilities to full readiness when needed, and structural readiness measures the enterprise's capacity to do so.

Chapter 7 covers *mobilization readiness* appraisals that measures the defense enterprise's capabilities and capacity to convert structural readiness into operational readiness and expand the force in the event of total mobilization. Examples of entities being appraised are accession commands, individual training centers, combined training centers and ranges, distribution of stockpiles, and materiel production.

Chapter 8 covers *long-term sustainability readiness* which is the military's capacity to sustain the fight over protracted periods of time, beyond the effects of the initial mobilization. How might the nation handle another World War II-like scenario where resources and industries may have to be nationalized, the population continuously tapped into for recruits, and the people constantly having to be reminded of the war's purpose and necessity and therefore put their own needs aside.

4. Enterprise Readiness: Managing and Stewarding the Profession of Arms[92]

What is the factor that most influences the ability of a nation to prosecute a war? Traditional readiness metrics do not answer this question. They assume that the force is already properly designed, trained, and ready if and only if it is adequately and properly equipped and manned. But what about the design itself, and the abilities of the force to adapt once the design is proven no match for an adaptive adversary? This chapter shows that the greatest competitive advantage is the intellectual capital of its members, both to establish the initial design that prepares the nation for the expected fight, and to provide adaptability for the actual fight as experienced on the ground.

The old saying that the plan never survives first contact on the battlefield may be true but may also be overstated. On the one hand, the enemy is always adapting and looking for vulnerabilities to exploit. Like ourselves, they can be expected to exercise strategic and tactical surprise at every opportunity. On the other hand, once the element of surprise has passed, good intelligence will show how much about the enemy force was indeed well known and anticipated. The plan may not work as written, but much of it will likely be preserved as the battle ensues.

But there must be a plan in the first place. Betts (1995) put it ominously when saying that preparedness "becomes an issue *when peace comes into doubt*."[93] How will the nation fight? How does the nation define victory? Where does the military fit in with the other elements of national power – diplomatic, informational, economic – in securing national interests? How does this translate into the types and quantities of forces required now? Soon? Later?

These are the sorts of questions that the defense enterprise continuously grapples with in times of both war and peace. To secure the resources and budgets necessary to provide trained and ready forces to combatant commanders, the enterprise must establish strategies and plans to justify the forces required. These documents are influenced by politics but also informed by military science and the experience and judgment of senior leaders. The resulting strategies and plans must be clear and flexible so they can be implemented and adjusted to fit the

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[92] This chapter is based on Thomas P. Galvin, Con Crane, and Michael Lynch, "Enterprise readiness: Providing strategic agility for the next big war," in Gregory Cantwell, William Barry, and Justin Magula (eds.), *Power projection: Proceedings from the 2022 Strategic Landpower Symposium* (Quantico, VA: Marine Corps University Press, 2024), 80-102.

[93] Betts, *Military readiness*, 35. Emphasis original.

situation on the battlefield. Meanwhile, junior leaders must be armed with the capacity to translate the plans to tactical action. Agility comes not only from training but also from education, experience, and self-development.

4.A. What are the components of enterprise readiness?

In effect, leaders at all levels must know how to read and analyze the situation as it unfolds before them. They must determine when they can take independent action or present an issue to a higher echelon for decision. They must appreciate the opportunities available around them, some of which call for bold, innovative solutions while others may be best handled using established tactics, techniques, and procedures.

Definition

Enterprise readiness measures the capacity of the force to develop and implement effective and efficient strategies and plans at echelon. There are two associated sub-measures: (1) the enterprise's capacity for planning against the expected war and (2) the enterprise's and individuals' collective capacities for fighting the actual war. The first sub-measure often measures readiness from a top-down perspective, establishing the quality and utility of the body of abstract knowledge the enterprise must rely on to develop the plans and translate them into institutional action – acquisition programs, force design, and stewardship of expertise. The second is bottom-up and reflects individual competencies to enact the body of knowledge and make it concrete in either established or innovative ways.

The approach taken here is to propose five outputs of enterprise readiness that will serve as concrete measures. These outputs constitute the foundations by which all other readiness measures logically follow. These are *environmental analysis, concepts & doctrine, organizational design, requirements articulation,* and *outreach*. Each of these outputs include both top-down and bottom-up manifestations. For example, from the enterprise perspective, organizational design governs how to translate defense strategies and plans into the force structure, force posture, and associated facilities and infrastructure to meet stated military objectives. Meanwhile, the individual is measured on the capacity to effectively redesign the unit—whether 'task organizing' the existing structure or innovating an entirely new one—as required for the situation. A sixth sub-measure, *professional stewardship* – is an enabling measure focused on the enterprise's capacity to sustain its body of expert knowledge.

Essential questions

The CJTF-7 vignette (Section 1.B.) illustrated some of the basic questions that members of the enterprise must have the capability of answering – whether at the enterprise level in times of peace or during operations. The first is the question of analyzing the environment. *What is the situation we expected to be in, and what is actually happening on the ground?* The decisions related to the creation of the task force were clearly influenced by assumptions and expectations that did not pan out. The ability to recognize the faults in those assumptions and make adjustments is a clear need.

The second question references concepts and doctrine. *What are the anticipated goals and how should we expect to fulfill them?* A key point in the vignette that is easy to overlook is the fact that the Army included in its doctrine the requirement for a corps headquarters to be expansible to a joint task force (or in this case, a combined task force). This requirement was therefore built into the structure of V Corps and incorporated into the processes associated with augmentation from each of the services. Concepts and doctrine therefore serve as a basis, foundation, or starting point from which agile and innovative leaders can adapt their forces to fit the situation.

The third question is one of organizational design. *What are the tasks that comprise the goals, who needs to do them, and who must communicate with whom?* [94] CJTF-7 is an excellent example of how important these skills are. On the one hand, the enterprise is responsible for establishing the general mission, tasks, divisions of labor, and personnel and equipment requirements to program the necessary resources and establish optimal conditions for readiness. On the other hand, as those goals change, the organization must be postured to adapt rapidly and negotiate a new design, as CJTF-7 did.

Fourth is the requirements question. *What does the organization need that it does not have and cannot internally generate?* Articulating requirements is incredibly challenging. However, the enterprise is generally attuned toward prescriptive requirements in which the requisite detail on personnel, equipment, and facility requirements are clear and unambiguous. This involves a level of precision not always available to the requester, and therefore sometimes enterprise planners must make assumptions. This is also true when the enterprise itself is a requestor seeking enhanced capabilities not yet available from industry. Again, CJTF-7 was an exemplar, quickly identifying the shortcomings of

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[94] Richard M. Burton, Børge Obel, & Dorthe Døjbak Håkonsson, *Organizational design: A step-by-step approach*, 4th ed. (Cambridge, UK: Cambridge University Press, 2020), 7.

its V Corps organizational structure to accept its greatly expanded mission.

The fifth question regards the capacity to identify and close knowledge gaps. *What capabilities are out there to help bridge the known from the unknown?* This is the outreach question and is vital for establishing enterprise readiness. It is insufficient and inefficient to seek specialized expertise and knowledge at a moment's notice without having established a network of resources in advance. It is also ineffective if members lack the necessary critical and creative thinking skills to make sense of what is likely to be contradictory or incomplete information.

The stewardship question emerges from the above five. How does the enterprise posture itself best to enhance the enterprise readiness of its members through the cultivation of its domains of expert knowledge? The defense enterprise establishes institutions ostensibly to provide the answers to this question. So-called centers of excellence and other organizations help capture the experiences of leaders, members, and organizations for re-use. For example, Wright and Reese (2008) is a product of the Combat Studies Institute, an organization whose mission is to study and analyze U.S. military operations to contribute to the abstract knowledge of warfighting. Professional military education institutions help share knowledge and prepare service members for future assignments. Combat laboratories and like organizations conduct experiments to help the enterprise learn what may be effective or efficient. All these institutions must work collaboratively at the enterprise level for the effective and efficient development of a trained and ready force in peace. They must also set conditions by which members can best put the enterprise's corporate knowledge to practical use in times of conflict.

The goal for the enterprise is therefore to cultivate the cognitive, technical, and interpersonal competencies – the intellectual tools of strategic leadership – in all members over the courses of their careers. [95] The principles of preparedness provide useful insights on what might be considered suitable, feasible, and acceptable solutions to these six questions. Judging such solutions is itself an outcome of stewardship.

4.B. Outreach – is the enterprise postured to engage with the external environment?

Domains of expert knowledge are never sustainable in isolation. Abbott's (1989) famous essay shows that professions are in constant

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[95] Douglas E. Waters, "Senior leader competencies," in Thomas P. Galvin and Dale E. Watson (eds.), *Strategic leadership: Primer for senior leaders*, 4th ed. (Carlisle, PA: Department of Command, Leadership, and Management, 2019), 61-72.

competition with each other over control of jurisdictions, and the competition contributes to the generation and sustainment of abstract knowledge.[96] In the case of military professions, Lacquement and Galvin (2022) show that military professions depend on collaboration and coordination across communities of practice – such as how experts in maneuver, intelligence, communications, logistics, and others come together to develop feasible and suitable warplans.[97] Many military communities of practice extend outside the enterprise. They may include individuals and organizations from civil society, industry, academia, other branches of government, multinational partners, and non-governmental organizations. Success of the military mission depends on the quantity and quality of the relationships to ensure sustained national support in times of war. If the military becomes insular and fails to sustain these relationships, there is risk of its capabilities becoming obsolete and ineffective. Ultimately, this can result in a lack of trust and confidence among the people in the military's ability to lawfully prosecute war.

The purpose of *outreach* is to make rapidly available domains of knowledge and resources that the defense enterprise might need to leverage in war. Outreach secures two outcomes: (1) to set conditions for access to needed resources and information in the transition to war, and (2) to project a trustworthy image and enhance the military's reputation among the people to sustain support for the war effort.

Gaining access

As will be explained in Chapter 7, the expansibility of the defense enterprise in times of war is a critical component of preparedness. The conditions for expansibility are set during peace through strategic relationships that require substantial effort on the part of the enterprise and all individual leaders within it.

Nations, including the US, are not naturally postured to flip a switch from peace to a war footing, from which resources quickly flow. It becomes incumbent on the defense enterprise to set conditions by which such resources could flow as rapidly and continuously as possible. From Congressional funding to logistics, the enterprise must have processes, systems, and relationships in place in peacetime that demonstrate both wartime needs and the enterprise's capacity to properly utilize and steward the resources when granted.

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[96] Andrew Abbott, *The system of professions: An essay on the division of expert labor* (Chicago: University of Chicago Press, 1988).

[97] Richard M. Lacquement and Thomas P. Galvin, *The future of the U.S. military profession* (Carlisle, PA: Strategies Studies Institute, 2022).

Information is also a critical resource, and the enterprise engages with information brokers such as academia, intelligence agencies, think tanks and others to exchange ideas and mutually contribute to knowledge. These information channels can be vital to a war effort as the military may depend on the unique expertise of external groups to analyze unforeseen or unexpected problems and generate quality solutions.

Managing reputation

It is also important that the military be seen as trustworthy and effective. The contrast in public support for the U.S. Army between the Vietnam War and the wars in Iraq and Afghanistan demonstrate the importance of a favorable reputation. However, military leaders recognize its fragility as demonstrated in the aftermath of the My Lai massacre in 1968 and the sexual harassment and assault scandals of the 2010s.[98] Put simply, it is not enough that the military is strong, it should also be perceived as strong to sustain the confidence of the public and dissuade and deter adversaries. How the defense enterprise projects its strengths and manages—not necessarily hides—its vulnerabilities is therefore important.

This demonstrates the need for well-crafted and coordinated communication campaigns that deliver clear and consistent messages about the defense enterprise's capabilities and intentions.[99] Building a campaign begins with analyzing the environment to understand how others perceive the enterprise and what impacts these perceptions have on its stakeholders, in this case national leaders. This is known as the *reputation*. Lange, Lee, & Dai's (2011) proposed that reputations have three components. The first is *being known* -- measured in terms of familiarity of the organization by others. Have they heard of it? Do they recognize the symbols, logos, or other forms of corporate identity? The second is *being known for what* – measured as familiarity with the military's mission and context. This is less obvious than it sounds as the U.S. military is currently known for more than fighting and winning wars, it has developed a reputation as an effective contributor to disaster

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[98] Richard Lacquement, "My Lai: A stain on the U.S. Army," *WAR ROOM*, June 27, 2018, https://warroom.armywarcollege.edu/special-series/anniversaries/my-lai-a-stain-on-the-army/; Amy Ziering, "Sexual assault: A stain on the US military," *Journal of International Affairs* 67, no. 1 (2013): 211-216.

[99] Thomas P. Galvin, *Communication campaigning: Primer for senior leaders* (Carlisle, PA: Department of Command, Leadership, and Management, 2019).

relief efforts, for example. The third is *affective attachment*. How well is the organization liked, or viewed favorably?[100]

Reputation is important in both peace and war, especially a sustained war as will be shown in Chapter 7. With stakeholders, a positive reputation engenders trust and allows for open conversations about the state of the military. A negative one creates distrust and foments misinformation that could lead to poor strategic decisions that deny resources to the enterprise. During war, a fighting force's reputation has a major influence on both enemy actions and friendly support and is often built on battlefield successes and failures.

The defense enterprise's campaigns project images of the military's capabilities and the nation's will to fight on the environment. The enterprise implements the campaign through the words and actions of leaders, units, and individuals.[101] The campaign is deliberate, however much of its implementation will be emergent and opportunistic due to situational dynamics. Therefore, it is important that the enterprise communicates its key themes and messages throughout the force, so that leaders and service members are better prepared to enact them.[102]

For illustration purposes, two critically important factors of a professional military's reputation are offered. The first is *the capacity to act lawfully in combat*. A study on command responsibility showed the ability to fight lawfully is built on a foundation of acting lawfully in peace.[103] The readiness of the force is therefore enhanced when there is a foundation of ethical and moral reasoning that drives professional behavior from the whole enterprise to the individual service member. If a military has a lawful reputation, it can be trusted to fight fairly and honorably, respect human life and dignity, and therefore be better able to secure peace afterwards. Lacking such a reputation erodes popular support for the military and emboldens adversaries to fight harder.

A second factor is *the demonstration of resilience* that includes the capacity to communicate effectively with internal and external audiences, make sound decisions, and exercise mental agility under duress.[104] In the modern social media environment where actions by individuals can

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[100] Donald Lange, Peggy M. Lee, and Ye Dai, "Organizational reputation: A review," *Journal of Management* 37, no. 1 (2011): 153-184.

[101] Dennis A. Gioia, Majken Schultz, and Kevin G. Corley, "Organizational identity, image, and adaptive instability," *Academy of Management Review* 25, no. 1 (2000): 63-81.

[102] Galvin, *Communication campaigning*, 98-108.

[103] Thomas P. Galvin, *Responsible command: Primer for senior leaders* (Carlisle, PA: Department of Command, Leadership, and Management, 2020).

[104] David Eckley, "The search for a strategic leader competency framework," in Silas Martinez and Lou Yuengert (eds.), *Strategic leader meta-competencies* (Carlisle, PA: Department of Command, Leadership, and Management), 16.

carry strategic consequences, resilience demonstrates to both friends and adversaries that the military has the will and abilities to complete the mission.

4.C. Analyzing the environment – Is the enterprise postured to assess threats and forecast the future?

It would be a mistake to answer the analysis question in a snapshot form – perceiving only the situation at the present. Rather, analysis must understand the complex adaptive behaviors of the environment that manifest over time – from the past to the present and on to the future. The strategic environment is inherently both complex and competitive. Hill & Watson (2019) identified three characteristics of strategic competition: (1) it involves unresolvable uncertainty, (2) it takes diverse forms both inside and outside organizational boundaries, and (3) participants shape the terms of the competition.[105] Leaders must also avoid the allure of the ideological or "permanent" solution to a problem, as it generally does not exist.[106]

Enterprise readiness is therefore partly a function of the capacity for continuous, critical evaluation of the environment over time. Four components of this capacity are offered here.

Scanning, interpreting, learning

The first component is straightforward in concept but challenging to put into practice. It is the combination of actions that translate observations about the environment into decisions and encompasses three processes according to Bullis (2015): (1) environmental scanning that identifies and monitors critical actors, stakeholders, and conditions in the environment; (2) interpretation that gives meaning to the observations; and (3) learning that translates the interpretations into action based on the conditions present and what has been done in the past.[107]

As a contribution to enterprise readiness, these processes must be active and engaged. Given the volatility, uncertainty, complexity, and ambiguity of the environment, the defense enterprise must always assume that its knowledge is incomplete and degrades over time. Interpretations of the same phenomenon will differ, and leaders must

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[105] Andrew A. Hill and Dale E. Watson, "The competitive environment," Thomas P. Galvin and Dale E. Watson (eds.), *Strategic leadership: Primer for senior leaders*, 4th ed. (Carlisle, PA: Department of Command, Leadership, and Management, 2019), 13-14.

[106] Hill and Watson, "The competitive environment," 15.

[107] R. Craig Bullis, *An interpretive model of managing the external environment* (faculty paper, Carlisle, PA: Department of Command, Leadership, and Management, 2015).

therefore be prepared to re-visit assumptions. All of this speaks to the capacity of the enterprise and all its members to exercise scanning, interpreting, and learning.

Historical mindedness

Cohen (2005) noted that the military profession uses history more than any other profession, and that military leaders are likely to find practical advice and solace in the lessons of centuries or millennia ago.[108] On the other hand, Echevarria (2005) noted that leaders can easily misuse history, such as merely treating it as a description of past events and not critically analyzing what actually happened.[109] The lesson is that the past cannot be treated as a snapshot in time, out of context of the situation. Rather, it must be critically evaluated lest the wrong conclusions be drawn that negatively impact present operations and future planning. Neiberg (2021) described well how history should be used, "By casting our minds backwards, we can see more accurately when we look forward."[110]

Neiberg further defined how strategists can be historically mindful without having to be historians themselves:

> We need to see where a problem began, when and why it gathered momentum, what changes it experienced over the centuries, and what effects it does or does not create downstream. We must also be aware that our view ... changes as we move [about the environment].[111]

A way to measure this is through the separate skills of describing and explaining the situation, whether historical or contemporary. These skills are not rank-specific, as they apply to both lieutenants and sergeants understanding the battle unfolding before them as they do the enterprise leaders mulling over defense strategies aimed at countering the actions of adversaries. *Describing* is communicating the collection of observations or data about a phenomenon or situation. Missing, uncertain, or ambiguous information is acknowledged and recognized. *Explaining* adds interpretation, which includes any assumptions to address gaps or inconsistencies. However, such gaps are never completely mitigated and, as Cohen warns, attempts to assume them away can be dangerous.[112]

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[108] Eliot A. Cohen, "The historical mind and military strategy," *Orbis* 49, no. 4 (2005): 575-588.

[109] Antulio J. Echevarria II, "The trouble with history," *Parameters* 35, no. 2 (2005): 78-90.

[110] Michael S. Neiberg, *Reflections of change: Intellectual Overmatch through historical mindedness* (Carlisle, PA: U.S. Army War College, 2021), 11.

[111] Neiberg, *Reflections of change*, 14.

[112] Cohen, "The historical mind," 579.

Forecasting future environments

Forecasting is not prediction. Rather, it is a skill for hypothesizing possible futures based on current observations and possible directions that the future may go.[113] Forecasting the future of a quantitative value is simple (though hardly easy). It is done by combining current observations, past trends, and likely future directions to produce a plausible future value. For present purposes, forecasting is the same idea applied to qualitative information such as policies, strategies, events, and decisions.[114]

There are plenty of forecasting tools available to senior leaders. A popular one at the U.S. Army War College is scenario-based forecasting that allows planners to consider up to four possible future environments based on options for two independent factors or decisions plus consideration for 'wild-card' or completely unexpected actions. For example, in a heated competition between two nations, one could develop plausible scenarios in which both parties choose to heighten or lessen tensions against a possible backdrop of the regional economic situation growing stronger or getting weaker.

As Roxburgh (2009) explains also, good scenario development takes advantage of natural patterns of behavior in the strategic environment that enable building plausible forecasts. His four patterns are adapted for the military context: (1) "demography is destiny," meaning that one can forecast changes in the security environment on the basis of anticipated changes in populations, (2) the principles of war will remain stable and influence the policies strategic leaders will enact, (3) change is often cyclical and thus one should avoid forecasting extreme scenarios, and (4) things will normally move a lot of slower than anyone expects.[115]

Regardless of the tools used, the capacity to forecast is beneficial and should be cultivated as part of military education. It has utility at the enterprise level where policies and strategies can lead military programs and budgets in vastly different directions. It also applies at the tactical level where commanders are continuously trying to infer the adversary's first and next moves. Skills and competencies useful for forecasting include but are not limited to: (a) systems understanding to differentiate

[113] Jay Ogilvy and Peter Schwarz, "Plotting your scenarios," in Liam Fahey and Robert M. Randall (eds.), *Learning from the future*: *Competitive foresight scenarios* (New York: John Wiley & Sons, 1998), 57-80.

[114] Waters, "Senior leader competencies"; Stephen Banks, "Formulate powerful vision," in Silas Martinez and Lou Yuengert (eds.), *Strategic leader meta-competencies* (Carlisle, PA: Department of Command, Leadership, and Management), 27-31.

[115] Charles Roxburgh, "The use and abuse of scenarios," *McKinsey and Company* (blog), November 1, 2009, https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-use-and-abuse-of-scenarios.

environmental factors and their interrelationships, (b) political competence (especially in joint, interagency, intergovernmental, and multinational environments to ascertain the decision spaces available that could shape future outcomes, (c) innovation and creativity to imagine the possible future scenarios, and (d) communication skills to articulate the plausible outcomes and the logic behind them.[116] These skills would also contribute to the development and articulation of future-oriented solutions.

Anticipating surprise

Strategic surprise puts friendly forces at high risk. The sudden appearance of a change in the competitive environment could negate a force's advantage and effectively hand victory over to the adversary. Associated with forecasting is the need to consider what Ogilvy and Schwarz call *wild-card scenarios* (or "wild-cards"), surprises that substantially alter the state of the environment. Types of wild-cards include: (a) major discontinuous events such as natural disasters or a surprise terrorist attack, (b) events with significant unintended consequences such as how actors may suddenly exploit loopholes in a newly passed law, and (c) disruptive innovations or other "catalytic developments" that foster rapid change. New technologies are an example of this – the Mosaic/Netscape browser, iPhone, Facebook, these significantly changed the ways societies interact.[117] Identifying wild-cards can be done by examining one's assumptions and how those assumptions can fail in a way that is both plausible and directly threatens national security.[118] However, one must guard against thinking of strategic surprise solely in terms of technological innovations. Social movements, such as the Black Lives Matter, and the COVID-19 pandemic might retrospectively be classified as wild-card scenarios for planners in the 2010s.

The purpose of identifying wild-cards is not to plan for them but plan against them. It is not possible to plan for every possible contingency.[119] However, one could identify indicators of a wild-card scenario unfolding and therefore consider the capabilities necessarily to address it and mitigate the impact long enough for the remainder of the enterprise to adapt.

Like forecasting, anticipating strategic surprise is helped through the skills and competencies of systems thinking and communication.

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[116] From Waters, "Senior leader competencies."
[117] Ogilvy and Schwarz, "Plotting your scenarios," 74.
[118] James A. Dewar, *The importance of 'wild card' scenarios* (unpublished paper for the NIC 2020 project, Santa Monica, CA: RAND Corporation, 2003).
[119] Ogilvy and Schwarz, "Plotting your scenarios," 74-75.

Innovation and creativity are particularly important as planners must look beyond the scenario as described and consider a broader range of possible outcomes. Then, planners must communicate the plausibility or reasonability of that wild-card to convince the enterprise to consider it in strategies and plans.

4.D. Concepts and doctrine – Is the enterprise postured to establish and deliver guidance and direction to the force?

Concepts and doctrine are two terms that military professionals can easily confuse.[120] The difference is that *doctrine* provides definitions, principles, tactics, techniques, procedures, and measures of performance and effectiveness for accomplishing military tasks.[121] *Concepts* are ideas that warrant further investigation and development. They may describe novel operational environments; novel ways of conducting war, campaigns, or battles; or novel capabilities required and how they might be employed.[122] The defense enterprise establishes processes and systems for developing concepts; assessing them through experiments, wargames, or other trials; and operationalizing them in the forms of new doctrine and new capabilities.[123] Concepts and doctrine are living documents and should be constantly subject to review.[124]

Developing concepts and doctrine involves many of the same competencies often ascribed to strategic leaders.[125] These include but are not limited to: (a) systems thinking and understanding, (b) envisioning the future, (c) problem management, and (d) consensus building. Together these competencies help leaders anticipate future needs and set in the enterprise in motion toward fulfilling those needs over time.

Systems thinking and understanding

Strategic problems are "wicked" problems, where many complex yet seemingly unrelated actors and issues interact in a broad system.[126] Examples of wicked problems are plentiful in the strategic environment

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[120] U.S. Department of the Army, *Doctrine primer*, Army Doctrinal Publication (ADP) 1-01 (Washington, DC: U.S. Department of the Army, 2019), paragraph 2-4, hereafter *ADP 1-01*; U.S. Joint Chiefs of Staff (JCS), "Joint Doctrinal Publications," retrieved September 9, 2021 from https://www.jcs.mil/Doctrine/Joint-Doctrine-Pubs/.

[121] *ADP 1-01*, paragraph 2-4.

[122] U.S. Joint Chiefs of Staff, *Doctrine for the Armed Forces of the United States*, Joint Publication 1 incorporating Change 1 (Washington, DC: U.S. Joint Chiefs of Staff, 2017), VI-10. Hereafter *JP 1*.

[123] *JP 1*, xxvi.

[124] *ADP 1-01*, paragraph 2-4.

[125] Waters, "Senior leader competencies."

[126] Derek Cabrera and Laura Cabrera, *Systems thinking made simple: New hope for solving wicked problems* (Plectica Publishing, 2015), 14-15.

such as poverty, climate change, and growth in demand for energy. *Systems thinking and understanding* is a competency that allows leaders to reason about system complexity, analyze it, and make sound rational decisions.[127]

This competency represents a departure from traditional perspectives on analyzing enterprise processes by breaking them down into smaller problems and aggregating the result. The *complex adaptive system* (CAS) is the fundamental unit of analysis for systems thinking and understanding. CAS cannot be broken down into discrete subparts to achieve understanding of system behavior, rather they comprise agents (e.g., individuals, organizations) that are dynamically interwoven but are oriented on a common outcome.[128] Useful skills for analyzing and synthesizing CAS into enterprise plans include differentiating CAS and their components, their respective interrelationships, and the perspectives of each component and those of the planners.[129]

Applying systems thinking and understanding to concepts and doctrine is itself a CAS. Constructing a unifying solution to a mission requirement involves networks of stakeholders from across the enterprise who could contribute resources and ideas.[130] Stakeholders can include services, agencies, secretariats, subject matter experts, and more, each having a different perspective on the problem.

Understanding the future

The ability to analyze and understand the future is critical for developing useful concepts and doctrine. There are two skills involved. The first skill projects the current reality to the future, in other words, *forecasting.* This is the synthesis of systems thinking and understanding applied to a predetermined period, whether a day, week, or decades into the future. *What are the possible outcomes of the present situation applied to that time? Which are most likely? Most dangerous?* At the enterprise level, envisioning involves a deeper understanding of the theories underpinning military science and operational art due to the increased prevalence of CAS and competing motivations of actors in the strategic environment.[131] The range of possible outcomes is too great, so the use of

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[127] Waters, "Senior leader competencies," 65-66.
[128] Mary Uhl-Bien, Russ Marion, and Bill McKelvey, "Complexity leadership theory: Shifting leadership from the Industrial Age to the knowledge era," *The Leadership Quarterly* 18, no. 4 (2007): 298-318, 302.
[129] Cabrera and Cabrera, *Systems thinking*, 185-192.
[130] Uhl-Bien, et al., "Complexity leadership," 319.
[131] Waters, "Senior leader competencies," 63.

forecasting tools help filter out those factors most salient to the decisions at hand for the enterprise. [132]

The other, vital to developing concepts, is *envisioning the future.* Concepts describe the forecasted situation and propose possible solutions to drive change in the enterprise. Leaders then communicate, through the concept, an idealized picture of what their organizations should strive toward to confront future threats and risks. [133] This picture should represent something achievable – feasible, suitable, and acceptable with due consideration to risk. [134]

Problem management

CAS also features in the pursuit of the concept – its conversion to requirements, programs, budgets, and ultimately fielded capabilities. The program is the fundamental unit of analysis for the defense enterprise, and comprises the resources granted by a government with the authorities, including constraints, on expending them. [135] Naturally, at any given time there are hundreds or thousands of such programs underway, each with their own measures of progress, timelines, and sensitivities to perturbations in the federal budget. Many weapons systems development programs naturally go over budget or take longer to develop than planned. Leaders must take actions to sustain adequate progress across all programs so the concepts can be realized.

As a skill, *problem management* is incremental decision-making leading toward a desired long-term result. These decisions are made in the context of a decision environment with numerous other competing problems demanding attention. [136] Leaders must determine factors or measures indicating progress toward resolving a problem, the impacts of disruptions toward progress (such as a budget cut or change in demand), and the lag effects of any decision. Incremental decision-making naturally leads one toward short-term thinking that can derail an effort, but good problem management keeps the focus on the end result.

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[132] Ogilvy and Schwarz, "Plotting your scenarios."

[133] Silas Martinez and Thomas P. Galvin, "Leadership at the strategic level," in Thomas P. Galvin and Dale E. Watson (eds.), *Strategic leadership: Primer for senior leaders*, 4th ed. (Carlisle, PA: Department of Command, Leadership, and Management, 2019), 9.

[134] Waters, "Senior leader competencies," 63-64.

[135] Lou Yuengert and Thomas P. Galvin, "Defense Systems and Processes," in Thomas P. Galvin (ed.), *Defense management: Primer for senior leaders* (Carlisle, PA: Department of Command Leadership and Management, 2018), 45-60.

[136] Waters, "Senior leader competencies,"64-65.

Consensus building

This follows from the idea that one can only manage CAS through a network of stakeholders. Because resources are finite, stakeholder interests will naturally compete and agreement on decisions will be difficult to achieve. The best one may achieve at any given time is consensus on a way forward.

Consensus building is influencing stakeholders through the use of logical reasoning and trust.[137] It often involves negotiation, understanding of intergroup dynamics, and political competence to understand the motivations and needs of external stakeholders.[138]

4.E. ORGANIZATIONAL DESIGN – IS THE ENTERPRISE POSTURED TO DEVELOP THE FORCES NEEDED?

Organizational design is defined as "arranging how to carry out [the organization's] purpose and strategy and achieve its aims."[139] Stanford (2013) explains that organizational design is not solely about the structure of the organization, which in the military context equates to the configurations of personnel and equipment into units—squads, platoons, companies, and so on through theater armies—but also the people, processes, systems, incentives, and culture.[140] Thus, organization design is not solely about constructing the organizational chart but figuring out how the unit will function in terms of objectives, strategies, principles, protocols, workflows, relationships, and other informal mechanisms.[141]

Organizational design is a continuous activity that involves tough decisions about change. Does the enterprise undertake a large-scale disruptive transformational change? Should it make do with series of smaller-scale incremental changes that are lower risk but may not help retain the military's comparative advantages in the long term? How does the enterprise respond if the initial designs prove flawed?

This chapter introduces six different decision spaces associated with organizational design: (1) task identification, (2) division of work, (3) job design, (4) requirements definition, (5) capability development, and (6) integration that encompasses the roles of individuals in the enterprise. These decision spaces are presented in a rational sequence that under

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[137] Waters, "Senior leader competencies,"68.
[138] Waters, "Senior leader competencies."
[139] Naomi Stanford, *Guide to organisation design: Creating high-performing and adaptable enterprises* (New York: John Wiley & Sons, 2007), 5.
[140] Stanford, *Guide to organisation design*, 6; Marvin R. Weisbord, "Organizational diagnosis: Six places to look for trouble with or without a theory," *Group & Organization Studies* 1, no. 4 (1976): 430-447.
[141] Stanford, *Guide to organisation design*, 9, Table 1.1.

ideal conditions would be conducted in order, but in reality these are co-evolving interdependent spaces that only occasionally follows a logical order. Mastering each of these spaces is helpful for designing the organizational structures that will deliver the needed capabilities and re-designing them as needed to improve, grow, correct problems, or adapt to the situation.[142] However, in large enterprises such as the U.S. military, one is likely to specialize in only one or two of these decision spaces as they are often managed in different parts of the enterprise.

In military organizations that are traditionally very hierarchical, organizational design takes on an additional dimension. The enterprise must design from the top. A brigade must be designed to harness the capabilities of its battalions and provide unity of purpose. Battalions do the same for companies and so on. At echelon, the larger unit must be substantially more capable than the sum of its component parts. Otherwise, the Army could be theoretically organized as tens of thousands of autonomous squads, assembled into task forces on demand.

Task identification

Burton and Obel (1995) write in a seminal book on organizational design that "the goals and mission of the organization are the basis for the specification for what the organization should do."[143] Military organizations can draw its goals and missions from civilian authorities or higher headquarters' strategies, plans, or programs; doctrine; habitual supporting/supported relationships with other organizations; and other sources. *Roles and missions* is a common term for expressing the purposes and requirements that military organizations perform.

Because strategy documents and other sources may provide only vague or contradictory guidance, leaders must formulate and disseminate a definitive set of roles and missions to drive the organization's preparations in peace and conduct of operations. To do this, leaders often choose from the following constructs. One is through a *mission statement* that describes the central purpose of the organization. Another is through a *vision statement* that describes the intended long-term impact of the organization on the environment and/or the additional capabilities, capacities, or attributes that the organization will acquire or divest over time. A third is through a statement of *intent*, which is a multi-part expression of a concept of operation, key tasks, and end state describing the ways that the organization will achieve its goals.

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[142] Jay R. Galbraith, *Designing organizations: Strategy, structure, and process at the business unit and enterprise levels* (New York: John Wiley & Sons, 2014), Chapter 1.

[143] Richard M. Burton, and Borge Obel. *Strategic organizational diagnosis and design: The dynamics of fit* (New York: Springer Science & Business Media, 2004), 13.

These are often combined in the public communications of an organization. [144]

Division of work

There are various options for structural design at enterprise level, and the choices may vary depending on the capability. The first is the *functional organizational structure* where subunits are divided by task. This is common in the platform-centric Air Force and Navy whereby the platform dictates the mission performed. Functional structures work best when the tasks are stable, centralized control is desirable, there is likelihood that each sub-unit would have adequate expertise, and there are at least some common standards of performance across all sub-units. [145]

The second is the *divisional organizational structure* that has subunits task-organized by product or service, geographic region, or supported unit or customer. Armies implement divisional-style structures, of which infantry and armored divisions are examples. These are task organized to perform maneuver on the battlefield in support of a campaign. A tank company includes a specific number of tank platoons and a headquarters element that provides a variety of organic support functions. A corps or theater support command may have subordinate ordnance, quartermaster, and transportation units. An installation management or base support command may have subordinate units distributed across theaters, tailored for the needs of the forces residing in that theater. Divisional structures work best when tasks are not stable or are sharply differentiated by service performed, geographic location, supported command, or other factors.

A third type is the matrix structure, used to enhance communication and coordination and preclude stovepipes or barriers to unified action. The organization may be divided divisionally but then task organized functionally or vice versa. The Army Futures' Command's cross-functional teams are examples, where subordinate elements representing different capabilities are brought together to pursue a specific task of pursuing advanced capabilities within an Army modernization priority. In general, matrix structures are good for project-based efforts where

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[144] These vary greatly according to the needs of the commander and the organization. A case study on the development of an arguable successful mission statement, vision, and intent is from the formation of the U.S. Africa Command during the late 2000s. Thomas P. Galvin, *Two case studies of successful strategic communication campaigns* (Carlisle, PA: U.S. Army War College Press, 2019), 75-172.

[145] Stanford, *Guide to Organisation Design*, 57-61.

expertise is critically important and the requirements for each project differ greatly.

The chosen structure must also include formal coordination mechanisms such as authorities, terms of reference, and rules of engagement. This is critical for top-down enterprise solutions in which an overall capability is subdivided into smaller capabilities that must be interoperable and scalable, such as combat formations. This is also necessary for bottom-up innovative solutions that need to be scaled up.[146]

Job design

Job design is the field of organizational studies concentrating on how individual positions within the organization are defined, described, and enacted. More than the duty description alone, job design entails what individuals actually do.[147] For example, a battalion assistant S-3 officer can have any number of responsibilities for readiness reporting, training management, installation liaison, unit movement officer, and others. Some of these tasks derive directly from the unit's roles and missions, but others are likely to fall into the nebulous category of "other duties as assigned."[148]

Resource constraints in peacetime may necessitate organizations being resourced at two levels, fully resourced for war and something less during peace (see Chapter 6 on Structural Readiness). The latter is not merely smaller in numbers of personnel, the duties are both different in that some tasks only apply in peace while others only in war, and the gapped positions often reflect requirements that are transferred to a serving member. The influx of personnel for operations constitutes more than a plugging of gaps, in includes a redistribution of tasks to align with wartime responsibilities. This may also involve a re-evaluation of skills and expertise available, resulting in the need to generate requirements. Not just any warm body would necessarily do.

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[146] David K. Banner and T. Elaine Gagné, *Designing effective organizations: Traditional and transformational views* (Thousand Oaks, CA: Sage, 1995), 131.

[147] J. Richard Hackman, and Greg R. Oldham, "Development of the job diagnostic survey," *Journal of Applied Psychology* 60, no. 2 (1975): 159; Lisa E. Cohen, "Assembling jobs: A model of how tasks are bundled into and across jobs," *Organization Science* 24, no. 2 (2013): 432-454.

[148] In officer evaluations in the U.S. military, this statement is a catch-all usually added at the end of one's duty description to cover any unspecified tasks at the beginning of an evaluation period. It is not unheard of for some officers to find that these "other duties" outnumber the core tasks and consume more time but are usually still necessary for the functioning of the unit.

Requirements determination

If done correctly, the analysis of the environment, development of concepts and doctrine, and subsequent organizational designs will lead to identification of gaps and redundancies that introduce risk to the organization's mission. While some risk may be acceptable, it is assumed that the defense enterprise must take steps to mitigate risk that is deemed unacceptable such as when an enemy has or is gaining a competitive advantage or that a friendly capability is losing advantage due to obsolescence.

Requirements determination is the process of articulating the needs of a force such that the enterprise acts to satisfy those needs.[149] There are steady-state and operational variants of the determination process. In steady-state, the process tends to be centralized and bureaucratized to allow for the most efficient enterprise-wide solutions to be adopted. This typically involves a vetting process by which requirements are surfaced, compared, prioritized, and ultimately resourced. During operations, the requirements process may be formal or informal depending on the context. Requirements pertaining to the whole force or enterprise may require adjudication at the enterprise level to ensure consistency and reduce redundant efforts. Localized issues could be handled in a more decentralized fashion, whereby requirements could be satisfied, at least temporarily, through quick fixes, workarounds, or available activities such as local procurements or contracts.

A great intellectual challenge is articulating the requirement, especially when the gap is difficult to describe. The guiding question should be *how must a force behave such that it mitigates the risks associated with the capability gap*?[150] The answer to this question should be described as an action that helps developers translate the requirement into needed skills, equipment, training, and other corrective actions to form a new or improve capability.

Capability development

There are multiple ways to describe a capability. It could be a weapons systems platform such as a tank, plane, or ship. It can be a technology that offers a competitive advantage such as an information

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[149] It is important to differentiate the formal use of the term 'requirement' as found in the Joint Capabilities Integration and Development System (JCIDS) in the U.S. and the less formal definition used here. In JCIDS, a requirement is a vetted and validated statement of need that is the outcome of an analysis process. Greg Thompson and Lou Yuengert, "Aligning vision to capability: Fundamentals of requirements determination" (faculty paper, Carlisle, PA: Department of Command, Leadership, and Management, January 2021).

[150] Thomas P. Galvin, *Capabilities-based planning: Experiential activity workbook* (Carlisle, PA: Department of Command, Leadership, and Management, 2023), 47-48.

technology network or real-time common operational picture system. A capability can also be an idea – such as ways and means of exercising agility and versatility in the face of dynamic and ever-adapting threats.

Earlier versions of the DoD Dictionary of Military and Associated Terms defined a *military capability* as the "The ability to achieve a specified wartime objective (win a war or battle, destroy a target set)" and comprise four components:[151] (1) *force structure* – defined as the numbers, size, and composition of the units that comprise the joint force; (2) *modernization*, the technical sophistication of forces, units, weapon systems, and equipment; (3) *readiness* or the abilities of forces, units, weapons systems, or equipment to deliver the outputs for which they were designed; and (4) *sustainability*, that maintains the necessary level and duration of operational activity to achieve military objectives. The first two reflect the greatest *force potential* – while the latter two constitute enablers and constraints of that potential.[152] So when the Army established a total end strength of so-many hundred thousand personnel, that constitutes the *Force Structure*. *Modernization* accounts for the equipment developed and procured to outfit the soldiers. The last two measures, which constitute the term "readiness" in common use, is a measure of how many soldiers are on-hand in the force and trained for the mission (*Readiness*) and how many supplies are on hand to support them (*Sustainability*).

A detailed description of capability development is beyond the scope of this primer, but one way the U.S. military divides responsibilities for capability development is the DOTMLPF-P framework. DOTMLPF-P stands for: (D) doctrine, (O) organization, (T) training, (M) materiel, (L) leadership and education, (P) personnel, (F) facilities, and (P) policy. The framework is useful for both materiel (e.g., new weapons systems) and non-materiel (e.g., change in tactics) capability development since the other components of the framework still apply.[153] Each component represents a line of effort interdependent of the others to allow smooth fielding of the capability. This means that at time of fielding, any materiel is tested, evaluated, produced, and distributed where needed; the force is properly organized, training, and educated on the capability and its application during operations; bases and installations are postured to house and sustain the capabilities (including access to needed information networks); and the enterprise is

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[151] DoD Dictionary, 1989 version, 228, https://apps.dtic.mil/dtic/tr/fulltext/u2/a258036.pdf The term has since been dropped from the DoD Dictionary but is used here because it is the definition included in various studies on military readiness systems in the 1990s.

[152] Moore, et al., *Measuring military readiness,* 4.

[153] To learn more, see Acquipedia (Defense Acquisition University), s.v. "DOTmLPF-P Analysis," https://www.dau.edu/acquipedia/pages/articledetails.aspx#!457

postured to sustain the capability over the long haul. The framework is also helpful for coordination and oversight of the effort so that any adjustments to the effort can be synchronized across the enterprise.

Integration

Designing organizations also involves establishing the coordination mechanisms that guide members to accomplishing tasks and resolving conflicts or gaps.[154] Coordination and control may be formally mandated, but in practice they are often influenced by the individual members' preferences in ways that elude formal controls and authorities.[155]

Ways to uncover and address shortcomings and vulnerabilities in an organization design include analyzing to what extent the informal structures complement the formal structures. For example, an overly bureaucratic organization operating in a highly dynamic and competitive environment may lose its competitive advantage over time.[156] Leaders who behave as entrepreneurs will likely clash with members whose tasks and responsibilities are highly routine.[157] Numerous design models exist that map relationships among systems and subsystems within the organization, allowing for both analysis and design of organizations. These models consider both formal (e.g., structures and technologies) and informal (e.g., climate, culture, rewards, and incentives).[158]

4.F. Professional stewardship – Is the enterprise postured to promote and sustain the military's professionalism?

The roles of the profession and professionalism have not traditionally been linked to readiness in the literature, but the relationship is intuitively clear. A professional force is more capable of abiding by the laws of land warfare in combat and fighting honorably in ways that contribute to a better peace afterward. Conversely, a non-professional or unprofessional force is more likely to act inappropriately and disregard human life under duress. In addition to instilling

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[154] Banner and Gagné, *Designing effective organizations*, 139.
[155] Kristin Behfar and Dale Watson, "Leading large bureaucratic organizations: The internal environment," in Thomas P. Galvin and Dale E. Watson (eds.), *Strategic leadership: Primer for senior leaders*, 4th ed. (Carlisle, PA: Department of Command, Leadership, and Management, 2019), 29.
[156] Burton and Obel, *Strategic organizational design*, 19-24.
[157] Galbraith, *Organizational design*.
[158] For example, see Burton and Obel, *Strategic organizational design*, 18-19 for a short list; also Weisbord, "Six places to look."

discipline and honor, professionalism comes with it the responsibility to perform tasks in a professional manner.[159]

Stewardship is the systemic caretaking of the military profession by enterprise leaders and each individual service member.[160] The defense enterprise must set conditions to foster professionalism across the services, and these conditions derive from both the values instilled by defense leaders and the domains of expert knowledge that the enterprise applies to military operations. As a function of enterprise readiness, this paper focuses on the latter. Expert knowledge of the military provides the basis upon which agile solutions to novel problems are explored, developed, shared, and—if successful—indoctrinated. The defense enterprise establishes institutions to serve these purposes, and it is both the quality and dynamism of the expert knowledge and the capacity of the individual members to acquire, apply, and contribute to it that is measured.

Sustaining domains of knowledge

Abbott's (1989) essay on professions defined *professional work* as the act of diagnosing a problem or condition and delivering treatment using professional inference and judgment that draw from the profession's abstract knowledge.[161] The intellectual functions described in this chapter all depend upon a sustained body of knowledge that is shared across the enterprise. This body of knowledge is broad and encompasses unique military tasks such as conducting offensive and defensive operations and tasks that are shared with others such as conducting peace operations and humanitarian assistance. It also encompasses the professional tasks of the enterprise to develop and implement strategies and plans, steward defense resources, and provide leadership for the services.[162]

Stewarding this expert knowledge is both an individual and institutional responsibility. At the institutional level, stewards provide organizational structures, processes, and systems oriented on collecting, interpreting, and storing corporate knowledge for recall and reapplication purposes. On the other hand, individuals carry responsibilities for drawing on and contributing to the corporate base of expert knowledge. Proper stewardship involves the retention of all knowledge whether deemed relevant or not, as the knowledge of what does not work or no longer works so well is equally important as what

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[159] Lacquement and Galvin, *Future of the U.S. military profession.*
[160] Don M. Snider, "Renewing the motivational power of the Army's professional ethic," *Parameters* 44, no. 3 (2014): 7-11.
[161] Abbott, *The system of professions*, Chapter 3.
[162] Lacquement and Galvin, *Future of the U.S. military profession.*

does work. The status of knowledge is fluid – what is obsolescent now may be renewed in importance at a future time.

Thus, from a stewardship standpoint, the readiness of the force includes the capacity of the enterprise to store, manage, and deliver expert knowledge on demand. It also includes the capability and capacity to share and evaluate its knowledge through the professional work of individuals. This is among the purposes behind institutions, processes, and systems associated with development of concepts and doctrine, professional military training, and education.

Training and education

Training and education serve as links between the domains of knowledge and the enterprise membership at echelon. Each defense enterprise establishes its own roles for training and education, but they are summarized as a combination of development of practice knowledge and instilling it among members to be put to use in performing professional tasks. In the U.S., collection and development of knowledge (both abstract and practical) are partially overseen by designated organizations, such as so-called *centers of excellence*. Centers of excellence provide the capacity to collect and interpret the massive amounts of historical and contemporary data available and distill them into practical knowledge in digestible forms such as concepts and doctrine. They also perform vetting functions, attempting to differentiate knowledge that is more useful from that which is less. However, vetting decisions should rarely be definitive or enduring.[163] Rather, it is advisory in nature because changes in the environment or context could make relevant knowledge that had been previously deemed obsolescent.

Training and educational institutions such as training centers, schools, leader development programs, online certification systems, and others provide ways and means of disseminating and sharing knowledge while providing feedback to the enterprise. For present purposes, the distinction between training and education is not so important. Both follow the enterprise's lead in determining priorities of outcomes – the skills and knowledge to be imparted and demonstrated in practical use, and the ability of trainees or students to deliver feedback or alternative perspectives, such as through after-action reports or research projects. Training and teachers bridge both capacities as: (a) content developers, disseminators, and evaluators, and (b) contributors to knowledge through their teaching, research, and service to the enterprise.

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[163] Abbott, *The System of Profession*s, Chapter 3.

Enterprise readiness of these enterprises is a measure of the throughput of knowledge – dissemination through the trainers and faculty to the students and trainees, and feedback and contributions in return. High readiness is seen as the ability of the institution to resist dogmatism and maintain openness to new ideas while also ensuring that the designated outcomes are achieved. Agility in practice requires agility in the institutions to remain current and effective in their teaching and training missions.

Innovation and experimentation

Abbott (1989) showed that inference is made possible by the collection, formalization, and dissemination of *abstract knowledge*, and this is the most important component in Abbott's construct of professional work. Abbott argues that abstract knowledge is not organized for practical use, with the implication that conflating abstract with practical knowledge can be dangerous. In particular, he highlights that abstract knowledge can be self-contradictory because it contains all the knowledge generated over time. The result may appear confusing to an outsider but should instead be a deeply logical and rationally consistent body from which practitioners can develop better diagnostic, treatment, and inferential methods. Practitioners can also discredit and reject methods that are less effective, ineffective, or counterproductive. [164]

Thus, both the enterprise and every individual member thereof has inherent responsibilities to take steps to contribute to the corporate body of knowledge through experimentation and innovation. Unlike academic research where experimentation often serves the field of knowledge, military experimentation serves a more practical purpose to learn about the ends, ways, and means of improved capabilities and sustained competitive advantage. The military experiments with a purpose in mind.

To that end, the enterprise is likely to centrally manage innovation and experimentation through formal designations of offices and units. This not only provides the ability to conduct important research, but it also shields the remainder of the force from undue disruption to their training and readiness activities. On the other hand, each member of the enterprise, as a professional steward, has the responsibility to innovate and experiment commensurate with their duties. The abilities to critically evaluate one's mission and capabilities and to seek ways of improving or enhancing them should be an inherent part of service. The ability to innovate in wartime is related to the abilities developed to innovate in peace. Like many other capabilities expressed as part of enterprise

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[164] Abbott, *The System of Professions*, 52-54.

readiness, the willingness to experiment cannot be turned on like a switch.

4.G. HOW DOES ONE MEASURE ENTERPRISE READINESS?

The cursory review of factors contributing to the enterprise readiness of the force offers two implications that should be refined through detailed research.

The first is that developing enterprise readiness is a critical component of peacetime activities that is necessary for building a force capable of being agile in war. Agility does not simply happen through individual or collective will. It must be cultivated. A defense enterprise that operates like a stultifying bureaucracy that suppresses innovation in peacetime will neither develop agile leaders for war, nor set conditions for the nation to adapt and innovate as the war develops.

The second implication is that enterprise readiness is aligned with known conceptions of senior leader competencies, but that these competencies must be developed over the course of a soldier's career. The U.S. Army War College has devoted considerable effort to identifying these competencies – cognitive, technical, and interpersonal – however, less effort has been given to the ways and means of developing these competencies beginning at entry level and developing them over time. Mumford's (2007) strataplex was an attempt at a framework for identifying the different skills and competencies needed at various hierarchical levels as leaders move from direct or strategic forms of supervision.[165]

Communication is an example of a senior leader competency requiring continuous development of the course of a career. According to Army doctrine, leaders at all levels must be able to communicate effectively "by clearly expressing ideas and actively listening to others."[166] Their communications must be engaging, develop shared understanding, and be sensitive to others' perspectives (e.g., cultures, contexts).[167] At the senior levels, communication incorporates the effective delivery of tailored messages to wide ranges of internal and external audiences, expresses vision and longer-term goals and intent, and appropriately uses a wider range of tools and available media,

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[165] Troy V. Mumford, Michael A. Campion, and Frederick P. Morgeson. "The leadership skills strataplex: Leadership skill requirements across organizational levels." *The Leadership Quarterly* 18, no. 2 (2007): 154-166.

[166] Department of the Army, *Army leadership and the profession*, Army Doctrine Publication 6-22 with Change 1 (Washington, DC: Department of the Army, 2019), Table 5-5. Hereafter *ADP 6-22*.

[167] *ADP 6-22*, Table 5-5.

including social media. [168] Skills and knowledge of communication must evolve and develop over time. As junior leaders progress, their requirements for communicating expand in scope and quality.

Other senior leader competencies are reinforced in the above discussion. These include but are not limited to the cognitive skills of strategic thinking and problem management; technical skills of systems understanding and change management; and interpersonal skills of negotiation, consensus building and team building. Of special note, strategic thinking involves the application of critical, systems, and creative thinking to make sense of a situation and derive a solution. Developing the capacity to exercise these individual thinking skills is important at junior levels but has traditionally been underemphasized in professional military education. Critical and creative thinking skills should be cultivated at more junior levels as this supports intellectual agility later in one's career.

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[168] Waters, "Senior leader competencies," 70.

5. Operational Readiness: Measuring State of Current Forces as Designed

When one hears the terms 'readiness' or 'preparedness,' there is a good chance one is thinking of operational readiness, typically measured in a snapshot – at this precise moment, does the military have enough people and equipment to roll out the gate? During the Cold War, the threats of invasion from the Warsaw Pact or North Korea were real, and the next war would be "come as you are," implying "you better be ready if it happens." [169] Operational readiness metrics and systems help identify and correct deficiencies.

Operational readiness management systems are intended for answering the question, "Are the on-hand capabilities ready to accomplish their missions?" A given military unit is organized with capabilities (i.e., equipment and personnel) to perform a range of potential missions and sustain them for a specified time. Being *ready* is a measure of how much that unit's equipment is on-hand and serviceable and how many of its personnel are assigned, present, and trained *as compared to the organization as designed*. Readiness of smaller units aggregate into readiness of larger units all the way up to Department level. For example, the U.S. Army defines strategic readiness as the ability of the Army as an institution provide sufficient, capable units to support national strategies. [170]

Reporting levels of readiness is the purpose of a *readiness management system*. They identify *readiness gaps*, shortfalls against the unit's defined organizational structures due to not being on-hand (e.g., one hundred people or platforms authorized but only ninety are assigned) or not available (e.g., 100 people assigned but only 90 are fit for duty, or 100 platforms assigned but only 90 are serviceable). This information aids senior leaders in making resource decisions and taking remedial action to correct the gaps.

Readiness management systems exist to allow for rational systematic assessment of preparedness of currently acquired or accessible capabilities. Often rational and systematic, these systems address the needs of a military's stakeholders in readiness decisions with consistency and clarity. [171] Effective systems allow national decision makers to consider important strategic questions like: *What do existing war plans ask*

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[169] Lynch et al., *"Come as you are" war*, 1-9.

[170] U.S. Department of the Army, *Army strategic and operational readiness*, Army Regulation 525-30 (Washington, DC: U.S. Department of the Army, April 2020), 2. Hereafter *AR 525-30*.

[171] Moore, et al., *Measuring military readiness*.

the joint force to do? What are the most likely and most dangerous emerging threats facing geographic combatant commanders in their theaters? Where are joint capabilities distributed worldwide (stationed units, prepositioned assets, etc.), and how can they be mobilized and employed where and when they are needed? What if one or more war plans are executed at the same time?

Several studies over the past three decades have examined the structures of readiness management systems. Three themes emerged from the literature. The first is that no system of measuring operational readiness is perfect and there are limitations to the "C-rating" systems commonly used. The second is that any readiness reporting system faces known tensions that affect their design. For example, how would the system integrate readiness ratings from different types of capabilities to produce a simple, communicable collective assessment? Or how do leaders weigh the options of what data to include in the system and what to exclude? The third is what decisions should the reports drive.

5.A. How does one measure and communicate operational readiness?

The meanings of operational readiness measures depend on the capabilities in the unit or service. However, the defense enterprise will often prefer that a common language is used for communicating readiness assessments regardless of the capability. This may simplify reporting but mask important details in the assessments specific to each capability.

Figure 2 shows a notional three-tier structure that shows how operational readiness might be understood and managed at different levels, based on the U.S. system. At the bottom is *unit readiness*, which aspires to measure operational readiness per unit or capability.[172] Each unit aggregates the operational readiness of its subordinate elements and reports it upwards to the next echelon. The middle level is *mission readiness*[173] which assesses the abilities of units to form together and perform a mission against an established warplan or another requirement document. Mission readiness assessments therefore include interoperability across units and capabilities. The top level is *strategic readiness* that assesses the capabilities and capacity of the whole service, agency, or activity to fulfill the requirements of national strategies.

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[172] In the U.S. system, the lowest level for most capabilities is company-level.

[173] To prevent confusion, I used the term "mission readiness" instead of the Army's doctrinal term which is "operational readiness" defined differently from Betts' (1995). "Mission" has the advantage of covering a wide array of military activities short of combat that enterprise leaders may want readiness reported on.

Strategic Level
- *Measured against the overall national strategies*
- *Usually aggregating the full service, agency, or activity*
- *Reported to external stakeholders*
- *E.g., U.S. Army Reg. 525-30*

Mission Level
- *Measured as the aggregate readiness against a mission or operations*
- *Usually against current and projected operational requirements*
- *Reported as risk to the mission*
- *E.g., U.S. Army Reg. 525-29*

Each arrow represents a different mission

Unit Level
- *Measured against force design*
- *Usually through a standard or common routine process*
- *Reported often as levels of resourcing and training*
- *E.g., U.S. Army's Unit Status Report (Army Reg. 220-1)*

Shading represents different capabilities

Figure 2. Notional three-level structure of operational readiness[174]

Systems of readiness assessments and ratings

Regardless of level, the aim is to calculate an overall readiness measure, known as a unit *C-level*[175] that stands for a *capability level* rating. These ratings are categorical,[176] constituting the overall operational readiness rating for the unit, capability, force, or service. Militaries may adopt different names of such assessments based on unit, mission, or strategic level, or purpose of the assessment. For example, the U.S. Army has a second unit level rating called an "A-level" oriented toward

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[174] Original graphic by author based on *AR 525-30,* Figure 1-1.

[175]

[176] A *categorical* variable is one where the range of possible values is limited and typically fixed. An example would be the variable of rank, ranging from Private to General.

readiness to conduct a specific assigned mission such as for an upcoming deployment.[177] Meanwhile, the Chairman's Readiness System at the U.S. joint level uses "RA-levels" for reporting strategic readiness of the services and combatant commands. Hereafter, I will use C-level to refer to all these types of scales since they use similar constructs and will mention others by exception.

As Figure 3 shows, C-levels are often defined as a set of values representing a scale of operational readiness from high to low. "C-1" through "C-4" that represent four levels of readiness from 1 = *high* to 4 = *low.* There may also be additional levels that fall outside the high to low and instead represent special circumstances or categories. For example, the U.S. Army maintains two extra levels that represents 'not applicable.' "C-5" is for units undergoing a transformation or other action that requires relief of their core mission temporarily, while "C-6" is conferred on capabilities whose readiness level cannot be calculated as determined by the Army.[178]

P-level
Personnel available and deployability

S-level
Required equipment available / on-hand

R-level
Serviceability of on-hand equipment

T-level
Training and capable of performing mission essential tasks

Commander's Assessment
Within authorities granted, may upgrade or downgrade based on relevant factors with justification

C-level
Overall readiness assessment of unit or capability

Figure 3. Deriving a C-level rating[179]

C-levels are usually calculated as a synthesis of several subordinate ratings. The U.S. Army, for example, has four and these four are common

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[177] Department of the Army, *Army unit status reporting and force registration – Consolidated policies*, Army Regulation 220-1 (Washington, DC: Department of the Army, August 2022), Table 4-2. Hereafter *AR 220-1.*

[178] , *AR 220-1,* paragraphs 4-1, 4-4e(2)(a), and 5-9.

[179] Graphic adapted from *AR 220-1*, Figure 4-1.

across the U.S. defense enterprise. Personnel are measured according to quantities on-hand compared to authorized strength (called "P-level") and levels of their training ("T-level"). Equipment is measured in terms of the amount on-hand ("S-level") and how much of it is available for employment ("R-level"), e.g., not under repair or servicing. These ratings can have values of 1 through 4 (e.g., P-1, R-3, S-4, T-2) whose meanings align with that of their respective C-rating equivalents. For example, a P-1 rating means that the unit is at *high* readiness for personnel, and a unit that has all subordinate ratings of '1' would be considered C-1 overall. [180]

Rules established in regulations govern how raw data is converted into each of the four ratings, and some of the calculations could be complex. For example, the P-rating is further subdivided into three measures – total available strength, strength levels by designated specialty, and senior level strength (available E-5 and above). Each measure is converted by using a lookup table from a raw percentage into a rating of 1 through 4, and the lowest of those ratings constitute the overall P-rating. [181] These lookup tables follow a general convention where each rating corresponds to a fixed percentage (for example, 90%-100% corresponds to a '1' rating, 75%-89% might be a '2', and so on).

Similarly, rules govern how the four ratings are synthesized into the overall C-level for the unit, and how higher echelon units aggregate the C-levels of subordinate units. Usually, this is by identifying the lowest rating of the four categories (perhaps excluding special ratings like C-5 or C-6). However, commanders may be allowed to subjectively upgrade or downgrade their C-rating within the guidelines of the applicable regulation. [182] An example is if there is an outlier among the data that artificially raises or lowers the overall C-rating such that it does not represent the unit's true readiness.

There are alternatives to using a C-level system. One is the A-level, introduced to measure a unit's ability to meet specified missions once assigned. Thus, if a unit has been placed on a deployment list for operations in CENTCOM, the commander will begin submitting A-levels informing the Army of unit readiness for the CENTCOM mission. Performing the A-rating assessment parallels that of the C-rating but differs in detail. [183]

Aggregation to the enterprise level (e.g., service or major command) conceptually follows suit although decision makers often require

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[180] *AR 220-1*, Chapter 5 describes how the respective P, R, S, and T ratings are calculated and aggregated into unit C-ratings.

[181] *AR 220-1*, Table 5-1.

[182] *AR 220-1*, paragraph 4-4f(3).

[183] *AR 220-1*, paragraphs 4-1f(2) and 4-1g.

additional information to make proper readiness-informed decisions. For example, the U.S. Army's Strategic Readiness process sits on top of unit readiness reporting and is governed under a separate regulation.[184] At Army level, staff proponents for service-level Title 10 functions of Manning, Equipping, Training, Sustaining, etc. assess key indicators and trends across the service, feeding into a "strategic-level" assessment known as the Army Strategic Readiness Assessment (ASRA). The "narrative" assessment identifies specific resourcing requirements and potential strategic levers—agencies, processes, and systems providing potential ways and means for mitigating such risk. The ASRA also serves as input into the Joint Force Readiness Review and other defense-wide assessments.

Another source is a comparison against the same force at another point in time, past or future. In the latter case, such comparisons can be fruitful as knowledge of one's unreadiness can spur needed modernization. The U.S. readiness reporting systems include ratings specific to periods when units are undergoing reorganization and modernization. Its force generation models account for the need to conduct controlled tear-down of units to build them back up in preparation for missions or rapid reaction status.

However, the former case, comparing current force readiness against the past, can be dangerous. Suppose the military overemphasizes a past glorious victory or general period of strength. In that case, perceived readiness can be low against unnaturally high expectations or the military may be pushed to maintain old, outdated capabilities no longer relevant for the next fight. If leaders emotionally invest in distancing the military from a loss, reversal, or crisis, they risk introducing bias into readiness assessments.

Limitations of operational readiness measures

Operational readiness measures work better for certain forces than others, especially at unit-level. They may be well-suited for combat or combat support units with discrete weapons systems whereby the percentage of available systems is meaningful. A tank platoon with its four tanks ready to go should be assessed as operationally ready. The same platoon with two tanks out of commission is not – and 50% can be used to indicate the unreadiness level and drive corrective actions.

The same approach does not work as well with network-based or other weapons systems where the sum of the parts is substantially different than the whole. An example is cybersecurity, where even a

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[184] *AR 525-30*, chapters 2, 4, and 5.

single unready system (out of millions of computers in DoD) puts the mission at risk due to the vulnerability provided and its potential exploitation by adversaries. From an operational readiness standpoint, one could undoubtedly quantify the numbers of computers configured adequately for access to the enterprise network and use metrics to determine priorities for computer life-cycle replacements. While these numbers indicate the computing capacity available to the unit, they present an incomplete description of the cybersecurity posture and instill a false sense of confidence (or a false sense of dread) regarding the execution of cybersecurity during war. [185]

There are also capabilities where the percentage of lost systems could be meaningless. Consider swarming technologies where thousands of drones are deployed at once and the quantity of drones in a given swarm can be variable. Of course, a unit table of equipment could mandate a quantity on-hand and operational readiness metrics can report on that quantity. However, for such a technology, how much would it matter whether 100,000 were on-hand or only 75,000? Or, if a unit had 60% or 80% of its quantity? In other words, how many drones does it take to produce an effective swarm?

There are similar limits to quantifying the operational readiness of personnel. Building metrics for common military skills and training for the unit's mission is easy. The principles of overmatch and sufficiency are applied straightforwardly, but what of other metrics like interoperability? Collective training can provide indicators when applied to a parent unit and its subordinates. However, it is more difficult to develop metrics for a unit's ability to plug and play in a force in a truly unfamiliar environment and adapt its mission essential tasks in ways previously unknown.

Another limitation regards the qualities of each individual being counted. Traditional P-rating measures assert that an individual is ready when they are present for duty and occupying a position in the organization's official structure, qualified / certified in the tasks to be performed according to the duty position and meets the physical fitness standards established by the military. The advantages to these measures is that it is easy to design systems to correct deficiencies in these areas. An unfilled position is addressed by a requisition to the personnel system. Training and certification shortfalls should spur requisitions for training or education. Physical fitness issues are addressed at unit level or through the medical enterprise.

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[185] Kevin E. Lunday, "Cybersecurity Is operational readiness," *SIGNAL Magazine*, October 17, 2017, https://www.afcea.org/content/cybersecurity-operational-readiness says it well -- "Each service member is either the strongest link or weakest link."

However, there are many other factors that may contribute to or detract from an individual's readiness to perform their duties in combat environments that might fall outside a P-rating system. For example, U.S. Army developed a "holistic health and fitness" system to capture such factors, including mental (e.g., "ability to meet the mental demands of combat"), spiritual (e.g., "personal qualities needed to sustain a person in times of stress"), sleep, and nutritional.[186] An operational readiness reporting system that is sensitive to these individual factors should likewise use reports to drive organizational or enterprise remediation while properly accounting for the privacy and dignity of each member. For example, if there is a metric or indicator of mental health concerns then the system's purpose should be to identify when such concerns present barriers to individual or unit operational readiness and energize remedial action.

5.B. What are the challenges in developing operational readiness metrics?

Designers of readiness management systems try to establish measures for the efficient and reliable input and output of valuable information for decision makers.[187] Accuracy and verifiability, of course, are important. However, as the preceding Army example shows, readiness assessments generally aggregate to decreasing levels of quantification and increasing levels of narrative or qualitative expression. Because of the potential inconsistencies arising with narrative assessments, DoD has generally moved toward greater use of quantifiable metrics and reduced authorities for subordinate commanders to make subjective upgrades or downgrades.[188]

Regardless, designing effective and useful measures is a significant challenge. There are decisions to be made regarding how best to translate massive amounts of raw data into a valuable and informative summary of a unit or service's readiness status. Sadly, no magic formula or metric works perfectly well for all situations. Studies of readiness metrics have

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[186] Michaela Pursley (ed.), *H2F: Holistic health and fitness – soldier readiness system* (Fort Leavenworth, KS: Center for Army Lessons Learned, 2023), https://api.army.mil/e2/c/downloads/2023/06/05/25e44ff1/23-06-784-holistic-health-and-fitness-handbook-jun-23-public-release-1.pdf

[187] John R. Brinkerhoff and Lawrence B. Morton, "Origin and evolution of readiness reporting," in John Tillson (Project Leader), *Independent review of the DoD's Reporting System*, IDA Paper P-3569 (Alexandria, VA: Institute for Defense Analyses, 2000), Appendix G, http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA406574.

[188] R. Derek Trunkey, "Implications of the Department of Defense Readiness Reporting System," CBO Working Paper #2013-03 (Washington, DC: Congressional Budget Office, 2013), https://www.cbo.gov/sites/default/files/cbofiles/attachments/44127_DefenseReadiness.pdf.

identified the following unavoidable tensions that system designers must consider.

Subjectivity versus objectivity

Tendencies are to favor objectivity and constrain subjectivity, as this is perceived to reduce bias in reporting even though this increases the data required and complexity of analyses.[189] Certainly at lower echelons, one may expect metrics to be easier to define and apply, but at upper echelons this can be more challenging as the range of potential data inputs increases.[190] Thus, subjectivity is difficult to eliminate. It is recognized that "commanders at all levels have experience and professional judgment that a readiness reporting system would be foolish to ignore."[191]

Readiness management systems should consider what "intangibles" warrant the exercise of a commander's professional judgment without risking the introduction of bias or undue manipulation of the ratings.[192] Examples of intangibles that might not be objectively measurable include, but are not limited to individual will to fight and collective esprit de corps,[193] individual and collective experiences operating in combat environments,[194] and outcomes of training events that did not fully replicate the conduct of mission essential tasks under wartime conditions.

Aggregation and summarization

The quantity of raw data, whether subjective or objective, is too great to be useful, hence the management system must provide means to reduce it to useful summary information tailored to support decision making. The complexity of the data makes this harder than it sounds.

The nesting of readiness levels from individual to joint force appears logical, but bias and misrepresentations can creep in based on the methods used to aggregate data from lower echelons to higher ones. For example, Betts (1995) questioned how both 90% and 100% of personnel fill represented "C-1," the highest rating, but a drop of only one

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[189] Brinkerhoff and Morton, "Origin and evolution," G-63.

[190] Harrison, "Rethinking readiness."

[191] Lawrence B. Morton, Mark R. Lewis, and John R. Brinkerhoff, "The Global Status of Resources and Training System (GSORTS)," in John C. F. Tillson (Project Leader), *Independent Review of the DoD's Reporting System*, IDA Paper P-3569 (Alexandria, VA: Institute for Defense Analyses, 2000), Appendix C, C-56. Hereafter "GSORTS."

[192] Morton et al., "GSORTS," C-56 and 57.

[193] William K. Seago and Robert M. Weekley, *Readiness system management* (study project, Carlisle, PA: U.S. Army War College, 1977), 6, https://apps.dtic.mil/sti/tr/pdf/ADA041438.pdf

[194] Seago and Weekley, *Readiness system management,* 9.

percentage point to 89% changed the rating category and disproportionately altered the scope of the unit response.[195] The same report also questioned the validity of division ratings when the same number of battalions below C-1 could produce a division rating of C-1 or C-2 depending solely on how the C-2 battalions were distributed among the brigades.[196]

There is also a question of sensitivity -- to what degree is the system sensitive to specific data outliers? An old historical example shows how this presents a problem. Consider a unit with two platforms, one that is more combat critical but lower in quantity and one that is less combat critical in nature but much higher in quantity. One would ordinarily presume that the state of the former might outweigh the state of the latter, but that depends on how the system aggregates different capabilities together into a single rating.[197] Sensitivity becomes especially challenging when changes in priorities of missions change which capabilities are more mission critical. For example, one commentator on defense readiness noted that "some of the capabilities in highest demand [in the 2000s] are truck drivers and civil engineers."[198]

The choice of summary ratings and their interpretation is another factor. As an example, the Defense Readiness Reporting System (DRRS) uses three rating levels (green, amber, and red which mean "yes," "qualified yes," and "no")[199] while the Joint Force Readiness Review within the Chairman's Readiness System[200] employs a four-level scale (RA-1 through RA-4). In the latter case, RA-2 and RA-3 essentially subdivide the "qualified yes" from DRRS.[201] Although the relationship between the two systems is documented in the Chairman's Guide, the interface between different rating profiles can introduce bias.

Comprehensiveness

Comprehensiveness addresses what is reportable versus not reportable. The clear trend in DoD is to report as comprehensively as possible, including all entities affecting the readiness of the joint force

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[195] Betts, *Military readiness*, 90-91.

[196] Betts, *Military readiness*, 90.

[197] Betts, *Military readiness*, 90.

[198] L. J. Junor, "The Defense Readiness Reporting System: A new tool for force management," *Joint Force Quarterly* 39 (4th Quarter 2005): 30-33, https://dml.armywarcollege.edu/wp-content/uploads/2023/01/Junor-The-Defense-Readiness-Reporting-System-2005.pdf, 31.

[199] Trunkey, "Implications."

[200] Chairman of the Joint Chiefs of Staff, *CJCS Guide to the Chairman's Readiness System*, CJCS Guide 3401D (Washington, DC: U.S. Joint Chiefs of Staff, 2010), 17. Hereafter *CJCSG 3401D*.

[201] The author thanks Dr. Richard Meinhart, DCLM, for this insight.

and all types of missions expressed in national security documents.[202] This is driven both internally, as DoD seeks to gain greater real-time understanding of its readiness, and externally through Congressional mandate.[203]

The challenge of designing the system to be comprehensive is two-fold. First, are there entities whose role in readiness is negligible such that the energy needed to collect the data outweighs the benefits? Certainly, there are DoD entities whose role in readiness is limited and can be exempted (e.g., ROTC detachments[204]). Others, such as higher headquarters (e.g., Office of the Secretary of Defense, joint and service staffs, etc.), present more complex challenges, including determining the suitable readiness metrics that are internally valid (that is, actually measure what they purport to measure) and resourcing the needed data collection and analysis functions, especially at a time when the impetus is to reduce the sizes of headquarters.

Finally, there is the general burden of reporting, which can become a readiness detractor. The amounts of reports and the extent of the data required can overwhelm commanders and staff and take time away from their ordinary training and sustainment duties.[205] Worse, a "zero defects" culture can encourage leaders to lie or misrepresent their readiness data, with disastrous consequences.[206]

5.C. How should one use operational readiness information to make decisions?

Harrison (2014) described the outputs of readiness management systems as an assessment of the capabilities of the force to meet mission requirements.[207] These assessments are not simple, but complex, and they form the basis of strategic decisions. These decisions, which include providing professional military advice to Congress on funding, are not easy. This section addresses several tensions and difficult choices facing decision makers:

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[202] Matthew N. Diascro, "Congress and the Readiness Reporting System," in John C. F. Tillson (Project Leader), *Independent Review of the DoD's Reporting System*, IDA Paper P-3569 (Alexandria, VA: Institute for Defense Analyses, 2000), Appendix A.

[203] Morton, et al., "GSORTS," C-34.

[204] Morton, et al., "GSORTS," note 51 includes a longer list.

[205] Thomas S. Tollefson, "Reports or readiness: A dilemma," *Naval War College Review* 26 (May-June 1974): 74-81, cited in Betts, *Military Readiness*, 100.

[206] Mark A. Kirchoff, "The Army's ethical dilemma in unit reporting," *NCO Journal*, August 19, 2020, https://www.armyupress.army.mil/Portals/7/nco-journal/images/2020/August/Ethical-Reporting/Ethics.pdf; Leonard Wong and Stephen J. Gerras, *Lying to ourselves: Dishonesty in the Army profession* (Carlisle, PA: Strategic Studies Institute, 2015).

[207] Harrison, "Rethinking readiness."

Investment versus consumption

This gets to a natural tension within the question of readiness -- for *What* versus for *When*. Betts (1995) asked, "Is full efficiency for combat two days from now closer to genuine readiness than having a larger military mass that could be fully efficient with two months of fleshing out?" [208]

Consider a decision to either fund the operational readiness of the existing structure versus modernizing it. Assume the Army had to provide ten Brigade Combat Teams to satisfy existing war plans and had fifteen in its inventory. The options are: (a) to fully fund ten so they would be 100% operationally ready (i.e., C-1) and leave the other five at lowered readiness (i.e., C-3 or C-4), or (b) only fund the ten to be moderately ready (e.g., C-2 or C-3) and divert resources to modernize the other five. Which would be the better choice?

The answer is, 'it depends.' Prioritizing operational readiness makes more sense when the likelihood of employment is higher given the security environment. However, as Betts explains this approach tends to become wasteful because of the need to sustain and consume higher volumes of spare parts or fuel to stay 100% ready for 96-hour deployability at all times. [209] It also assures that the quantity of capability remains unchanged. In contrast, the investment option provides greater potential in future capability so long as the risk is acceptable of having existing units requiring longer lead times. Typically, the Army manages readiness so that different portions of the force are at different readiness levels to balance operational readiness with investment in modernization. But the decisions must consider the reliability in gauging the amount of capability needed where and when. Lead times for achieving full readiness are difficult, if not impossible, to compress when crises occur.

Mass versus efficiency

Betts (1995) offers the following description of this dichotomy, which can be either a trade-off or complementarity:

> "[Consider] expensive advanced systems that must be retained long after their basic efficiency begins to decline and must be replaced by new systems in which it takes a long time to get rid of the bugs." [210]

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[208] Betts, *Military readiness*, 45.
[209] Betts, *Military readiness*, 46.
[210] Betts, *Military readiness*, 67.

As a trade-off, one might decide to defer modernization and put more resources into keeping current systems at higher readiness. However, this could lead to "bloc obsolescence"[211] as funding operational readiness for outdated systems becomes a cost-multiplier as parts and maintenance demands increase. Maintaining older systems beyond expected service life could lead to significantly lowered structural readiness (see Chapter 6). On the other hand, modernization is not automatically a panacea, as the higher costs and complexities of new systems can lead to lowered force structure and investments in readiness.[212]

Readiness versus itself in operations and training

Betts said that:

> *During peacetime military operations, units go into the field to practice their functions in the closest possible approximation of combat. … The price of achieving peak readiness through such operations is its evanescence and self-destruction. … Operations overheat the system.[213]*

How much training is sufficient before it drains human energy, causes unacceptable increases in broken equipment, or induces safety risks? This has always been a difficult question to answer. Particularly in times of peace, it is generally preferred to seek appropriate balances between realistic training and preservation of manpower, equipment, and sustainment to minimize the reconstitution required to return to a state of desired readiness.

In a situation where the global security environment demands routine crisis response, this dichotomy is problematic. The demands of crisis response typically differ from conventional warfare needs, and actions to bring units to readiness for crisis may see other skills atrophy. Transitioning from a crisis situation to conventional warfare[214] is every bit as complex as the inverse, which the U.S. Army experienced in Iraq and Afghanistan. Additionally, joint shaping activities such as partner security capacity building also competes for readiness time, and these activities may constitute a distinct set of military readiness requirements.[215]

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[211] Betts, *Military readiness*, 69.
[212] Betts, *Military readiness*, 68-69.
[213] Betts, *Military readiness*, 70.
[214] Betts, *Military readiness*, 71.
[215] Joint Chiefs of Staff, *Joint campaigns and operations*, Joint Publication 3-0 (Washington, DC: Joint Chiefs of Staff, 2022) – IV-15; Joint Chiefs of Staff, *Security cooperation*, Joint Publication 3-20 (Washington, DC: Joint Chiefs of Staff, 2022), I-3 to I-5.

Readiness versus itself in standby posture

How long can a unit stay at a posture for immediate no-notice or short-notice deployment? How much of the force needs to be at that posture? In the past, the military conferred particular respect to those units who were 'first in, last out' such as rotational ready brigades or airborne infantry. Under the total force commitments and high operations tempo in Iraq and Afghanistan, the distinction between these quick reaction forces and the remainder of the general-purpose forces was blurred. Returning to relative peacetime, however, may cause the re-emergence of distinct responsiveness levels among different parts of the force.

"Alert fatigue and readiness decay" are key considerations in any readiness model.[216] Units on a high state of alert readiness tire out manpower and wear out equipment, with reconstitution becoming necessary. These considerations not only a concern for units on alert during peacetime, but also for units who have been called forward to staging bases in the advent of a potential crisis. The episodic responses across the Iraqi Disarmament Crisis in the 1990s (resulting in Operations VIGILANT WARRIOR, DESERT THUNDERs I & II, and DESERT FOX) along with the long-standing Operations NORTHERN WATCH and SOUTHERN WATCH arguably generated alert fatigue, affecting readiness levels of units.

5.D. Implications

There are several questions for decision makers in the design of readiness management systems that go beyond how to add new measurements to the portfolio. *Do the costs involved in additional tracking inputs to satisfy such measures exceed the benefits of responding to these queries? Can existing qualitative measures by the functional combatant commanders, for example, be expanded or extended to provide a targeted assessment that is useful by such external stakeholders? How dependable might such assessments be, and what is the risk of making faulty decisions based on such assessments?*

The burden on units for participating in the readiness assessment process is difficult to reduce. Automation is often touted as a panacea, but inevitably faces a common data challenge in that the design of the data structure is biased toward one view of how readiness can be measured that may not apply to all units. Poor assumptions about the ease of data entry can undermine software solutions, erasing time and manpower savings from eliminating manual inputs. However, the

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[216] Betts, *Military readiness*, 73.

perception of the burden increases when there is little visible impact of doing the reporting. How can the system be designed to incentivize accurate and truthful data reporting, buffeted by command climates rewarding such behaviors rather than incentivizing deceit?

Unfortunately, even accurate and clear reports can be misinterpreted or misused by enterprise leaders and stakeholders. The following are just a few examples.

In a well-understood and studied artifact of military culture that readiness can be more than just a rating. It is too often conflated with organizational performance and misused as a measure to judge the unit's leader, regardless of the extent to which the leader's actions influenced the ratings in any way. This culture has contributed to zero-defects mentalities in some commands whereby leaders must game the readiness reporting system to avoid appearing incompetent, even when the lowered rating is fully justified, especially when the ratings are the result of the unit following the proper procedures.[217]

There are broader systemic challenges that senior leaders also must consider. One regards how the reliability of the reports dips in the event of changes in the strategy, roles and missions, or readiness reporting guidance. A 2013 RAND study found that changes in these documents risk uneven implementation across the force and potential confusion and misunderstandings on how one applies the new approaches to their unit contexts. While these may self-correct over time, the frequency of such changes in reporting guidance compounds the problem.[218] The same report pointed out that modernizing software systems, such as those used to gather and analyze readiness data, can negatively impact the accuracy of readiness reports.[219]

Reports that show differential results among peers or like units can also lead to misinterpretation, particularly when it impacts other decision support systems such as programming and budgeting. Consider questions that might arise when service-level readiness reports go forward where one service reports a different rating from the others (i.e., *does this mean that resources must shift?*) or if all the reports mirror each

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[217] Wong and Gerras, *Lying to ourselves*; Theo Lipsky, "Unit Status Reports and the gaming of readiness," *Military Review* (September-October 2020): 148-157, https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/September-October-2020/Lipsky-Unit-Status-Report/

[218] Christopher G. Pernin, et al., *Readiness reporting for an adaptive Army* (Santa Monica, CA: RAND Corporation, 2013), 88, https://www.rand.org/content/dam/rand/pubs/research_reports/RR200/RR230/RAND_RR230.pdf

[219] Pernin et al., *Readiness reporting,* 97-101.

other closely (i.e., *they look too much the same, is one of the services hiding something?*).

Overall, the high value placed on readiness in general, and operational readiness in particular, means that people may misinterpret or intentionally misrepresent the ratings. The implications for readiness reporting are that the reports must be evidence-based to the maximum extent possible to avoid obvious bias, but that the reports are likely to be dismissed or opposed by some stakeholders whose aims or interests conflict with the objective analysis. Senior leaders must navigate this minefield when engaging with stakeholders and presenting their arguments for the resources needed to correct readiness deficiencies.

6. Structural Readiness: Posturing to be Ready Just-in-Time

Maximum operational readiness is desirable, but normally infeasible. It takes significant resources to always keep a military organization at "C-1". Therefore, decisions must be made on how to optimize operational readiness for the situation and for the resources available. The previous section covered one set of options – to simply allow gaps of operational readiness within the organization, such that "80%" ready may be good enough. But if the war is not going to be "come as you are" (and it has not been since the end of the Cold War), there are other options to manage readiness. This section covers a range of options under the rubric of strategic readiness, which includes concepts of force generation, such that the military takes risk in fully or partially standing down capabilities under the assumption that it can rebuild them rapidly in the event of war. Options include moving units to reserve components, cyclic models of readiness, cadre units, and others.

Operational readiness constitutes how ready the unit is right now. Shortfalls reflect unfilled personnel slots, a lack of training, or broken or missing equipment. Operational readiness measures should reflect what the unit is designated to have – how are the two battalions and the brigade headquarters postured? Responsibility for the personnel, maintenance, and training falls largely on the unit commander.

Structural readiness is different, as Figure 4 shows. The enterprise has <u>intentionally</u> not provided all the personnel and equipment the unit is supposed to have according to doctrine. For example, the enterprise may choose to fill its units' personnel at 80%, or only provide two out of its three companies, or otherwise withhold some of the unit's organic resources. The assumption is that the unit would gain and integrate those elements in time for employment. Justifications may include cost savings or the ability to invest personnel and materiel in innovation and experimentation activities. But the unit commander must command a unit that is intentionally less than fully ready.

Structural readiness is a measure of the *enterprise's* ability to fill the unit just in time. For example, one can structure a brigade with two assigned battalions during peacetime, under the assumption that at the onset of war there will be enough time to re-assign or build the third battalion and train the brigade together before employment. The

enterprise must provide the ways and means of ensuring that third battalion is identified and provided. [220]
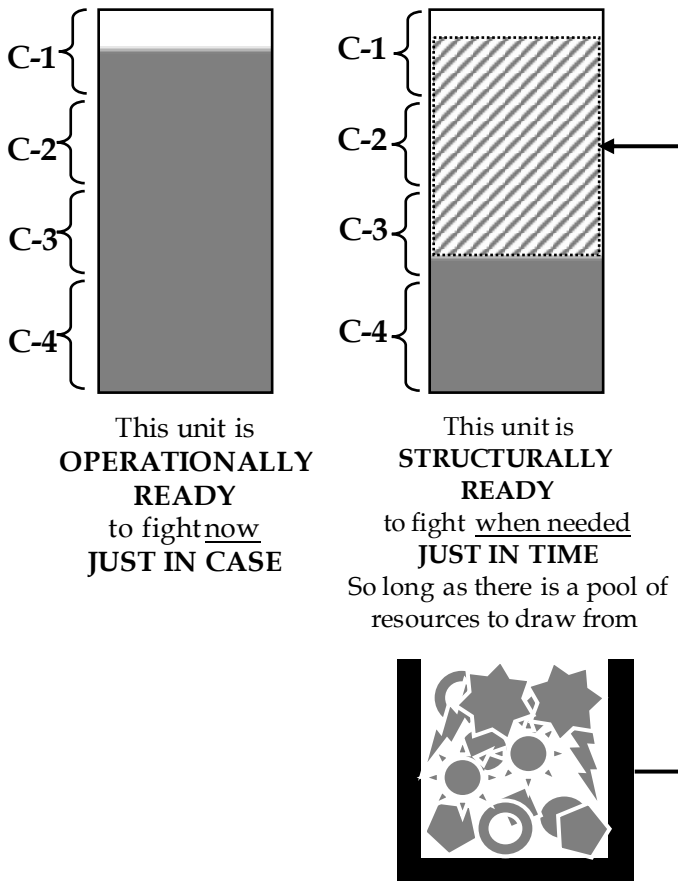
Figure 4. Difference between operational and structural readiness [221]

Given that it is too expensive to maintain excessive on-hand capabilities, structural readiness is about balancing efficiency against risk. What capability gaps pose acceptable levels of risk and which do not? Are there ways of configuring structural readiness to manage that risk – for example, instead of shorting the brigade by a battalion, could

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[220] Daniel Sukman, "Reviewing military readiness: Thinking About the three big questions," *Strategy Bridge* (blog), July 3, 2019,

https://thestrategybridge.org/the-bridge/2019/7/3/reviewing-military-readiness-thinking-about-the-three-big-questions-of-readiness

[221] Original graphic by author.

the brigade be adequately ready if instead the headquarters and three battalion staffs were filled but the junior enlisted were shorted by thirty percent, under the promise that the enterprise would provide the soldiers in time for collective training and employment? There often is a wide range of choices and configurations available, each carrying its own opportunities and risks.

Modernization also has a role to play as it represents future capabilities that ostensibly would be available by the time needed, assuming that strategic assessments accurately forecast when war could potentially occur. However, it is dangerous to conflate modernization and readiness, especially structural readiness. Betts (1995) explains in a chapter on "readiness as political football" how military leaders and lay people can easily make statements that "modernization is readiness" when in fact operational (ready now) and structural readiness (ready soon) represent a difficult trade-off, and modernization complicates matters because new weapons systems may not (or, likely will not) make it to the force as originally planned. However, military leaders are loathe to admit the trade-off because of fallout from any admission that the current force is not fully ready. [222]

There are several different ways in which the force structure can be designed to sacrifice operational readiness today to leverage structural readiness for the near-term. The remainder of this chapter is devoted to several common configurations of structural readiness in the U.S. military, but this is not an exhaustive list. The primary assumption under each configuration is that the military is confident in knowing the answer to Betts' readiness for *when* and can therefore plan for the time and resources necessary to fill the force's critical capability gaps.

6.A. What does structural readiness mean at individual level?

I start at the individual level since the concept is simple and scales naturally upward to unit and higher level. Each military unit establishes set numbers of personnel required by rank and specialty. This is commonly referred to as a *space*. A *face* is the person occupying that space, normally having been trained and educated in the skills needed to perform the tasks required by the space. Structural readiness at the individual level constitutes three components.

The first is *unfilled spaces*, whereby a space is empty in peacetime but would be filled during operations. Leaders may determine that it is more cost efficient to fill units at a set percentage and assume that mobilization

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[222] Betts, *Military readiness*, 134-136.

for operations would provide the additional faces needed. This is a helpful approach when the duty requirements in peacetime are low such that the unit can maintain adequate operational readiness despite a lowered personnel fill. Thus, a unit is structurally ready from the individual perspective if it is assured that all its spaces would be filled in time for incoming personnel to onboard and train, and the fulfilled unit would be employed on time when and where needed.

The second component is *pooling*. It may not—and usually is not—practical to assign all faces to a space. There may be a requirement for an unstructured and unassigned collection of people to be available for short-term augmentation to any command requiring their services or to allow the people opportunities to address personal or professional matters that cannot be addressed while occupying a space. In the United States, an example of the former is the Individual Ready Reserve, or IRR. This program allows recently separated service members to remain on recall for national emergency. This leverages the service members' recency of training and readiness and requires them to maintain current contact information and complete muster duty. They also must always be prepared for involuntary mobilization, which enhances the service's structural readiness standing.[223] An example of pooling is the Trainees, Transients, Holdees, and Students (TTHS) account in the active U.S. Army. This account provides adequate structures to manage the flow of individuals—enlisted and officer—through activities that are impractical or inefficient to manage at unit level. The four categories represent:

- Trainees—entry-level training

- Transients—accountability for those undergoing permanent change of status moves

- Holdees—manage prisoners and ensure care for those requiring long-term hospitalization, especially combat injuries

- Students – enlisted members and officers attending professional military education or full-time academic education or fellowships[224]

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[223] U.S. Army Reserve, "Individual Ready Reserve (IRR)," https://www.usar.army.mil/IRR/.
[224]; Tommie Hewitt, "Military human resource management," in Lou Yuengert (ed.), *How the Army runs 2021-2022: A senior leader reference handbook* (Carlisle, PA: Department of Command, Leadership, and Management, 2022), p. 12-4; Department of Defense, *Programming and accounting for Active Component (AC) military manpower,* DoD Instruction 1120.11 (Washington, DC: Department of Defense, 2015), 7-9, includes a fifth category of "cadets/midshipmen."

Some service members in this account can be pulled from the pool and assigned to a unit for employment to fill a personnel shortfall, particularly students and transients. Trainees can be accelerated through their entry-level training.

However, this is not the only way to manage individual readiness. Rather than pooling into a separate account, under the Air Expeditionary Forces construct used until 2023 the U.S. Air Force ran the equivalent of a service-wide duty roster for individual augmentations. Every position by specialty and rank received a code that determines periods of availability for deployment and periods of training or reset, during which airmen can attend professional military education and so on. The code assignments theoretically mitigate the risks of any organization being overtapped for deployments at any given time.[225] However, regardless of the methods used to manage readiness, none are sustainable when the demands far exceed the capacity that the method affords, such as during a full mobilization for war.

Structural readiness at the individual level is difficult to measure accurately. A unit may be staffed at 80% under the presumption that the personnel assigned and available are operationally ready and structural readiness addresses the other 20%. However, what might happen once a crisis occurs, and the unit mobilizes? Sometimes only then do the disqualifying conditions of some service members come to light, which not only decreases the actual operational readiness level but also decreases structural readiness as that many more individuals must be found to fill in the spaces. This brings about the third component of structural readiness, *cross-leveling*. The operational readiness of an employing unit is bolstered by the reassignment of personnel from other units, but at the risk of decreasing both the operational and structural readiness of the donor units.

Structural readiness also applies analogously to individual weapons systems and other materiel. The equivalent of "spaces" is the authorized numbers of weapons systems while "faces" refers to those on-hand. Of course, on-hand quantities may be reduced by weapons systems not being issued due to overall Army shortages. On-hand systems may have maintenance issues (e.g., broken equipment, requiring periodic calibration, awaiting necessary upgrades or depot services) that preclude their availability. Structural readiness therefore is measured in the militaries' abilities to fill these shortages at the onset of operations through emergency procurements and fielding, issuing from wartime stocks, deploying units to prepositioned sets of equipment and stocks, or

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[225] Thomas P. Galvin and Ed Filiberti, *A summary of force generation models past & present* (faculty paper, Carlisle, PA: Department of Command, Leadership, and Management, 2022).

cross-leveling equipment between units. There is also the regulated practice of *cannibalization* between two broken systems whereby good parts from one replace bad parts on another to bring one to higher readiness.[226] The risk is that the cannibalized system may degrade to the point of it being impossible to reconstitute, thereby reducing future structural readiness.

It is beyond the scope of this book to detail all the ways and means that individuals can contribute to the structural readiness of the force overall. The important point is that structural readiness is enhanced by having pools of individuals with military training and experience available for activation that mitigate the need tapping into the general population for mobilization later. The capacity to fill the ranks with faces through individual contractual obligations enhances structural readiness. However, the potential is always present that individuals might not honor those obligations at the time of activation. On the other hand, the capacity to expand the spaces and faces (such as through an augmentation program) is a measure of mobilization readiness, which will be discussed in the next chapter.

6.B. What does structural readiness mean at unit level?

Typically, when one considers structural readiness, one is more likely to consider the unit level of analysis rather than individual. After all, spaces are defined within a unit, and it is normally to units that the enterprise provides faces to fill gaps.

Because of the impracticality and expense of sustaining high operational readiness for all forces, the services have resorted to various strategies to reduce readiness to feasible and affordable levels under the assumptions that, when needed, the forces can be mobilized, staffed, trained, and equipped sufficiently and deployed to the fight in time.

All the below strategies naturally incur risk. Adversaries could exploit vulnerabilities caused when some capabilities are intentionally maintained at lowered readiness. Keeping units at higher readiness for too long risks burnout[227]. Most importantly, measuring structural readiness requires assumptions about having the capacity to bring a unit to operational readiness in time. When one declares that a unit is structurally ready but kept at lowered operational readiness, the assumptions govern both the resources needed to fill the unit and the time available before the unit must fight. Declarations of high structural

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[226] Department of the Army, *Army materiel maintenance policy*, Army Regulation 750-1 (Washington, DC: Department of the Army, 2023), 113.

[227] Betts, *Military readiness*, 70-71.

readiness must never mask shortcomings in the enterprise's capacity to deliver the capabilities where and when required.

Force generation models

There are two common strategies to managing structural readiness in units with a wide range of hybrid approaches in between – *tiered readiness* (see Figure 5) and *cyclic* (also *cyclical*) *readiness*. The differences amount to the extent to which the division of high versus low readiness units are fixed versus rotating. Tiered readiness represents the fixed variant in which the designation of high readiness units is permanent or persistent. Such units may be resourced to sustain a C-1 whereas other units would be expected only to be at C-2 or C-3.
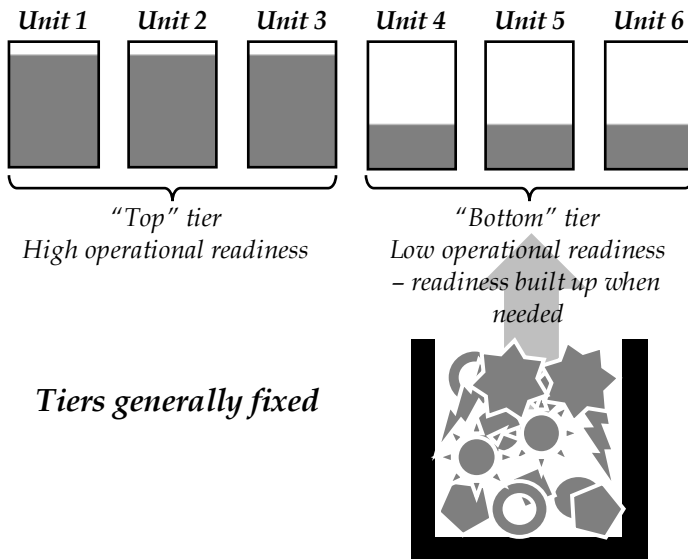
Figure 5. Tiered readiness model - general case[228]

In the Cold War, tiered readiness was used to ensure peak operational readiness for forward stationed, "front line" units and lowered required readiness levels for those based in the continental United States (CONUS) and reserve component.[229] Personnel and equipment fills, repair parts, supplies, etc. were prioritized to the forward units and their operational readiness rates were closely scrutinized.

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[228] Original graphic by author.
[229] Tiered readiness was also used to differentiate rapid-response forces from other units.

CONUS units were expected to sustain gaps in their structure which would be filled at the onset of war, preserving structural readiness.

Owing to the Cold War experience, tiered readiness is generally disfavored and the term sometimes used disparagingly. Critics claim that this readiness model creates a culture of "haves" and "have nots" from which lower readiness units become wholly dysfunctional and require far greater resources and effort to return to satisfactory levels of readiness.[230] This affected not only the comparative operational readiness of units[231] but also limits the potential use of some units for valid peacetime missions such as building partner capacity.[232] However, other writers insist that these problems were caused by other factors,[233] and that tiered readiness more closely approximates the natural division between a small standing force ready for immediate crises and a reliance on reserve capabilities.[234]

In contrast, cyclic readiness models place units into a rotation of pre-designated periods of high and low readiness. The aim is the same – providing sufficient trained and ready forces while managing costs – but the methods are different. Cyclic readiness models assume that units at high readiness will develop problems with personnel tiring out or equipment wearing out. Thus, cyclic readiness allows the unit to drop to lowered readiness for a time to recapitalize equipment and take care of people. The presumed advantages were that no unit is systematically ignored and left to degrade. All units would be assured of getting the latest equipment, and there would be opportunities for personnel to attend necessary training and schools.

The downside of cyclic readiness is the sensitivity of such models to disruption. A good example is in the Navy, where ships are required to rotate to tightly scheduled maintenance facilities, during which time the crew is placed in a lowered readiness status. However, should the Navy

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[230] Mackenzie Eaglen, "Newsflash to the new Congress: Tiered readiness is here now," *Real Clear Defense* (blog), November 5, 2014, https://www.realcleardefense.com/articles/2014/11/06/newsflash_to_the_new_congress_tiered_readiness_is_here_now_107530.html

[231] Mark Thompson, "Tiers of sorrow: Path to a `hollow force'?" *TIME*, December 9, 2013, https://swampland.time.com/2013/12/09/tiers-of-sorrow-path-to-a-hollow-force/

[232] Names redacted, *Military readiness: Background to Congressional debate over tiered readiness,* CRS Report #97-866F Updated (Washington, DC: Congressional Research Service, August 1998), 5-6.

[233] Travis Sharp, "Gambling with ground forces: The 2015 Defense Budget and the 2014 Quadrennial Defense Review" (policy brief, Washington, DC: Center for a New American Security, March 2014), https://www.cnas.org/publications/reports/gambling-with-ground-forces-the-2015-defense-budget-and-the-2014-quadrennial-defense-review

[234] James L. George, "Is readiness overrated? Implications for a tiered readiness force structure," Policy Analysis #342 (Washington, DC: Cato Institute, April 29, 1999), https://www.cato.org/sites/cato.org/files/pubs/pdf/pa342.pdf

have to extend the deployment of a ship or the maintenance facility is unable to accept the ship at the designated time, there can be a significant ripple effect on future maintenance cycles and available ships for deployment.[235]
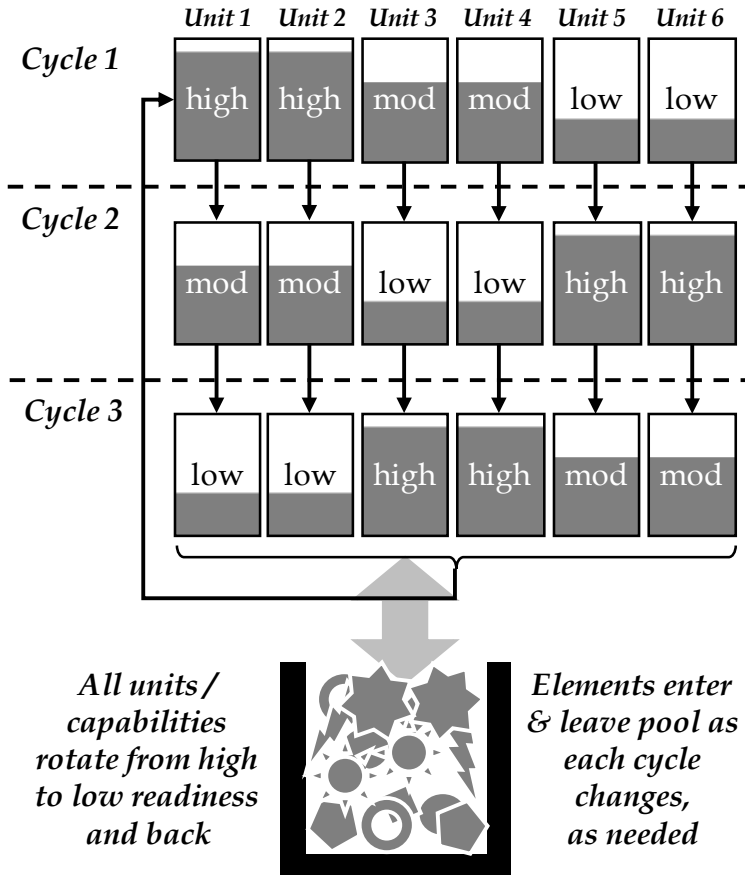
Figure 6. Cyclic readiness model -- general case[236]

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[236] Original graphic by author. This shows a three-cycle model with a uniform duration of cycles and all units depicted undergo each part of the cycle for the same periods of time. A possible variation comes from the reserve components in the U.S. that may exercise a five-

Likewise, Army units might be designated to rotate from high- to low-readiness cycles every so often, but how low is the readiness in the 'low-readiness' phase? If too much of the force is at low readiness such that the force is not structurally ready to reconstitute for mission on time, then the cyclic readiness model will fail. [237]

Since dispensing with tiered readiness in the 1990s, the Army has adopted a series of cyclic models. First was the Army Forces Generation model (ARFORGEN) in which like units (e.g., brigade combat teams) would undergo three cycles: (1) *available* (i.e. the "green" cycle) when units were either deployed or at high-readiness ready to deploy, followed by (2) *reset* ("red" cycle) when units returned from deployment and went into states of low readiness, and (3) *train/ready* ("amber" cycle) when they would refill manning and equipment, and conduct collective training and mission rehearsal exercises in preparation for going back to *available* status. The duration of these cycles depended on component and was calculated as *dwell ratio*, reflecting the relative amount of time in the available cycle versus the other cycles. The durations of each cycle also differed by component. Active combat forces would be available for 12 months and be in the other cycles for 24 months, constituting a dwell ratio of "1:2," meaning that the unit is available for one period for every two it is in reset or train. [238] Reserve component units could be available for 12 months but in the other cycles for five years, a dwell ratio of 1:5. [239]

Owing to changes in strategic priorities and the security environments, the Army replaced ARFORGEN with the Sustainable Readiness Model (SRM) in 2016 [240] and then move to the Regionally Aligned Readiness & Modernization Model (ReARMM) in 2019. Both aimed to reduce the readiness delta between phases of high and low readiness and added specificity to enterprise requirements to support the transitions between cycles. [241] While ARFORGEN, SRM, and ReARMM

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cycle model where units over five periods undergo one "high" cycle, three "low" cycles, and one "moderate" cycle to accommodate the reserve soldiers' civilian employment needs. See discussion of "dwell ratios" below.

[237] For example, David Vergun, "Soldiers need to be ready 100 percent of time, says FORSCOM commander," *Army.mil*, June 3, 2016, https://www.army.mil/article/169082/Soldiers_need_to_be_ready_100_percent_of_time__says_FORSCOM_commander/

[238] Under Secretary of Defense, *Deployment-to-dwell, mobilization-to-dwell policy revision,* Directive-type Memorandum DTM 21-055 incorporating Change 1 (Washington, DC: Department of Defense, October 13, 2022).

[239] Department of the Army, *Force generation – Sustainable readiness*, Army Regulation 525-29 (Washington, DC: Department of the Army, 2019). Hereafter *AR 525-29.*

[240] *AR 525-29.*

[241] Army G-3/5/7, "Regionally Aligned Readiness & Modernization Model," Stand To! *Army.mil*, October 16, 2020, https://www.army.mil/standto/archive/2020/10/16/

differ in character and implementation, the underlying architecture remains one of cyclic readiness.

Differentiation within units

One can also manage structural readiness internally to a unit, such that different parts of the unit may operate at higher or lower levels of readiness based on context. This is useful when the higher readiness element serves a unique, immediate time-frame mission on behalf of the whole organization.

The *forward unit* is one example whereby an element is postured in a location that the organization might need to conduct operations. During the Cold War, some infantry and armored divisions established *forward units* composed of a segment of the organization employed in a separate location with the mission of conducting initial operations that allow the remainder of the organization to mobilize and move forward in the event of an emergency. One type was the Cold War construct of the "division headquarters forward" which comprised part of a CONUS-based division located in an overseas theater. For example, in the late 1970s, the 2nd Armored Division from Fort Hood established a Forward element in northwest Germany composed of a reinforced brigade. In the event of a Warsaw Pact invasion, the 2nd AD (Fwd) would secure ports and airfields or deploy forward to the inter-German border and establish a blocking position.[242] Forward units can also support security cooperation and interoperability while providing forward presence, exemplified by the 2019 US-Polish defense co-operation agreement leading to the 2022 establishment of V Corps Headquarters (Forward) in Poznań, Poland.[243]

Establishing incomplete units

Structural readiness can also be preserved by creating units with little to no operational readiness at all. Instead, the structure of a unit is established but incomplete with only a minimal structure until mobilized. One form of this is the *cadre unit*, established as a full organization but only manned and equipped at significantly reduced

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[242] John B. Wilson, *The evolution of divisions and separate brigades*, Lineage Series, CMH Publication #60-14-1 (Washington, DC: Center for Military History, 1998), 366-367, https://history.army.mil/html/books/060/60-14-1/cmhPub_60-14-1.pdf

[243] "US 1st Cavalry Division establishes forward headquarters in Poland," *Janes.com*, June 10, 2020, https://www.janes.com/defence-news/news-detail/430cb6c9-388c-4694-aa38-9d3754ea0675; Mark Heeter, "Army establishes permanent garrison in Poland," U.S. Army, March 21, 2023, https://www.army.mil/article/265027/army_establishes_permanent_garrison_in_poland

capabilities during peacetime.[244] Cadre units are an element of structural readiness that can become operational through addition of resources through mobilization readiness. Each cadre unit will be configured uniquely, possibly no more than a headquarters, or perhaps a headquarters and only one subordinate command. The documented structure of the organization (e.g., for the Army, its Table of Organization and Equipment) will include the full structure – all subordinate units and capabilities – while flagging its non-cadre components as unfulfilled, again under the presumption that the units will be filled out as needed in the event of war.

Cadre units have been occasionally used as a way of fostering the establishment of new combat units. During the World War II build-up, the Army used the cadre unit approach to construct its new divisions. A cadre of about 170 officers and over a thousand enlisted, comprising less than ten percent of a division's authorized manning, would be formed and train as a unit while the enterprise mobilized additional manpower to fill the division. Fully-formed divisions might then provide parts of the cadre for the next divisions to be built.[245] A contemporary is the Security Force Assistance Brigades (SFAB) that perform the missions of partner capacity building and combat advisory services to allied and partner nations. They are organized using a construct similar to a brigade combat team but with reduced combat capability, however with augmentation of personnel and equipment, an SFAB could be filled out as a "fully functional Infantry … or Armored brigade combat team."[246]

Cadres have also been used in other militaries successfully. During the Cold War, a percentage of German armored and infantry brigades saw one or more infantry battalions as a cadre unit with only a commander and handful of troops caring for the unit's full complement of equipment until a mobilization occurs.[247] The Swiss Army also operates a cadre unit system whereby professional soldiers are largely focused on training the reservists who would fill the formation in war.[248]

Another form of incomplete unit is what I will call a *collateral unit*. This is when a capability is built into a unit structure and activated in war but effectively assigned as a collateral duty in peacetime. An example of

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[244] Christopher Ordowich, *Considering a cadre augmented Army* (dissertation, RAND Pardee Graduate School, 2008), https://www.rand.org/content/dam/rand/pubs/rgs_dissertations/2008/RAND_RGSD225.pdf

[245] Henry G. Holcomb, "The cadre Army" (research project, Carlisle, PA: U.S. Army War College, 1992), https://apps.dtic.mil/dtic/tr/fulltext/u2/a250990.pdf

[246] Department of the Army, *Security force assistance brigade,* Army Techniques Publication 3-96.1 (Washington, DC: Department of the Army, May 2018), paragraph 1-62.

[247] Holcomb, "The cadre Army."

[248] Ordowich, *Considering a cadre augmented Army*.

this was a previous joint force headquarters concept (JFHQ) in which joint commands, such as the combatant commands, were required to have staff officers designated with the collateral duty of manning the JFHQ for operations. The JFHQ would detach from the command and deploy, leaving gaps in the command's headquarters structure to be filled with augmentees. Outside of exercises and other JFHQ activities, its members would perform their regular peacetime duties. [249]

6.C. WHAT DOES STRUCTURAL READINESS MEAN AT COMPONENT LEVEL?

An ever-present choice for enterprise leaders concerns what goes in the active component and what goes into the reserves. The active component may ordinarily enjoy greater operational readiness because it has its organic personnel and equipment continuously available and has regular access to training facilities. Reserve component units might not ordinarily be at the same levels of operational readiness because they have less training time overall and might lack the same access to facilities. However, it may not be feasible or affordable to have all capabilities in an active status, and therefore the enterprise may place them in the reserves.

Reserve units would be structurally ready if, given a mission and sufficient time and resources dedicated from the enterprise, they would become ready in time for employment. [250] Structural readiness includes measures of assuredness that the unit can mobilize its members, assemble, equip, train, and integrate with the force. Measures of readiness for the enterprise involves everything that would not be organic to the unit, such as movement to a collective training location to join and train with the rest of the force.

Structural readiness initiatives carry inherent risk that a unit could be unable to convert it structural readiness to operational readiness when mobilized. For example, a major effort from the 1980s was the Roundout Brigade Program in the late Cold War period that manned some active-duty divisions with only two brigades, with the third brigade coming from the reserve components. Unfortunately, this effort failed due to factors beyond the Army's control. For example, prior to the Persian Gulf War, the Fort Stewart-based 24th Infantry Division had, as its roundout brigade, the 48th Infantry Brigade of the Georgia National Guard. But when the 24th ID was tasked to deploy, legal and political issues with

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[249] This was the case in USEUCOM in the mid-2000s, where some by position were designated as dual-hatted JFHQ manning. In the event of employment, JFHQ designees would detach from the organization and deploy as a headquarters. Otherwise, they performed their 'peacetime' duties while occasionally conducting JFHQ training.

[250] Betts, *Military readiness*, 41-42.

reserve mobilization precluded the use of the 48th, so Fort Benning's 197th Infantry Brigade deployed in its place. This demonstrated how structural readiness was improperly assumed in the creation of the program.[251]

Structural readiness is also embedded in the on-going discourse about the extent to which the reserve component acts as an operational or strategic reserve. For those favoring an operational configuration, this translates to increasing operational readiness to ensure near-immediate augmentation with active units and as a "pressure release" for active forces maintaining a global presence.[252] However, this has the paradoxical effect of reducing operational readiness in those reserve units over time due to turnover caused by civilian job pressures,[253] exemplifying Betts' contention that when it comes to readiness, "more is less."[254]

6.D. HOW DOES OUTSOURCING AFFECT STRUCTURAL READINESS?

The decision of whether to *in-source* (e.g., provide using government personnel and resources) or *out-source* (e.g., provide through contracts) is an important structural readiness question. The implication is that the military will establish a standing contract containing provisions that establish conditions under which the military may activate the contract in times of need, and the contractor has fixed timelines to provide specified goods and services. In the U.S., such arrangements may be known as *civil augmentation programs*, of which the U.S. Army's Logistics Civil Augmentation Program (LOGCAP, for supplies and base services, theater construction, and specialized medical support) is one.[255]

In such cases, the contract determines the timelines under which the military can plan its operational support. The contract may contain provisions by which the government or the military must provide services or capabilities that enable the contractor to deploy where and when needed. Therefore, the structural readiness levels are functions of two factors: (1) the readiness of such government-provided enablers, plus (2) the assumption that the contractor will meet the timelines specified in

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[251] Frank N. Schubert and Theresa L. Kraus (eds.) *The whirlwind war: The United States Army in Operations DESERT SHIELD and DESERT STORM* (Washington, DC: Center for Military History, 2000), 71-72, https://history.army.mil/books/www/www4.htm

[252] Jacquelin Schneider, "Moving beyond Total Force: Building a true strategic reserve," *War on the Rocks*, November 2, 2020, https://warontherocks.com/2020/11/moving-beyond-total-force-building-a-true-strategic-reserve/

[253] Schneider, "Moving beyond."

[254] Betts, *Military readiness*, 69.

[255] See Department of the Army, *Logistics civil augmentation program,* Army Regulation 700-137 (Washington, DC: Department of the Army, 2017). The other U.S. services have similar programs.

the contract. If those two factors do not assure the military that the timelines needed *in the war plan* will be met, then it is assumed that either the military should seek to adjust the contract to close the timeline gap or, if that is impractical, accept the risk of such capabilities arriving late to the theater of operations.

Even if the contract provides for a structural ready capability, the risks to military performance include, but are not limited to: (a) whether contracted personnel require additional military capabilities for security, sustainment, transportation, and so on, thereby potentially adding to the total force structure; (b) whether contracted personnel in theater can be protected under diplomatic agreements with hosting nations; (c) whether government (military or civilian) personnel can be tasked to oversee contract performance without otherwise affecting the mission; and (d) whether the contracts can be modified rapidly in the event of significant changes to the environment.[256] These and other risks constitute hidden costs of outsourcing a military capability that must be considered.[257]

As will be shown in the chapters on mobilization and sustainment readiness, contracting is an important vehicle for generating capabilities the force does not or could not generate by itself.[258] Decisions to contract must consider Betts' question of readiness for *when*. Demands for expeditionary support that mirror military capabilities for no-notice or short-notice activation and employment can be expensive. Attempts to minimize risk by adding a wider range of expeditionary capabilities *just in case* via contract risks not being affordable and sustainable. If insourcing is a possibility but deemed inefficient, a balance could be struck to establish a minimum uniformed capability (e.g., a token active unit or command, a reserve cadre unit) for immediate employment and outsource all follow-on capabilities.

6.E. What are challenges of managing structural readiness?

Thus far, structural readiness has been presented in terms of overstructuring the force—there is greater structure than capabilities available. Structural readiness also applies in cases of understructuring, when there are capabilities that cannot be and likely can never be employed in the force structure. This is unlike day-to-day fluctuations in

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[256] Winston P. Nagan and Craig Hammer, "The rise of outsourcing in modern warfare: Sovereign power, private military actors, and the constitutive process," *Maine Law Review* 60 (2008): 429-460; Joint Chiefs of Staff, *Operational contract support*, Joint Publication 4-10 (Washington, DC: Joint Chiefs of Staff, 2019), V-2. Hereafter *JP 4-10*.

[257] For example, war profiteering. Peter Singer, "Outsourcing war," *Brooking Institution*, March 1, 2005, https://www.brookings.edu/articles/outsourcing-war/

[258] *JP 4-10*, I-1.

operational readiness caused by temporary absences or finding that equipment is in need of unit-level repair. The structural readiness problem refers to service members whose permanent or long-term temporary medical conditions preclude employment or "hangar queens," weapon systems that are constantly unserviceable and may be used as a source of spare parts rather than be fully reconstituted or repaired. [259] The resulting lowered operational readiness is coupled with structural readiness challenges because of the need to source a solution or assume risk in assembling the force. The problem becomes more complicated should the enterprise be unable to divest the personnel or equipment.

Consider a unit with ten attack helicopters might have four of them damaged or degraded beyond repair. This represents both an operational readiness problem and a structural readiness problem. The former is obvious as the unit is at 60% fill of a key weapon system. The latter is a problem for the enterprise should the unit be told to deploy as the enterprise must replace the helicopters through issuance from a depot or cross-levelling from other units. It is worse if the unit would have to receive and integrate different variations of the helicopter or different airframes altogether due to shortages, as additional effort may be required for staffing and training, increasing the time needed to build up the force for deployment.

Similar challenges exist on the personnel side. In addition to nondeployables (e.g., permanent medical profiles, within a period of time before separation or retirement, awaiting court-martial, parental or emergency leave), service members who are systematically borrowed or reassigned outside of their unit results in a decrement of structural readiness when they are unable to return to their units should they have to deploy. Some of these issues can be extremely sensitive. Consider the initiative to create the U.S. Army's Warrior Transition Units (WTU). [260] The Army faced a crisis in 2007 related to the lack of capacity to provide case management for and medically discharge soldiers with serious combat-related physical and psychological injuries. The WTUs provided officers and noncommissioned officers to provide a chain of command and case managers to help wounded soldiers receive the care they needed

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[259] Kelly J. Larson, *An investigation into the effects of the hangar queen program* (research report, Maxwell Air Force Base: Air University, March 2002), https://apps.dtic.mil/sti/pdfs/ADA420440.pdf

[260] Nikki R. Wooten et al., "Army Warrior Care Project (AWCP): Rationale and methods for a longitudinal study of behavioral health care in Army Warrior Transition Units using Military Health System data, FY2008–2015," *International Journal of Methods in Psychiatric Research* 28, no. 3 (2019): e1788, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6791723/

in preparation for eventual transition out of the service.[261] The need to staff the cadre of WTUs with upward of 4000 senior members of the force presented a structural readiness challenge to fill deployment units for operational rotations.[262]

Removing capabilities from the force that detract from structural readiness is an enterprise responsibility. Three strategies are explained here. *Decommissioning* is an act of reclaiming structural readiness by unburdening the force from a capability that is no longer serviceable so as to replace it with the same or similar (usually upgraded) capability. In contrast, *divestiture* reclaims structural readiness by removing a capability no longer needed. This is to reduce excess capacity or replace it with a qualitatively greater or different capability.

A third strategy is what I will call *relegation*, which is the retention of a capability but at a depot or 'war stockage.' Ordinarily, one does this to retain an old capability just in case a new one fails or is destroyed in combat. In the helicopter example, one might have a new airframe that renders the old helicopters obsolete, and thus the helicopters are coded out and placed in a war stock rather than be destroyed. Examples of this in the U.S. abound, such as the depots at Red River and Letterkenny and the "boneyard" at Davis Montan Air Force Base.[263] This enhances structural readiness by fostering the ability to regenerate capabilities within the defense enterprise without having to engage the procurement system.

Removing capabilities can be an uncomfortable option because militaries are loathe to simply give up something that may be useful in a worst-case scenario. As of this writing, this was playing out in the Russian-Ukraine was as Russia has found herself pulling equipment out of warstocks to make up for shortages.[264] The specter of a prolonged war of attrition means that leaders will want to know that somewhere there are war stocks still available, even if the equipment or supplies are extremely old and modern soldiers might not know how to employ them.

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[261] Brenda S. Farrell, *MILITARY HEALTH CARE: Army needs to improve oversight of Warrior Transition Units*, GAO Report #GAO-16-583 (Washington, DC: Government Accountability Office, 2016).

[262] For example, J. D. Leipold, "Warrior Transition Command restructuring as numbers fall," Joint Base Langley-Eustis,, January 14, 2014, https://www.jble.af.mil/News/Article-Display/Article/844318/warrior-transition-command-restructuring-as-numbers-fall/

[263] With gratitude to Doug Orsi, USAWC, for this insight.

[264] For example, Simon Ellery, "Russia pulls mothballed Cold War-era tanks out of deep storage as Ukraine war grinds on," CBS News, April 18, 2023, https://www.cbsnews.com/news/russia-ukraine-war-cold-war-era-soviet-tanks-t54-t55-out-of-storage/

6.F. HOW TO MEASURE AND REPORT STRUCTURAL READINESS?

Structural readiness is harder to report than operational readiness for two reasons. The first is because operational readiness is measured bottom-up from unit level and aggregated at higher levels. Structural readiness is a top-down assessment based on the enterprise's capacity to accurately assess and address the shortfalls against both the expected operations that derived the units' personnel and equipment and the actual operations that require military responses. The second is because structural readiness is as much a measure of time as of capability gaps, and there is tremendous uncertainty regarding how quickly the enterprise could address gaps when units are alerted.

Attempts to incorporate structural readiness have been made, albeit to a limited extent. Consider as one example the U.S. Army's *A-level rating* system covered in Chapter 5.[265] A-level ratings measure readiness to accomplish a specified mission, which may be for a forthcoming deployment and may differ from readiness to perform mission essential tasks measured through ordinary C-level ratings. Two categories of A-level ratings are Assigned Mission Manning and Assigned Mission Equipping, each with its own levels '1' through '4,'[266] which can aid the enterprise in prioritizing remedial actions that the unit cannot manage itself such as pulling personnel and equipment from the resource pool.[267] However, to fully capture structural readiness, the A-level rating system would need to supplemented with specific data from the resource pool showing to what extent the enterprise can remediate such shortages.

A more general system for reporting structural readiness is elusive for several reasons. First, the indicators are largely outside of the purview of the organization. An organization can report that they would be ready in the event of war in X number of days, but whether they would be is determined chiefly by actions of the enterprise that the unit does not control. In many cases, the commander would be reporting on a promise rather than an actual state. The likely solution is to make reporting most structural readiness metrics an enterprise responsibility.

Other cases would find the commander reporting on proxy rather than actual indicators. Accurately measuring structural readiness of collateral units is tricky because it may require disrupting a unit's ability to perform its peacetime mission. For example, a combatant command with a JFHQ may not be fully able to detach the JFHQ for a certification exercise as its members may also be vital to day-to-day operations. It may

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[265] *AR 220-1*, para 4-3g(3).
[266] *AR 220-1*, paragraph 5-7.
[267] *AR 220-1*, paragraph 4-4.

also be difficult to fully examine a cadre organization's ability to perform its mission beyond what the cadre members themselves can demonstrate.

A second challenge is uncertainty associated with assigned missions at operational or strategic level. The Army's example A-rating is only as accurate as the mission set assigned to the unit in the system and the aggregated demands on units for training, exercises, or other deployments at any given time. Inaccuracies, gaps, redundancies, and other challenges may not become apparent until the time that the force is activated and begins organizing and training for mission. The danger is that the enterprise, so accustomed to units being responsible for operational readiness, will put pressure on unit commanders to initiate the fixes. In general terms, this should not be a unit responsibility. The force commander is the one primarily responsible for assessing problems of structural readiness and raising them to the enterprise. In turn, the enterprise is responsible for addressing them.

The third challenge to consider is the extent to which structural readiness measures would influence senior leader decisions in helpful ways over operational readiness alone. As the previous section explained, cases of low operational readiness can be masked by claims of high structural readiness under questionable assumptions of the enterprise's capacity to mobilize resources and reconstitute units before their deployment. Whereas operational readiness can be measured as a status such as *high* or *low*, structural readiness is best measured as a bill to the enterprise, listing the time and resources needed to generate the required force. A qualitative assessment would therefore ask the question as to whether the bill is worth paying to ensure success against a given mission. The risk of making such an assessment is that the enterprise seeks instead to avoid paying such bills and employ a less ready force.

7. Mobilization Readiness: Expanding the Organic Force

Organic forces are rarely sufficient to support a prolonged conflict to the end. At a minimum, the military will require replacement personnel to recover from casualties and replacement or new equipment against what is damaged or worn out. Structural readiness will only go as far as available pooled resources are cross-leveled into operational units and employed. The pools will likely run dry over time. What then?

For such missions, militaries require the capacity to generate operational readiness from beyond its organic capabilities. This does not only apply to prolonged conflicts but any military mission where the required capabilities do not exist in the organic force or are insufficient, thereby requiring augmentation from national resources. In the event of total war, such as the two World Wars of the 20th century, the military may have to grow to many times its organic strength.

Doing so incurs an additional step. The nation must decide to provide those resources, usually through formal means such as a law or directive. The nation may establish systems of thresholds by which the military can augment without further authorization for certain types of emergencies, or reserve certain authorities at national level. The nation also gets to choose when to enact those authorities. Civil-military norms often preclude the military from acting in ways that presuppose such decisions being made because it may bind national leaders hoping to avoid escalating a conflict until all other options are eliminated. Thus, the military must wait until specifically authorized.

In the framework presented, *mobilization readiness* is "the swift and deliberate structural expansion of military forces to close the gap between the supply of or demand for actual capability needed now and potential capability needed later." [268] I describe here as the combination of several activities that involve the conversion of structural readiness to operational readiness on the one hand, and the growth of the force once structural readiness is either exhausted or a political decision is made to grow. It is an enterprise measure and reflects the state of a military's generating force that provides the capabilities to plan for mobilization; receive raw national resources; organize, train, and equip them as units and capabilities; and provide them to combatant commanders through reception, staging, onward movement, and integration. As will be shown in this chapter, mobilization readiness is recursive. When the military

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[268] Bradley Martin et al., *Measuring strategic readiness* (Santa Monica, CA: RAND Corporation, 2021), x.

must expand for total war, the organic generating force may need to construct more generating force capabilities while building operational readiness. Thus, measuring mobilization readiness can be difficult and the enterprise must rely to some extent on proxy measures.

This chapter proposes a framework for describing and measuring mobilization readiness as a function of legal authorities, organic generating force capabilities, and available resources (e.g., real property and transportation networks) to manage the expansion of the military. It begins with a discussion of the many common meanings of mobilization to ensure clarity over what counts as mobilization readiness and what remains structural and operational readiness [269]

7.A. What are the three kinds of "mobilization"?

Mobilization is a troublesome term because in a colloquial sense it applies to just about any activity that converts structural readiness to operational readiness, but only a subset of those activities is of present concern. Mobilization is also formally, often narrowly, defined in law and military doctrine. Below, I categorized the uses into three levels to help explain what constitutes mobilization readiness and what does not.

Internal mobilization (e.g., rapid response and rotational)

The first tier is the most ordinary–of mobilizing a capability from steady-state operations as the result of a declared alert, emergency, or pre-planned deployment. The general process is shown in Figure 7. I will use a construct from the 1980s-1990s known as the "immediate ready company" as an example. [270] The company served as a first unit deployed in the event of a declared emergency and had to be "wheels up" (i.e., on board an Air Force transport plane that is moving down the runway) within a certain number of hours (e.g., 24). The company was to be the first on the ground at a forward location to set conditions for other deploying (referred to as *follow-on*) forces, such as establishing footholds and providing security.

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[269] John Dowdle, "Army mobilization and deployment," in Lou Yuengert (ed.), *How the Army runs 2021-2022: A senior leader reference handbook* (Carlisle, PA: U.S. Army War College, 2023), page 5-10.

[270] In the U.S. Army, some posts had immediate ready battalions or brigades that were to be wheels up in 96 hours or longer, but the concept was essentially the same. They still exist in some form or another as *immediate reaction* or *immediate response forces*. For example, the 82nd Airborne Division has historically had immediate response missions. A contemporary examination of the 82d's can be found in Haley Britzky, "'We're always ready' – Meet the soldiers of America's go-to rapid response force," *Task & Purpose* (blog), January 27, 2022, https://taskandpurpose.com/news/army-82nd-airborne-division-immediate-response/
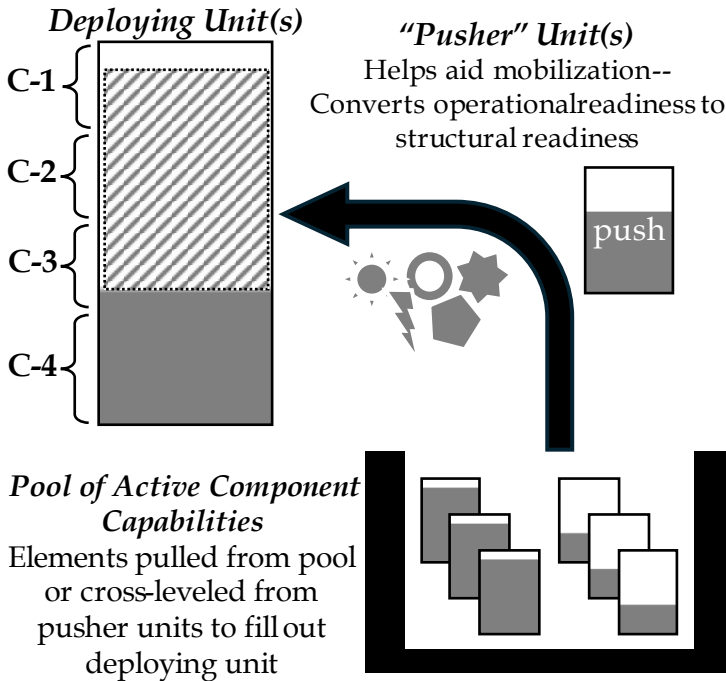
Figure 7. Simple case -- mobilizing active elements only[271]

To meet the timeline, often the company's vehicles and equipment were staged and prepackaged in a staging area for immediate loading onto airframes and therefore not available for training. Prepackaged stocks of food, ammunition, and other classes of supply were similarly prepared and stored for quick access and movement. Actions during that window from notification to wheels up was referred to as *mobilization*.

Mobilization activities involved a combination of resources from both the generating force and the company's parent unit. Their roles included receiving, organizing, equipping as needed, manifesting, loading, and embarking. The parent unit and the company's own personnel typically drew the equipment and moved it to the airframe but generating force personnel had to open the stores and motor pools, run the administration systems, and provide emergency sustainment in the event of sudden oil leaks or a soldier falling ill. Some of these capabilities had to operate on shorter recall than the company.

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[271] Original graphic by author.

If insufficient contractor or installation base services are available and on-call to manage the mobilization, a common method is to activate a *pusher unit*. Pusher units are typically at lowered states of readiness with the collateral duties of being on-call to assist deployments, and perhaps remaining to further assist with follow-on deploying units. In some cases, the pusher unit may also serve as part of the force pool if a deploying unit's capability proves to be unready. For example, if a soldier is nondeployable due to illness, the pusher unit may have the first responsibility to produce the replacement to maintain the deployment schedule.

Pusher units may only need to activate teams or small elements, however regardless of the commitment, those elements are effectively reassigned until released (often after the complete force package has departed). Thus, some of the operational readiness of pusher units are converted to structural readiness due to possible degradation of training status and the potential of losing capabilities in cross-leveling. The longer that the pusher unit remains active, the lower its operational readiness becomes. Thus, once released from duties, the pusher unit must reconstitute to restore its prior state of operational readiness. This is even more important should the pusher unit also be among the units deploying. In that case, the enterprise must replace the pusher unit so it has the opportunity to reconstitute before deploying.

The ability to mobilize is dependent on a declaration of emergency and the commensurate authorities to notify the units and capabilities. The services could prepare internally to the maximum extent possible and establish joint agreements to manage expectations, but without the mechanism for national leaders to declare emergencies, there would be no mechanism of assuring that the Air Force would have airframes at the proper locations to meet the timelines.[272]

Reserve component mobilization

The second form of mobilization probably aligns with how most defense leaders would associate the term—the activation of forces from reserve status to active and subsequent integration for employment. The purpose is the same, to convert structural readiness to operational readiness, but on a larger scale and in a way that signals greater commitment of the nation. Figure shows this form of mobilization.

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[272] Personal anecdote. This was not only because of the limited number of airframes. Basing was an issue. In one instance, an immediate ready company was established at an Army base that was two hours apart from the nearest Air Force Base and in an area known for severe winter weather. The Air Force was trying to close the base (which it eventually did) and never wanted it associated with this Army-centered mission.

Deploying Unit(s)

C-1

C-2

C-3

C-4

Force Integration
Staff, equip, and train to bring to
sufficient operational readiness

push

"Pusher" Capabilities(s)
Can be active or reserve
elements or contracted

**Pool of Active and Reserve
Component Capabilities**

**After "full" mobilization– the pool is drained!
Thus strategic readiness goes to zero!**
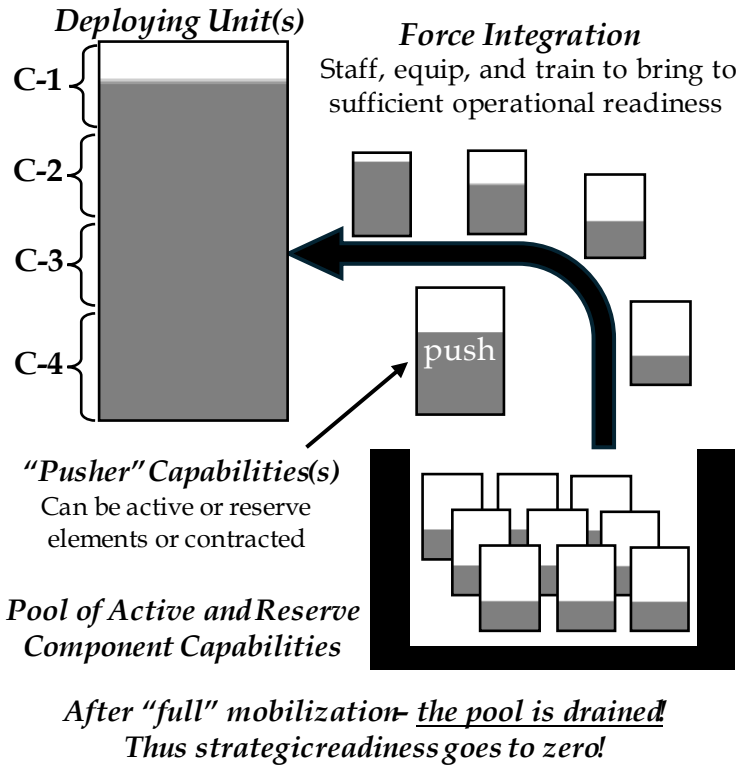
Figure 8. General case -- reserve component mobilization[273]

The reserve components, by definition, provide mostly structural readiness until activated. Based on the laws and authorities each nation establishes, activations can come about in multiple ways. There are short-term, often specific to a mission, activations where a reserve unit is mobilized, placed in an active status, and employed; followed by demobilization and return to a reserve status. Individual reservists can also be mobilized and serve in an active capacity, filling or augmenting an active unit. Or, in the event of major combat operations or significant national emergency (e.g., natural disasters or large-scale civil unrest), large numbers of reservists and reserve units can be called up to active service for longer durations or even indeterminate amounts of time (e.g., when the war or crisis is over).

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[273] Original graphic by author.

To provide both flexibility and certainty, given the disruption that mobilization brings to reservists' lives, it is common for nations to establish formal or legal thresholds that establish limits on quantities of reservists called up and durations of their active service. This allows for better alignment between the mission and the quantities of reservists activated to avoid wasting resources or misutilizing reservists. For example, the U.S. system establishes mobilization thresholds[274] ranging from small-scale *emergency call-ups* of limited duration (60,000 for no more than 120 days) to progressive larger mid-range call-ups (e.g., "Presidential Reserve Call-up" of 200,000 for one year to *partial mobilization* of 1 million reservists up to 24 months) to *full mobilization* that activates the entire reserve force structure (duration of war plus six months).[275] Each threshold may also include its own progressively higher level of national decision or increased requirements for checks and balances between executive leaders and legislatures. In the US system, the President can declare a partial mobilization, but a full mobilization requires a Congressional declaration.[276]

An important point about this level of mobilization is its impact on strategic readiness of the remainder of the force. In the simple case above, any cross-leveling or sustainment of the pusher unit mission will reduce the size of the force pool, but the impact could be light. The availability of that pool will contribute to sustaining adequate structural readiness for the rest of the force. However, in the present case, it can be assumed that the pool will be depleted such that some units might not be able to draw from it, and for those units' structural readiness goes to zero and therefore their only readiness is their operational readiness state. In the event of full mobilization, the pool is theoretically depleted fully and there is no longer any structural readiness in the force. In that case, the force deploys and operates only with the capabilities it has on hand.

Reserve component mobilizations fall almost entirely on the generating force, performed by special purpose units that may lack an operational mission. In theory, because the reserve components are part of the organic force, the defense enterprise would have sufficient capabilities available to handle any threshold of mobilization, but these may also be at different levels of operational readiness based on the

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[274] The U.S. can mobilize its forces at federal and state levels. The federal level draws authorities either from Title 10, U.S. Code directly or in provisions of the annual National Defense Authorization Act, per Dowdle, "Army Mobilization and Deployment," 5-5. For the National Guard, each state defines its own levels of mobilization and associated procedures.

[275] Dowdle, "Army mobilization and deployment," 5-4; drawing from Chairman of the Joint Chiefs of Staff, *Joint mobilization planning*, Joint Publication 4-05 (Washington, DC: The Joint Staff, 2018). Hereafter *JP 4-05*.

[276] Dowdle, "Army mobilization and deployment," 5-4.

likelihood of enacting those thresholds or the risks that the nation is willing to accept.

Expansion of the armed forces

See Figure 9. This is the rarest and most disruptive to the nation. *Expansibility* (a.k.a. national mobilization or *total mobilization* in the U.S.) involves the capacity to create new units and capabilities not in the organic force structure. For example, if the force structure includes ten brigades but the nation needs fifteen to prosecute a war, then the nation must produce those five additional brigades somehow. That means potentially recruiting five more brigades' worth of personnel, acquiring five more brigades' worth of equipment and sustainment, and training and integrating all these capabilities into the force for employment. In the worst cases, the force structure may have to expand to several times its peacetime size.

While the nation's capacity to provide the resources for the war effort will be presented in Part III, it is the defense enterprise's role in receiving and integrating those resources. Peacetime preparations include the establishment and maintenance of war stocks of strategic minerals, critical supplies such as petroleum, and end items such as weapons systems and war reserve stocks of weapon systems and materiel.[277] The enterprise also must maintain systems and processes for the reliable and efficient management of mobilizing assets as they move through the pipeline, especially for personnel as they may move among multiple locations for inprocessing, training, equipping, and assignment to a deploying unit.[278]

One can expect that the generating force itself must expand in kind. Nationalization of assets such as industry and sustainment capabilities (addressed in Part III) invokes a potential need to convert them for military use, therefore this may involve the nationalization of planning and operations activities for integration with the military. Expansion may also require the employment of operational units in generating force

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[277] In the U.S. system, strategic minerals are part of the National Defense Stockpile, established under Strategic and Critical Materials Stock Piling Act, 50 U.S.C. § 98 (1939). The US also maintains pre-positioned war reserve material (known as PWRM) that includes stocks of vehicles and materiel under various programs such as the Army Prepositioned Stock (APS) program under Strategic Policy on Prepositioning of Materiel and Equipment, 10 U.S.C. § 2229 (2005). Most PWRM is owned or managed within the defense enterprise. The Strategic Petroleum Reserve, on the other hand, is maintained by the Department of Energy, not Defense, in Strategic Petroleum Reserve, 42 U.S.C. § 151(b).

[278] Ken S. Gilliam and Barrett K. Parker, "Mobilization: The state of the field," *Parameters* 47, no. 2 (Summer 2017): 95-101.

roles, such as to supplement personnel management or augment the training base to oversee the increased influx of personnel.
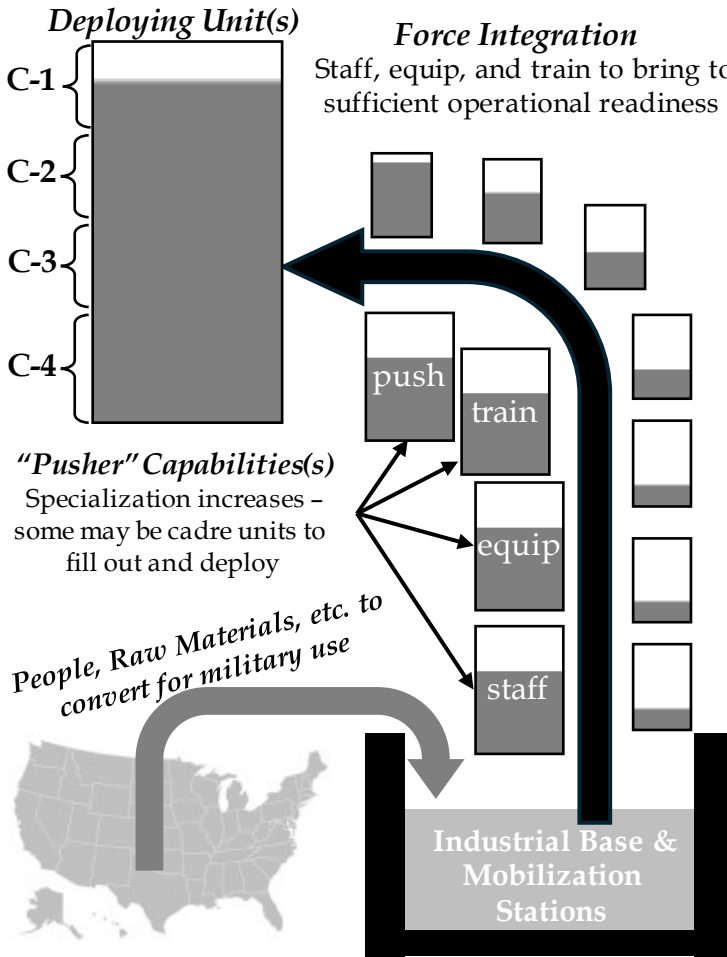

Figure 9. Most complex case -- national or "total" mobilization[279]

Implications

The need for external authorization to mobilize complicates readiness measurement. Structural readiness measures presume that the enterprise can control the timeline and has confidence that the units

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[279] Original graphic by author.

aligned against the mission are the ones that will deploy. The decision to mobilize is dependent on a political decision, which may not be forthcoming as expected or desired. Therefore, the enterprise must be prepared to operate from a cold start. It may need to choose different units for the mission than originally allocated in the planning documents, invalidating prior calculations of structural readiness.

Another distinction is that conceptually, mobilization readiness is a function of the enterprise, even when operational units perform mobilization activities. In effect, when a deploying force designates "pusher" units to aid, support, and possibly augment or replenish mobilizing units, they forgo their roles as operational units and fulfill enterprise roles. Units that push themselves out (i.e., without pusher units or other support) are doing the same, they perform enterprise functions until they stage in theater, at which point they resume their operational roles.

Mobilization readiness is also a function of the operational and structural readiness of the enterprise's mobilization capabilities. In this context, operational readiness is measured as a function of throughput-- the conversion process from steady-state peacetime operational readiness to employment of the trained and ready forces. Throughput measures would also include the capacity of operational units to serve as pushers, which in turn may temporarily reduce those units' operational readiness.

This aspect of mobilization readiness risks becoming recursive, especially in the event of expansibility. Due to natural constraints on resources, the defense enterprise is unlikely to maintain mobilization readiness for the equivalent of total mobilization in peacetime and may not be able to afford full mobilization. If so, full mobilization necessitates the expansibility of mobilization capabilities. For example, operational units may have to be reorganized to form as cadres of new units, investing operational readiness now to foster greater operational readiness as the new units come online in the future.

The remainder of this chapter offers conceptual frameworks for developing mobilization readiness measures with respect to throughput and the issue of reorganizing to expand the military.

7.B. How does the "mobilization pipeline" work?

The *mobilization pipeline* is the cumulative set of activities that converts structural readiness to operational readiness for a given force or

capability.[280] The pipeline is more than just the mobilization capabilities that replenish and train units for employment, but also includes the communication channels used to initiate the mobilization process and establish command and control over the process through the employing unit's onward movement in theater.

A critical early step in establishing the pipeline is assessing the mobilization requirements of units. The unit's presumed structural readiness, established as a by-product of the force generation process, will be superseded by the actual structural readiness of the unit at the time mobilization begins. Historically, units arrive at the mobilization pipeline at lower-than-reported readiness levels. This results in cross-leveling assets from other units which detracts from their readiness and degrades overall force readiness.[281]

Mobilization and demobilization stations

The *mobilization station* is the combination of personnel, materiel, and real property assigned responsibility for performing force generation for units, and the *pipeline* is that portion of the mobilization station that acts on unit assets while the remainder of the station is administration and support. The pipeline is depicted notionally as having five *stations* whose presence and responsibilities will naturally vary according to the capability being generated. The phases are: (1) manning, (2) equipping, (3) training, (4) unit-level quality control, and (5) force-level quality control.[282] These stations can be co-located or conducted concurrently such as individual-level manning, equipping, and training.

The first three phases—manning, equipping, training--are usually done in some sort of sequence. Manning activities normally begin prior to equipping, which in turn normally precedes training. The manning phase involves activities to administratively certify individual eligibility to continue in the pipeline. For entry-level cases, this includes verification of one's physical, mental, and moral standing and socialization into the military. For those already serving, this station amounts to a reverification of same given the potential emergence of health conditions or disciplinary problems, etc. If needed, the manning phase also includes the integration of individuals (which may also include civilians and contractors) to deploying units. The equipping phase provides

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[280] The pipeline metaphor comes from Laura Junor, *Managing military readiness*, Strategic Perspectives 23 (Washington, DC: Institute for National Strategic Studies, 2017).

[281] Kenneth Powell, Christin D'Angelo, B. Thornburg, and Mike Nowak, *Unit cohesion: Cross leveling and readiness* (Alexandria, VA: BCP International Limited, November 2006), 20-31, https://apps.dtic.mil/sti/pdfs/ADA463157.pdf

[282] G. James Herrera, *The fundamentals of military readiness*, Report #R46559 (Washington, DC: Congressional Research Service, 2020).

equipment that the individual or element does not have on-hand or has on-hand but needs replacement or servicing. The training phase provides opportunities to develop skills and knowledge necessary to become operationally ready. These phases can also operate in a cycle whereby mobilization progresses toward the operational readiness of the full force. The first cycle might be at individual level, then repeated to some extent at team or squad level, then to company level, and so on.[283]

At the end of the pipeline are two quality control phases that perform validation activities that the unit is indeed ready. The first is small-unit level that can verify the mobilization activities undertaken. Qualification testing, field training exercises, live-fire exercises, and other activities ensure the mobilization pipeline functioned as intended. The second quality control phase is large-unit and force level that provides overall certification for the collective unit or force and allows departure from the pipeline. Certification activities for deploying units might include "mission rehearsal exercises," combined arms exercises, Warfighter evaluations, or joint/multinational exercises. Entry-level programs may include culminating events and graduations.[284]

De-mobilization stations

To this point, mobilization readiness has focused on building readiness, however there is a commensurate requirement for the enterprise to reduce readiness from high to low. Redeployment, deactivation or disestablishment of units, separations and retirements, and the movement of a unit to lowered readiness per the force generation model are reasons to reduce readiness. For the present discussion, only the last is of interest. Cyclic force generation models include requirements to reduce readiness in units according to a schedule or plan to allow for reset and reconstitution of the unit and, under the Army's present ReARMM model, modernization.[285]

The term *demobilization* is traditionally used to reflect the transition from war to peace or the release of reserve component service members from federal service following a deployment or other augmentation to the active force.[286] Analogous to mobilization, demobilization includes the reconversion of operational readiness to either structural readiness or

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[283] Herrera, *Fundamentals*, 15 depicts this as a serial assembly line that begins at individual level, exercising an "iterative process" through "small" and "large" unit levels, and finally to a set of "ready" units.

[284] Herrera, *Fundamentals*, 15.

[285] Galvin and Filiberti, *Force generation models.*

[286] Oxford Dictionary, s.v. "Demobilization."

divestiture. The decision to demobilize is political and normally includes how much force structure remains.

The *demobilization pipeline* acts the same as mobilization but conceptually in reverse, breaking down capabilities so that disposition of personnel and materiel are conducted in a planned and coordinated way. In practice, however, sometimes demobilization is done rapidly, and therefore imperfectly. Elements supporting demobilization must activate the station in a similar way as for mobilization. Some facilities or activities may serve both mobilization and demobilization purposes simultaneously (e.g., arms rooms, central issue facilities for individual equipment). A detailed description of the demobilization process is beyond the scope of this book, but generally involves the following:

- Recovery of equipment such as major end items.

- Reception and care of service members, particularly those requiring assistance

- Reception of items (e.g., ammunition, parts) for return to war stocks

- Termination of unneeded war-related contracts and restoration of garrison or home base services

- Preparations for movement back to home station[287]

Readiness to activate the pipeline

However, the mobilization process and the mobilizing capabilities also must be ready to receive and process the deploying unit. The pipeline is not necessarily active on a continuous basis; it has to be activated through deliberate action such as an emergency declaration. This means that the support units performing mobilization must themselves be operationally *and* structurally ready to mobilize (in some cases, self-mobilize) and activate the pipeline. The geographic locations of pipeline activities are also significant as deploying units and any individual augmentees may need to displace to a mobilization station for training, equipping, and integration into the deploying force. Obviously, this would be alleviated at bases where mobilization assets are co-located with fighting units, but in other instances where the mobilization stations are far away, the act of mobilizing incurs added costs in funding and time for pre-mobilization movements.

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[287] *JP 4-05*, page VI-3.

This leads to a set of factors that can be used to describe the meaning of high mobilization readiness versus low so that it can be measured separately from the operational and structural readiness of both deploying units and mobilization support units. The first factor, which is the most straightforward, is the capacity of the mobilization stations' designs. Can it push capabilities through the pipeline at the requisite speed and quality so that the force is employable as intended when mobilization is complete?

The second factor is the capacity for self-mobilization and activation. Activities continuously underway such as personnel replacement services may need to increase capacity while others will have to effectively operate from a dead start. Mobilization units must be operationally and structurally ready to activate and operate the pipeline, but the pipeline itself must be physically ready to be activated or have its capacity increased. High mobilization readiness describes conditions whereby there are no significant delays in activation that would preclude the reception of capabilities for processing.

The third factor is assembly and movement of deploying units from home station to the mobilization station and later from the mobilization station to the point of embarkation (where Sustainment Readiness kicks in, see Chapter 8). The co-location of the units, mobilization stations, and points of embarkation clearly enhance mobilization readiness for those units. However, units that are dispersed in the stationing—especially reserve components—will naturally see lower mobilization readiness due to the additional time needed for assembly. Mobilization readiness can also be reduced in instances where the mobilization pipeline is itself dispersed, such as distant separation between manning and equipping operations (e.g., at a state armory) and the training areas.

The fourth factor for consideration is the materiel and stocks required to reconstitute the units during the mobilization process. There are several ways that this equipping or re-equipping may occur: (a) initial issue to the unit/individual from stocks for equipment not on-hand or replacement for damaged or unserviceable equipment, (b) cross-leveling or loaning the equipment from its original unit to the deploying unit, (c) diverting equipment from its designated receiving unit to the deploying unit, or (d) deployment without the equipment from the mobilization station in favor of drawing from a prepositioned stock or other theater staging base. In the last case, the units may require temporary issue of equipment to conduct training. Issue and return of such equipment may

add to the mobilization time.[288] The enterprise is responsible to provide asset visibility to facilitate decisions on equipping the deploying force.

7.C. What are the critical resources for the pipeline?

Personnel

Given the data available, it is not surprising that DoD has had to resort to internal screening processes to supplement the data or validate eligibility for service. However, these need not be confined to screening actual recruits. Some tools can serve outreach purposes such as helping youths find opportunities in a prospective military or non-military career. A prominent U.S. example is the ASVAB (Armed Services Vocational Aptitude Battery) whose primary purpose is to determine best fit for occupational specialties in the military. However, the ASVAB is also used as a prospective career identification tool for general high school students irrespective of interest in military service. It provides helpful feedback for determining one's readiness for further education or influence one's decisions to enter the workforce after graduation.[289]

Mobilization readiness is also about the generation of combat power that the force does not initially or ordinarily have. When an army mobilizes one million people for a war effort, there is a need for one million rifles, one million pairs of boots, thousands of military vehicles, and an incredible range of other weapons systems and end items that are likely beyond what is available from war stockpiles. These would have to be produced rapidly enough to be available for training and use by the new soldiers.

Real property

This concerns the capacity to establish and employ lines of communication (LOCs) end-to-end when needed, and consumption and attrition rates during operations.[290] It can include the supply packages that the force initially deploys with,[291] materiel and manpower stocks

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[288] These options are based on Undersecretary of Deference for Personnel and Readiness, *Equipping the reserve forces*, Department of Defense Instruction 1225.06 with change 2 (Washington, DC: Department of Defense, 2022).

[289] "ASVAB Career Exploration Program," Department of Defense (sponsor), https://www.asvabprogram.com/.

[290] Moore et al., *Measuring military readiness*, 99. This category combines the authors' Deployment Readiness and Operational Analysis appraisals as these reside primarily at service or combatant command level whereas the other two levels are primarily service and below. The Operational Analysis discourse, however, focuses on conventional warfare.

[291] Robert Fabrie, "Sustainability aspects of readiness reporting," in John C. F. Tillson (Project Leader), *Independent review of the DoD's reporting system*, IDA Paper P-3569 (Alexandria, VA: Institute for Defense Analyses, 2000), E-1.

amassed during mobilization not immediately allocated to the force,[292] and production or acquisition of supplies in theater.[293]

The challenge for senior leaders is the difficulties associated with appraising the latter two, which depend greatly on non-DoD capabilities and DoD capacity to mobilize critical capabilities early. Such appraisals rely on assumptions regarding service contracts and capacity of the industrial base, which directly affect *when* the force would be prepared to conduct a specific operation.

Initial Sustainment Support for Mobilization

Moore et al. (1991) proposed an integrated framework for sustainment assessment and planning tied to initial mobilization but extending to long-range sustainability covered in the next chapter. Recommendations from their framework include measuring the capacities of: (a) mobilization centers and related training ranges, (b) stockpiles on-hand and distributing stockpiles, (c) producing additional materiel required, and (d) cross-leveling materiel and personnel among units.[294] Using simulations or modeling, planners can determine the initial supportability of units flowing from CONUS to an overseas theater and the corresponding accumulations of stocks flowing with or separately from the units to theater. The aim is to develop confidence in the supportability of units initially through continental-U.S. stocks long enough for the establishment of in-theater production and distribution capabilities.

Transportation

DoD depends on the national transportation infrastructure for most sustainment conducted during war. In smaller-scale contingencies, it is possible for DoD's organic assets to perform the majority of transportation, but even during initial build-up for war, DoD depends on other U.S. government partners for support, especially the Department of Transportation (DoT). The following is drawn from Joint Publication 4-01 and provides a brief list of the capabilities whose readiness must be considered for mobilization. Many of these capabilities are also relevant for long-term sustainability readiness:[295]

- Capacity for transportation planning

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292 Moore et al., *Measuring military readiness*, 81.
293 Moore et al., *Measuring military readiness*, 82.
294 Moore et al., *Measuring military readiness*, 74.
295 Joint Chiefs of Staff, *The Defense Transportation System*, Joint Publication 4-01 (Washington, DC: Joint Chiefs of Staff, 2017). Hereafter *JP 4-01*.

- Capacity for national and in-theater port management and terminal services. Includes capabilities provided by DoT for administering national demands on highways, railroads, airspace, and waterways (including seas and rivers)

- Capacity to contract with commercial transportation service providers

- Capacity of available national, military organic, and in-theater port capabilities – ground, air, sea, and rail *plus* available remaining capacity for non-military use

- Capacity of available national, military organic, and in-theater shipping and distribution capabilities *plus* available remaining capacity for non-military use

- Capacity of available national, military organic, and in-theater movement services at echelon

- Capacity to coordinate the activities of corresponding state and local-level entities within the U.S. and its territories or international partners in overseas theaters

Several critical transportation functions under the Defense Transportation System also require assessment for their capacity to support large-scale mobilization. These include the capacity to perform adequate in-transit visibility to ensure timely deliveries to warfighting units, military support to civil transportation in the event of major disruption, the use of DoD transportation for non-DoD shipments such as support for allies, partners, other US government agencies, or US commercial firms, and customs functions to prevent the flow of contraband.

Security

Security is an essential part of mobilization readiness. It is to be assumed that the U.S. would become a target of both foreign and domestic action aimed at disrupting national mobilization and employment of its assets. DoD partners with the Department of Homeland Security to develop and implement plans for the safety and security of mobilization operations. Among the key readiness indicators for mobilization are the U.S. Coast Guard's readiness and capacity to secure maritime zones and seaports, the Federal Emergency Management Agency's capacity to respond to disasters or other events proximate to mobilization activities, the Transportation Security Administration's capacity to secure the nation's transportation systems

for continued freedom of movement, and DHS' Office of Infrastructure Protection's capacity to protect critical infrastructure from terrorist attack or other emergency.

These federal agencies also have responsibilities to coordinate access control and security activities with corresponding state and local agencies. This is especially important for roadways, which in the U.S. are owned by the states and not the federal government.[296]

Compounding nature of demands on the pipeline

As a nation moves toward total mobilization, mobilization readiness risks becoming recursive. At lower levels of mobilization, realigning operational units to a pusher role can be viewed as temporary or as part of the assumed responsibilities of the organic force. Mobilization readiness is thus a straightforward (albeit difficult) measure of comparing the anticipated demands for mobilization against the available capacities listed above.

Under total mobilization and other conditions whereby the organic force is inadequate to mobilize itself, actual mobilization readiness could be much lower than the percentage of available capacity would suggest. This is because of *compounding* — the same process that causes investments to increase their value rapidly in the long run also can cause readiness to decrease at an exponential rate.

Consider the following scenario. A nation has entered a war. Peacetime force levels caused some units to be filled at under 100%. When the alert came, the first wave of combat units assembled and found they had nondeployables on-hand. Redistribution of assets provided adequate fill for the first wave of units, but the remainder saw further decreases in readiness. The remaining organic force begins a process of seeking individual replacements to join and train.

But what if the war is going badly and the nation decides that total mobilization is needed? For present purposes, assume that number of combat units must double. Because the enterprise's mobilization capacity was built around the organic force, it may lack sufficient resources to welcome and process this many personnel nor receive and distribute equipment from the defense industrial base — if the industrial capacity increased in kind. Because the large number of new units will likely lack direct military experience, the task facing the enterprise of shaping them into fighting units may become more complicated. Not only may the remaining organic force be called upon to become pusher units, thereby pulling capabilities out of the operational force, but they may also have

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[296] *JP 4-01.*

to provide cadres for the new units being built. This causes a redistribution of vital leadership positions that further disrupts the original organic force as it gets ready. Instability in requirements could create more disruptions as personnel are pulled from units they are training with and sent to different units (hopefully ones that better leverage their talents).

The larger the ratio from total mobilization to original organic force levels, the more rapidly the compounding problem is likely to occur. This finding is based on a study of U.S. mobilization for World War II by scholars at the Army Heritage and Education Center (AHEC).[297] When planning for expansibility, defense managers must consider how much of the organic force may need to be held in reserve to perform enterprise-level mobilization tasks and potentially augment or lead newly created units, such as cadres (see Chapter 6). Similar concerns are also relevant for the other critical resources. As the AHEC study concluded, building an expansible Army requires available and convertible real property, an ability to grow and convert industrial capabilities, and (especially in a contested homefront) increase security of bases and critical infrastructure and networks.

For these reasons, mobilization readiness measures should also consider to what extent the force can expand beyond its organic capacity and reasonably expect to avoid the compounding problem. Being organized and trained for performing expansibility functions would also seem logical extensions of a unit's suite of operational readiness measures.

7.D. IS MOBILIZATION READINESS MEASURABLE?

This chapter only proposes a framework for considering mobilization readiness measures; it does not prescribe a clear set nor present a recommended scale. Further research is needed to uncover what may be a useful set of measures. The reliance on external stakeholder decisions and commensurate resources suggests that even under perfect conditions a unit that would be considered mobilization ready in peace might not be if political realities delay or preclude the speed and clarity of decisions the military desires. Such is the way in civil-military relations.

Figure 10 provides a hypothetical example of the impacts that political timing can have on the operational readiness of a unit. The vignette shows the risk of *alert fatigue* where a unit is directed to be ready

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[297] Con Crane, James Scudieri, Michael Lynch, and Joe Williams, *The myths of expansibility* (Carlisle, PA: Army Heritage and Education Center, 2019), 39-42.

to deploy and therefore mobilizes to the point of departure, only to be stuck waiting for political authorization to deploy. The reasons for the delay are legitimate – political leaders wish to avoid war if possible and would rather not put their forces in harm's way. However, as explained in Chapter 5, placing units under conditions of high readiness tend to cause readiness to consume itself, and thus the delay in the political decision may lead to the deploying unit being at lowered readiness (e.g., tired from being in a continuous alert state, personnel getting ill, equipment breaking) at the time the political decision comes. Thus, whereas the stakeholder may expect instantaneous wheels up, the deploying units may find themselves needing to reconstitute, even if a little bit, before being certified and ready to go.

Time	Situation	Unit A	Unit B	Pusher
Start	Unit A is immediate ready unit while Unit B is first follow-on	HI	MOD	N/A
Alert (A-day)	Enemy action triggers alerting A & B and activating pusher	HI	MOD	MOD
A+1	Units A & B are fully ready – awaiting final order to deploy	HI	HI	HI
A+3	Political decision delayed – attempts to meet out peaceful solution begin	HI	HI	HI
A+4	Alert fatigue sets in – negotiations begin, proving contentious	HI(-)	HI(-)	MOD
A+5	Enemy breaks negotiations – Units A & B given order to deploy	MOD	MOD	MOD
A+5.5	Units A & B *and pusher units* reconstitute to restore full operational readiness – pool further depleted	HI	HI(-)	HI(-)
A+6	Unit A "wheels up"		HI	MOD

Figure 10. Notional case of delayed decision impacting readiness[298]

Thus, it might not be useful to think of finding a small set of consolidated measures, but instead take a more scenario-based approach. For each level of mobilization and general class of scenario, what is the degree of confidence that the organic force can simultaneously assemble

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[298] Original graphic by author.

and deploy while also suitably aiding the enterprise to help other units assemble? To what extent are the measures sensitive to external pressures or constraints such as delays in the political decisions or unexpected changes in the mobilization requirements. In other words, how much risk is assumed that the deployment order will come down as expected? To what extent does the risk increase when it does not?

Measures of mobilization readiness may only be useful if the nation has both the legal and institutional frameworks in place and pools of resources ready to commit to the military under worst case scenarios. The same AHEC study identified how fears of standing armies and difficulties from previous campaigns leads nations to scale down their militaries in peace. Also, because operational and structural readiness are more closely aligned with traditional conceptions of a military's core missions, mobilization readiness can become overlooked. Therefore, the next mobilizations run the risk of repeating mistakes of the past.

8. Long-Term Sustainability Readiness: The Military's Organic Resiliency

The next category of readiness involves the long fight, wars that last longer and require significantly more capability and capacity than ordinarily afforded to the defense enterprise at onset of hostilities. Unlike mobilization readiness that constitutes the initial national commitment to the war effort requiring expansion of the military, long-term sustainability readiness considers the longitudinal impacts of continuous commitment.

The American experience is light compared to those of other nations such as in western Europe that participated in a multitude of "total" wars, some lasting many years or decades. Much of what is discussed in this section stems from the 1940s to present, encompassing World War II, Korea, Vietnam, the Cold War, the Balkans, Iraq, and Afghanistan. Each of these wars or competitions lasted long enough to require some degree of expansion of the defense enterprise for a sustained period of at least a couple years or required continuous commitments after the original conflict.[299] For example, this applies to the extended peacekeeping and peace enforcement operations in Bosnia after the signing of the Dayton Accords, the retention of forces in the Republic of South Korea since the 1953 armistice, and the extended commitments of forces in post-IRAQI FREEDOM Iraq and post-ENDURING FREEDOM Afghanistan.

In each case, continuation of the national efforts over time conflicted with the needs and desires of the nation to resume and sustain some degree of normalcy, if not a full return to the *status quo antebellum*. Much like the national response to the COVID pandemic, as the initial sense of urgency behind a war effort wanes, the calls for its termination grow stronger or more persistent. The costs of war become more heavily scrutinized as the neglect of other priorities (e.g., economic, social, environmental) becomes less tolerable.

The traditional view of this kind of readiness is reflected in the common term *sustainment readiness* defined as the extent to which the nation and its industrial base can satisfy the continual requirements for ready forces, replacement personnel and equipment, and supplies until the conclusion of operations.[300] This definition is suitable only for what is traditionally encompassed by sustainment – personnel, materiel, and supplies. Resupplying the war effort is only a part of the long-term

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[299] Case studies on these and other conflicts can be found in Crane, et al., *The Myths of Expansibility*.

[300] Martin, Measuring Strategic Readiness, x.

equation. The resilience to keep fighting so long as necessary to win is even more important as a measure of readiness. Hence, this report extends the concept beyond resources.

Long-term sustainability readiness is observable through the energy (i.e., resources, time, and leader emphasis) that the defense enterprise expends toward keeping the war effort going from the war's beginning to both its end and any post-war stabilization that follows. A significant component of it is communication synchronization. As Chapters 9 and 11 will show, the nation's strategic communication campaign is a vital part of the war effort, and the military's words and actions must nest within that campaign as much as possible. This becomes more challenging as the war prolongs. Long-term sustainability readiness is the most context-dependent and least quantifiable of the five categories of readiness presented here. The nation's will to fight has a tremendous influence on the military's resilience, and the miliary may have to overcome the nation's anxieties or eroding support for the war or for the fighting forces.

The discourse below is not comprehensive, but rather a product of recent U.S. experiences. These mostly align with the informational element of national power, as the nation must use such tools to inform and persuade internal and external audiences regarding the need for the war's continuance. In effect, sustainability readiness must be maintained through an accompanying strategic communication campaign aimed at precluding a premature loss of national energy and interest in the war.

Four components of long-term sustainability readiness are explored here, and readers are invited to propose others. The first is the most straightforward, to sustain, protect, and efficiently utilize lines of communication. Second is the readiness to regenerate lost capabilities. This involves the capability to continue the high expenditure of national resources – personnel, materiel, facilities, and infrastructure – beyond the initial national mobilization along with the readiness of capabilities that activate at the onset of hostilities. Third is the content and implementation of communication synchronization, such that the military's actions support national narratives aimed at maintaining commitment to the war effort both at home and abroad. Finally, there is the requirements for converting from sustaining a war effort to sustain a post-conflict environment that may include a rapid transformation of the in-theater footprint and changing requirements for equipment, supplies, and personnel to support the stabilization mission.

8.A. What is involved in sustaining and protecting lines of communication?

Lines of communication are the "transportation bridges to deploy, sustain, and redeploy forces" from home station to the theater of

operations[301] and generally include sustainment capabilities across various *modes*—land, sea, and/or air.[302] Lines of communication can be *intratheater*, such as connecting an operating force with its own base of operations or *intertheater* that normally connects the operating force back to its national territory.[303]

The resiliency of LOCs is critically important, and this evolves during operations. Adversaries will have had time to plan the interdiction of line of communication from CONUS, for example, if they were not already postured to interdict during mobilization. Thus, the capacity to establish, expand, sustain, reconfigure, and move forward operating bases, however defined by the operation, is a critical readiness measure for the protracted fight.

Some readiness considerations follow: First is the enterprise's capacity to establish an adaptive and agile footprint, secure lines of communication from CONUS to the force, and provide in-theater movement security.[304] Assumptions about means for providing this security may require re-assessment as the war progresses. The use of military assets to provide protection for private or nationalized security firms may be necessary but may detract from the military's other operational requirements.

The second consideration is the strength of any host nation relationships relevant to overflight, landing, and port rights along with diplomatic clearances needed to use them.[305] Most of these relate to intertheater LOCs but can also be a factor in intratheater LOCs.

Another consideration is the operational capacity of movement control systems.[306] Command and control is critical to ensuring the effective and efficient movement of goods through the LOC. The throughput is also important as an insufficient level of throughput due to geographical constraints or adversarial action means that additional LOCs may be required, which in turn increases the risk to operations.

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[301] U.S. Air Force, "Lines of communication," in *Combat support*, Air Force Doctrine Publication 4-0 (Washington, DC: Department of the Air Force, 2020). Hereafter *AFDP 4-0*.

[302] Department of the Army, *Army transportation operations*, Field Manual 4-1 (Washington, DC: Department of the Army, 2014), page 1-3. Hereafter *FM 4-1*.

[303] *FM 4-1* and *AFDP 4-0*.

[304] Patrick Mills, et al., *Building agile combat support competencies to enable evolving adaptive basing concepts* (Santa Monica, CA: RAND Corporation, 2020), https://www.rand.org/content/dam/rand/pubs/research_reports/RR4200/RR4200/RAND_RR4200.pdf.

[305] *AFDP 4-0*.

[306] *AFDP 4-0*.

8.B. What is involved in capability regeneration?

Once the force is mobilized and its operational readiness levels are attained, those levels will naturally begin eroding. Personnel may become casualties for various combat and non-combat reasons. Equipment may break in transit for reasons that can include enemy action, interdiction of lines of communication, loss of vessels, mishaps at the ports, and others. Supply chains may be disrupted, leaving the force without critical sustainment. Thus, concurrent with mobilization is the need to establish capability regeneration systems to replace casualties and lost equipment, and in the worst case reorganize and reconstitute the employed force.

Although the systems described here may be performed in part by the fighting force in theater, the regeneration ecosystem that combines replacement systems with doctrine and procedures for reorganizing a depleted force is mainly an enterprise responsibility. Ultimately, it falls upon the enterprise to keep the pipelines open with the nation to continue to provide the personnel and materiel solutions to emerging gaps in the force. The enterprise also must develop alternative, potentially novel, solutions when it is found that the fighting force lacks the needed capabilities to win—e.g., when a national resource is depleted and therefore certain materiel can no longer be produced or when the enemy is employing tactics or capabilities that the fighting force cannot confront. Also, in part because of the potential interdiction of LOCs and in part due to how prolonged conflict potentially necessitates the shifting of goods production and service deliveries to forward locations, regeneration may involve moving or standing up new sustainment capabilities to the theater.

It must be presumed that regeneration becomes more difficult as the war prolongs. This form of readiness relies on the ability to continue asking the nation for resources and support. During war, if the military's requests become irregular or unpredictable or a national government overly constrains the flow of funding available to the war effort, it could become detrimental to the industrial base's abilities to respond or the public's continued support for the war. [307]

Personnel and wartime replacement systems

The previous subsection discusses the enterprise's abilities to build the pipeline from homefront to fighting force. This and the following

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[307] The instability of the requisition process and uncertainty over timely payments during World War II negatively impacted the defense industrial base. For a case study, see Alfred P. Sloan, Jr., *My years at General Motors* (New York: Doubleday, 1959), Chapter 20. This is also referenced in Chapter 10 of this volume, "Resource preparedness."

subsection are about what goes through the LOC and reaches the warfighter.

Personnel replacement systems act to fill personnel gaps upon receipt of a requisition from a forward fighting force. They can be *individual replacement systems* whereby each loss in a unit incurs a requisition for a suitable person. The requisition can be sourced internally by someone already serving and available, or externally through mobilization or from the recruiting pool. A *unit replacement system* works by assembling a whole unit before deployment and employing it *in toto.* [308]

One can anticipate that personnel systems must have the capacity to evolve as the war transitions from initial stages of conflict to a more protracted footing. The enterprise may need to establish new or enhance existing systems and processes in the areas of recruiting and retention, casualty assistance, combat awards, promotions and evaluations, incarceration and other detainee operations, and so on in response to wartime conditions. Processes and systems developed during peacetime, even if designed intentionally for use in support of the war, may prove unsuitable and would need to be changed. One example is in the event that data networks become unreliable or are interdicted by enemy action, which may require the institution of alternative processes for managing personnel. Medical operations is one example. During operations in Iraq and Afghanistan, the U.S. relied on medical evacuation to Germany and CONUS which might not be possible or feasible in a future large-scale conflict. [309]

Another consideration for the replacement system is whether the approach is to maintain units in theater until the war is over or institute a rotational system. The problems of combat stress and burnout can be too risky, which favors using rotations,[310] but there is also the concern

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[308] It is beyond the scope of this volume to debate the relative merits of individual and unit replacement systems. There is considerable literature in this area, however. For example, see R. Smith Griggs, Jacob Haider, and Luke Flatebo, "The small-term replacement system: Wartime replacement systems in large-scale combat operations," *Military Review* (January-February 2020): 22-28, https://www.armyupress.army.mil/Portals/7/military-review/Archives/English/JA-20/Haider-Replacements-3.pdf

[309] Eddie Lopez, "Will thermobaric weapons overwhelm the military health system?" *WAR ROOM*, August 8, 2018, https://warroom.armywarcollege.edu/articles/will-thermobaric-weapons-overwhelm-the-military-health-system/.

[310] Historical Studies Branch, *Combat crew rotation: World War II and Korean War* (Maxwell AB, AL: Aerospace Studies Institute, 1968), 1.

about the ability to retrograde personnel from theater when their combat tours are completed when the LOCs are contested.[311]

Materiel requisition and production systems

This applies to all classes of supply including end items, food and water, fuel, ammunition, spare parts, and so on. Of course, the enterprise's organic sustainment capabilities provide some level of capacity regardless of peacetime or war, but prolonged conflict may strain the availability of such materiel coming from the homefront. Therefore, long-term sustainability readiness also considers to capacity to establish production forward, such as leveraging additive manufacturing and other emerging technologies.[312] Power,[313] potable water,[314] and other vital resources may be produced forward to reduce reliance on CONUS-based facilities and the vulnerable lines of communication to theater.

Mass-scale displaced persons & detention camps

In prolonged conflict, the fighting force becomes increasingly likely to have to manage large numbers of displaced individuals or perform extensive detainee operations. Managing prisoners (including corrections facilities for friendly forces, prisoner of war camps for adversaries, and other detention requirements), displaced persons, and refugees are incredibly complex operations and can drain a fighting force and divert its energies.[315] However, no other agency or non-military capability may be available to perform this task. Measures for the readiness of a force to plan and implement these types of contingencies must be established.

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[311] For a complete history of the personnel replacement system from the U.S. Revolutionary War to World War II and Korea, see Leonard L. Lerwill, *The personnel replacement system in the U.S. Army*, Department of the Army Pamphlet 20-211 and Center for Military History Pub 104-9 (Washington, DC: Department of the Army, 1954), https://history.army.mil/html/books/104/104-9/CMH_Pub_104-9.pdf

[312] Jeremy McLain, "The 4th Industrial Revolution, additive manufacturing, and the operational environment," *Mad Scientist Blog* (blog), U.S. Army Training and Doctrine Command, July 2, 2020, https://madsciblog.tradoc.army.mil/250-the-4th-industrial-revolution-additive-manufacturing-and-the-operational-environment/.

[313] For example, Holly Jordan, "AFRL developing rapidly-deployable, independent energy sources for remote military sites," *Defense Logistics Agency*, July 8, 2017, https://www.dla.mil/AboutDLA/News/NewsArticleView/Article/1251838/afrl-developing-rapidly-deployable-independent-energy-sources-for-remote-milita/.

[314] For example, "DARPA selects teams to capture potable water from air," *Defense Advanced Research Projects Agency*, December 18, 2020, https://www.darpa.mil/news-events/2020-12-18.

[315] Center for Army Lessons Learned, *Commander's guide to supporting refugees and internally displaced persons* (Fort Leavenworth, KS: Combined Arms Center, 2012).

Reconstitution operations

Like mass detainee operations, reconstitution belongs in a class of activities likely limited to major combat operations that is difficult to train in and may not be treated as a high priority. A feature of major combat operations is the propensity for engaged units to become so depleted that replacements and requisitions will not be sufficient to sustain or restore readiness. In effect, the unit has to be rebuilt. *Reconstitution operations* restore depleted units to an acceptable level of operational readiness, normally to return them to combat.[316]

There are several different forms of reconstitution depending on the severity of the depletion, the resources immediately available (including from higher echelons), and the on-going mission requirements. *Reorganization* is mostly internal to the unit and involves re-establishing combat capable units and a functional chain of command among the surviving soldiers. Operational readiness normally does not increase much but the unit's capabilities are optimized.[317] Commensurate with the enterprise use of the term, *regeneration* involves the infusion of personnel, equipment, and supplies from higher echelons to restore the unit's original capacity. This may involve the reallocation of resources coming into theater to the reconstituting unit or an emergency requisition that reaches back through the LOC to the homefront.[318] *Redistribution* is the last resort. It is the reassignment of all personnel and equipment, as individuals or subunits, to other units in the force. The unit is, in effect, disbanded and therefore the overall force structure is reduced. Potentially, this would lead to the requisition of the lost units either through expansion of the military or early mobilization of a follow-on force.[319]

Each of these activities, especially regeneration, could incur training requirements to re-establish operational readiness.[320] Such training would ideally occur out of contact with the enemy. Service doctrines may require that higher commands redirect resources to serve as an external evaluator to verify the restored levels of readiness among reconstituted units before being returned to combat. Like reconstitution operations more generally, this incurs a training requirement in peacetime that the enterprise must establish and provide opportunities for.

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[316] Department of the Army, *Reconstitution operations*, Army Technical Publication 3.94-4 (Washington, DC: Department of the Army, 2021), "1-1" - "1-3." Hereafter, *ATP 3-94.4.*

[317] *ATP 3-94.4,* "1-1."

[318] ATP 3-94.4, "1-2."

[319] *ATP 3-94.4,* "1-3."

[320] *ATP 3-94.4,* "4-1" - "4-5."

8.C. What is communication synchronization?

Strategic communication is critical to any war effort, but as shown from operations in Iraq and Afghanistan, it faces heavy challenges in the context of a protracted war effort. This is not solely because the U.S. is culturally impatient with long-duration wars, but also because it harbors a distaste for propaganda such that a long-standing law, the Smith-Mundt Act of 1948, legally prohibited the U.S. government from disseminating to domestic audiences any information intended for a foreign audience. The aim was to allow citizens to receive their information from independent or unbiased sources such as their own local or Congressional representatives, the media, or experts such as academics or think tanks. Domination of the information sphere by government officials, and accompanying efforts to suppress opposing views, was seen as un-American and the tactics of authoritarian or Socialist regimes.

Strategic communication was defined in joint doctrine until its deletion in 2017. It is now reserved as a national function that the defense enterprise supports[321] and therefore constitutes a component of a nation's preparedness of war. The original joint doctrine definition is still useful for present purposes:

> *Focused United States Government efforts to understand and engage key audiences to create, strengthen, or preserve conditions favorable for the advancement of United States Government interests, policies, and objectives through the use of coordinated programs, plans, themes, messages, and products synchronized with the actions of all instruments of national power.*[322]

A key factor in the effectiveness of strategic communication is alignment between words and actions – that what the nation says (through leader statements and official documents, policies, strategies, and so on) is consistent with what it does or intends to do (as enacted by government agencies including the defense enterprise). This alignment operationalizes national will, one of the principles of preparedness. Deviations from such alignment can therefore be suggestive of a loss or degradation of will. Enemy forces would exploit real or perceived gaps

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[321] *Communication synchronization* first appears in joint doctrine in 2013 under Joint Chiefs of Staff, *Commander's communication synchronization*, Joint Doctrine Note 2-13 (Washington, DC: Joint Chiefs of Staff, 2013) and was later added to the official military lexicon in Joint Chiefs of Staff, *DoD dictionary of Military and Associated Terms*, 2017 edition (Washington, DC: Joint Chiefs of Staff, 2017), 41. Hereafter *DoD Dictionary*.

[322] Joint Chiefs of Staff, *Department of Defense dictionary of military and associated terms*, Joint Publication 1-02, 2001 edition as amended through 2009 (Washington D.C., Joint Chiefs of Staff, 2009).

and inconsistencies in a nation's words and actions to harm the morale of U.S. forces and break the will of the American people to continue the fight. Therefore, the capacity and desire to align words and actions is a critical indicator of the nation's preparedness to exercise its informational element of national power for the duration of the conflict. The below covers four perspectives of strategic communication for their preparedness implications: (1) internal to the military (e.g., command information), (2) internal to the government (e.g., civil-military relations), (3) internally to the populace, and (4) externally to allies, partners, and adversaries alike. Each of these are exercised in both peace and war, but their characters change according to the situation. The focus for sustainability readiness is measuring the capacity to sustain these channels under conditions of duress – such as when doubts and criticisms grow over the purpose and conduct of the war as time passes. It is also important to note that each of these sets of channels face significant challenges in the present information environment.

Internal to military

Communications within the military should in theory be stable in the transition from peace and war and back. Given the natural complexities of war, it is difficult to imagine that a unit that does not keep itself properly informed in peace would be able to do so in war. Thus, it is important from a readiness perspective to ensure that units sustain effective and efficient internal communications in peace. However, even units that are highly effective in communications will face increasing challenges as a war effort continues. Three channels are presented below as those that experience noteworthy challenges in a sustained fight.

The first set of channels are 'push' communications that come from top-down. *Command information* includes the various ways and means of providing official policies, strategies, plans, and other mission essential information down the chain of command.[323] Command information is conducted by commanders and supported by the staff. Its role is to be the first resort for dissemination, clarification, and feedback related to approved positions of the defense enterprise and chain of command. These channels always face challenges from alternative, unofficial, and unapproved sources such as news opinions and editorials, social media, or emerging through the rumor mill. The risk in a sustained fight is the erosion of trust in command information due to perceived gaps and inconsistencies between official messages and the battlefield.

The second set of channels for consideration is the concept of a *common operational picture* (COP), which is a normative form of channels

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[323] *DoD Dictionary*, 34.

permitted mission essential and mission relevant information horizontally across individuals and units on the battlefield. [324] Although technologies have evolved and automated means of gathering, deciphering, and analyzing battlefield information continues to improve, the technical systems and information contained in COPs are susceptible to cyber and physical attacks, growing unreliability and inconsistency of data entry, and challenges of maintaining real-time relevance in a rapid, dynamic battlefield.

A third set of channels is *operational security*, or OPSEC, also broadened to encompass many matters related to the dissemination of threat information to those with need-to-know and the protection of friendly information from unauthorized access and exploitation. The term OPSEC implies responsibility to the individual level, but the enterprise plays a role in determined which information is to be protected and why (e.g., security classifications and handling instructions) and providing bureaucratic procedures aimed at enforcing policies. Peacetime OPSEC generally carries over to the battlefield without difficulties, but additional protections have sometimes had to be instituted. For example, censors in World War II reviewed soldier's letters to prevent the unauthorized release of information to civilians back home.

Internal to government

Communications with other agencies and members of the government is critical as the defense enterprise provides only one of the four instruments of national power, and it can generally be assumed that national risks waning during a sustained conflict. For present purposes, the main channels of concern are those involving the budgeting process and intragovernmental communications and how policies and protocols may evolve in a future protracted conflict.

Under steady-state conditions, *programming and budgeting* works as follows: the executive branch requests funds from the legislature, who provides the funds with the authorities necessary to spend it. The legislature also demands oversight of the defense enterprise in all steps of the budgeting process. For its part, the defense enterprise manages its budget through the use of plans and programs to help justify the funding

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[324] *DoD Dictionary*, 42; Joint Chiefs of Staff, *Joint operations,* incorporating Change 1 (Washington, DC: Joint Chiefs of Staff, 2018), V-18.

requests and demonstrate that the funds are properly spent. The process involves many checks and balances to prevent waste.[325]

In a sustained conflict, the pressures on the national budget can become extensive as the nation tries to avoid decisions that could have long-term consequences for post-war economic recovery. Meanwhile, the defense enterprise is under pressure to ensure adequate funding for force generation and regeneration as the conflict ensues but may face difficulties in providing detailed requirements and justifications, accurately and comprehensively reporting on expenditures, or establishing reversibility to a new post-war steady-state. Examples include the extensive costs accrued from demobilizing after World War II,[326] difficulties in separate base budget from contingency expenditures in Iraq and Afghanistan,[327] and the rapid emergence of emergency operational needs procurements.[328]

Intragovernmental communications encompass most activities in which defense enterprise leaders engage with other government agencies. In the U.S., the budgeting process incorporates hearings and reports requires by Congress to perform the oversight function. War does not necessarily preclude the continued exercises of these hearings, and leaders may be called to testify in the event of major crises. Interagency meetings are another example whereby defense leaders engage with State, USAID, DHS, and other agencies for plans and policy recommendations.

The will to sustain the war effort is enacted in continued support from the government, through the provision of resources and the effectiveness and efficiency of collaboration. Any of these relationships being hostile should be considered a poor sign as they will likely become more strained in a long-term war which may leave other domestic priorities wanting for resources and attention.

Prolonged conflict may bring about the worst-case scenario where physical attack on or other catastrophic disruption to the operations of a national government are possible. Continuity of governance planning was critically important during the Cold War, as evidenced by the

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[325] Lou Yuengert and Thomas P. Galvin, "Defense systems and processes," in Thomas P. Galvin (ed.), *Defense management: Primer for senior leaders* (Carlisle, PA: U.S. Army War College, 2018), 45-60.

[326] John C. Sparrow, *History of demobilization in the United States Army*, Department of the Army Pamphlet 20-210 (Washington, DC: U.S. Army War Office, 1952), https://history.army.mil/html/books/104/104-8/CMH_Pub_104-8.pdf.

[327] "Overseas Contingency Operations funding: Background and status," CRS Report #R44519 (Washington, DC: Congressional Research Service, September 6, 2019), https://crsreports.congress.gov/product/pdf/R/R44519/12.

[328] Defense Science Board, *Report of the Defense Science Board task force on the fulfillment of urgent operational needs* (Washington, DC: Office of the Under Secretary of Defense, 2009), https://dsb.cto.mil/reports/2000s/ADA503382.pdf.

enactment of the 25th Amendment to the Constitution that established clear and unambiguous lines of Presidential succession. The threat of nuclear strike caused the government to set up secret alternate command posts outside of the nation's capital.[329] The possibility of targeted attacks against national leaders is also a possibility. It is important to remember that the U.S. was successful in conducting Presidential elections during times of war in the past. But continuity of governance is not to be assumed as a given, and the military may need to be prepared to support continuity operations to both reassure the public of the nation's stability during war and to enforce the Constitution at times when it is most vulnerable.

Long-term sustainment readiness therefore includes considerations for: (a) sustainment of alternative facilities or infrastructure for continuity purposes, (b) implementation of evacuation and re-establishment plans, (c) augmented support to the security of national and state officials, and other requirements. Details are beyond the scope of this monograph, but planners should assume that execution of these plans until the duress of war will be complex and risky, and therefore may require more means than allocated in the plans.

Internal to populace

Public support for the military is never universal and cannot be taken for granted. Military efforts must be seen as being purposeful in support of national aims while also adhering to international norms and the laws of land conflict. Support from the homefront has a significant impact on the soldiers' willingness to fight. Winning helps, of course, but how one fights is also important. The people can withdraw their support precipitously when the military does something dishonorable or embarrassing, as seen in the wake of the Abu Gharaib scandal.[330]

The defense enterprise has a responsibility to keep the public informed, but this is challenging in today's information environment where reaching all public audiences is difficult. Anti-war and anti-military groups are likely to be active at the onset of the war and gain strength and membership as a conflict prolongs. They may establish and utilize separate media channels, including social media platforms, and therefore not be accessible by defense information channels. Countering

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[329] Richard A. Paulsen, *The role of U.S. nuclear weapons in the post-Cold War era* (Maxwell Air Force Base, AL: Air University Press, 1993), 6., https://www.airuniversity.af.edu/Portals/10/AUPress/Books/b_0058_paulsen_role_nuclear_weapons.pdf.

[330] Dean Bland, *The Abu Gharaib scandal: Impact on the Army profession and the intelligence process* (strategy research project, Carlisle, PA: U.S. Army War College, 2005), https://apps.dtic.mil/sti/pdfs/ADA434475.pdf.

potential misinformation and disinformation, while respecting first amendment rights, can be especially difficult. There is also an important distinction between communications for domestic and foreign audiences, as anti-propaganda laws in the U.S. prevents defense leaders from disseminating information intended for foreign audiences within the U.S. [331] Thus, capacity for separate communication activities must be accounted for in long-range information planning.

External to allies, partners, & adversaries

A major aim of communication synchronization is to ensure the military's actions support national themes and messages aimed at reassuring allies and partners of the nation's commitment to win the war. In addition to sustaining communications and coordination, militaries may also have to perform mutual support activities such as providing supplies or services.

At the same time, militaries show resolve against the adversary by actions that demonstrate an ability to overcome adversarial efforts to exhaust or attrit while also influencing the adversary's decision cycle. *Information operations* is an important tool of warfare but has been rapidly evolving throughout the 21st century and emerging as a key warfighting element of power. [332] Through the use of carefully developed messages, operators seek to confuse the enemy, weaken moral support among enemy forces or their citizenry, or curtail the flow of reinforcements and sustainment, while also recognizing that enemy forces are doing the same to friendly forces. [333]

Obviously, the operational and structural readiness of information operations elements are no less important than those of other capabilities. Of present concern is how information operations requirements could increase as the initial messages fade and become irrelevant, overtaken by events, or lose their impact on the enemy. Just as regeneration of capabilities is important for long-term sustainability, so too is the capacity to generate (or re-generate) novel messages based on the evolution of military objectives during the course of the actual war and the morale and state of the adversaries' populations. This may cause an increased need for capacity devoted to the information operations function during a sustained fight where demands for other capabilities

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[331] U.S. Information and Educational Exchange Act of 1948 (also known as the Smith-Mundt Act), Public Law No. 80-402, 62 Stat. 6 (1948), https://govtrackus.s3.amazonaws.com/legislink/pdf/stat/62/STATUTE-62-Pg6.pdf.

[332] Department of the Army, *The conduct of information operations*, Army Training Publication 3-13.1 (Washington, DC: Department of the Army, 2018).

[333] Military Intelligence Branch, P*ropaganda in its military and legal aspects* (Washington, DC: War Department General Staff, 1918), https://www.hsdl.org/?view&did=719603.

will likely become stronger over time. Additionally, pressures on the informational element of national power could bring about temptations to consolidate capabilities for efficiency and the appearance of greater effectiveness, notwithstanding the aforementioned anti-propaganda laws.

8.D. What is readiness for the war's end?

The transition from war to post-conflict peace is a risky one, as it often accompanies desires to reduce military force commitments and allow other government elements to secure peace. However, experiences in recent conflicts show that securing peace can be more difficult and costly than one may expect. Also, it may require different capabilities that those required for prosecuting a war. Because protracted conflicts risk depleting a nation's resources, the victor may be required to repurpose their military forces to satisfy post-conflict stabilization without the benefit of adequate training or equipping for the purpose.

World War II was followed by competition between the western allies and the Soviet Union over control of Berlin. When the Soviets sealed the city off from the rest of Germany, the allies responded with the Berlin Airlift. For eleven months, continuous sorties of American and British shipments of food and essentials flew in to provide for the people of Berlin. The Soviets would relent and once again allow restricted ground-based access to the city from West Germany. [334]

Another example is the Dayton Accords that concluded the Bosnian War, requiring significant international civilian and military presence in Bosnia to enforce the peace and allow the reconstruction of the nation. NATO provided 60,000 troops in 1995 and would steadily reduce its presence to 7,000 troops in 2004 when the mission passed to the European Union as Operation ALTHEA that continues to this day. [335] The military implementation requirements included peacekeeping and peace enforcement operations, transforming the divided armed forces into a single, unified defense force, pursuing war crimes suspects, and supporting the reconstruction of the country. The latter included elaborate and extensive de-mining operations and small arms collection

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[334] Office of the Historian, "The Berlin Airlift, 1948-1949," Department of State, https://history.state.gov/milestones/1945-1952/berlin-airlift.
[335] "Peace support operations in Bosnia and Herzegovina," North Atlantic Treaty Organization, April 26, 2019, https://www.nato.int/cps/en/natolive/topics_52122.htm; https://www.euforbih.org/.

activities to de-militarize the country (known as Operation HARVEST).[336]

As the experience of CJTF-7 (Section I.B.) shows, forces in theater may be pressed into service to provide post-conflict stabilization. Committed forces may have to assume these missions without being trained or equipped for them. Non-military entities, such as the Department of State or USAID, may not be robust enough nor have access to capabilities needed to relieve the military of such missions. Moreover, stabilization may involve significant operations oriented on returning displaced individuals to their homes; immediate repair and reconstruction of infrastructure; restoration of basic services; managing refugee flows; detention operations of enemy forces, war criminals, and other threats.[337]

Readiness for such missions will be challenging to define up front because of the context sensitivity. The conduct of the war will naturally dictate peace, and the expenditure of national resources will present constraints on a nation's capacity to sustain the peace afterward. World War II and the Bosnian War concluded with signed treaties that provided clarity on post-conflict stabilization requirements, but that may not always come to pass. Also, political objectives will play significant roles in shaping peace.

This should not preclude the necessary intellectual work needed to develop frameworks for post-conflict stabilization that include expected capability requirements. Some already exist but are oriented more on the mission requirements and less on defining the necessary structures to perform the mission. Joint Publication 3-07, *Stability Operations*, provides a thorough rundown of the general requirements for conducting stabilization in various contexts, ranging from conflict prevention to major operations.[338] The Army followed with ADP 3-07, *Stability*, that describes the land component requirements and considerations.[339] The joint and service enterprises therefore need to follow-up on the capability requirements and determine how best to resource and conduct the stability missions and prepare its forces for post-conflict conversions when the time comes.

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[336] A compendium of articles on Operation HARVEST is available at Stabilization Force, "Project Harvest," North Atlantic Treaty Organization, https://www.nato.int/sfor/opharvest/harvest.htm.

[337] See Joint Chiefs of Staff, *Stability operations*, Joint Publication 3-07 (Washington, DC: Joint Chiefs of Staff, 2016). Hereafter *JP 3-07*.

[338] *JP 3-07*, Section V.

[339] Department of the Army, *Stability*, Army Doctrine Publication 3-07 (Washington, DC: Department of the Army, 2019).

8.E. Is long-term sustainability readiness measurable?

Long-term sustainability readiness is not measurable in the traditional sense. Like mobilization readiness, this form of readiness can only be estimated based on the situation that unfolds. During times of peace, it is only possible to measure existing capacity and presume that it will be fully available when and where needed. For example, one can measure the amount of equipment and supplies on-hand for sustainment purposes and their relative proximity to likely theaters of war, but the capacity to produce more in the event of a surge might not be knowable in advance. Similarly, the capacity to establish lines of communication can be known, but not the extent to which they would be contested or have to be re-routed at the onset of hostilities. The capacity for militaries to communicate to friendly and adversary audiences can be measured in advance but the impact of their communications is not knowable as it will depend greatly on the information environment as the war begins and the character of the policies that the nation enacts as a result. Of course, it is impossible to know how the war will end and therefore what the post-conflict situation would look like and what goods and services that a stabilization force would therefore need.

It is therefore important that the enterprise develop and sustain the capacity to make these assessments as the details of operations become known. Such assessments must be sensitive to any constraints that national governments may impose on the military, such as to cap overall commitments or divert resources to domestic security concerns. They also must consider the adversary's likely efforts to interdict lines of communication in unobservable ways.

PART THREE: THREE CONSTRUCTS OF NATIONAL PREPAREDNESS

National preparedness is about much more than the military alone. There are innumerable types of crises and emergencies that nations contend with. Some are recurring and can be forecasted, such as earthquakes along known faults or hurricanes and monsoons in tropical zones. Each occurrence may differ in detail and severity, but overall the citizens of the nation should be confident in their government's abilities to lead them in preparations for crises that may occur. When the government fails in that preparation, officials should be rightfully held accountable.

Most, though not all natural events are relatively easy to predict. We speak of hurricanes, floods, and even wildfires as being seasonal. Other's activities, like war, civil unrest, and others that are human in origin are harder to forecast. How many ways can a war unfold? Might it be a World War I context where there is widespread tension, with a flashpoint event--the assassination of Archduke Ferdinand--setting off rapidly-spreading violent conflict? Faculty at the War College have in the past held heated debates on whether that is an accurate or useful depiction about how the war started![340] So if one cannot even look back on such events with clarity and certainty, forecasting is doubly challenging.

But it is necessary. A nation cannot be flatfooted in its crisis response, but it also cannot possibly prepare for everything. What can it prepare for given its available resources? Who provides the first response when a crisis happens? The answers are different for each nation.

Consider the US federal system as an example. All emergencies are considered "local." When localities are overwhelmed, they turn — either formally or informally — to adjoining jurisdictions for help. If enough assistance, either in terms of capabilities or capacities is not available, the jurisdictions may turn to the state or territory. If a state's resources are overwhelmed, they may turn to other states through statutorily regulated Emergency Management Assistance Compact (EMAC).[341] If all these steps fail to provide for the welfare of people in times of crises, then the governor of the state or territory may petition the President of the United

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[340] For a review of World War I books with differing opinions of how it started, see James D. Scudieri, "Review Essay: Reflections on the Great War," *Parameters* 42, no. 1 (2012), doi:10.55540/0031-1723.2626. It includes a review of Michael S. Neiberg, *Dance of the Furies: Europe and the Outbreak of World War I* (Cambridge, MA: Harvard Univ. Press, 2011). Scudieri and Nieberg are both faculty members of the U.S. Army War College.

[341] See Emergency Management Assistance Compact Legislation, https://www.emacweb.org/index.php/learn-about-emac/emac-legislation

States to declare an emergency or disaster, thus unleashing the next tier of response for what is envisioned to be a whole of nation assurance for our people. But what happens if this proven progression is immediately overwhelmed? What happens if the enormity of an event overwhelms even the combined resources of community, locality, state and nation? Or what happens if the origin of the catastrophe is not natural, but manmade…to include the most devastating of manmade disasters, war.

These questions are not the sort to be asked during the crisis. Nations need a legal and regulatory framework that helps all parties—officials at every tier of government, non-governmental organizations, communities, and the private sector—make sense of an emerging crisis situation and know how to initially respond. Government must provide a framework for societal preparedness, to provide a means for allocation of available resources in times of unusual crises, and even prioritization of resources when the character of either natural or manmade crises worsens. Preparations must come in times of peace and stability, to instill an understanding of what a crisis could convey, and a conviction that a society may remain resilient in the face of it.

However, there is an additional risk to consider which has been referred to as the *simultaneity challenge*, the potential for dealing with multiple significant national crises simultaneously of which fighting a war may be one.[342] For example, in contemporary societies, militaries may be called upon to take up dual roles in preparing for and responding to crises. First and foremost, if the crisis was caused by another nation-state, the victim nation's military may be called upon to perform traditional military roles such as defending the nation, deterring further attacks, and defeating the adversary. The second role is one of support and is relevant no matter the type of crisis or its cause. In times of need, a nation may call upon its military to contribute to response and recovery operations designed to save lives, minimize further destruction, and reduce human suffering. The first is the dominant mission and will always demand priority, but the second is not to be dismissed.

Moreover, there is a second facet to simultaneity for resources or capabilities that are critical, high-demand, and finite such that prosecuting a war might induce a domestic crisis! An example of this concern would be medical personnel, especially doctors and surgeons whose skills and expertise take long times to develop and whose capabilities are in high demand. In a war where battlefield casualties become significant, doctors and surgeons may be pressed into military

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[342] Melissa Dalton and Ron Granieri, "A conversation with the Honorable Melissa Daton of defense policy," *WAR ROOM* (blog), March 5, 2024, https://warroom.armywarcollege.edu/podcasts/melissa-dalton

service handling the wounded. This could result in a backlog of critical life-saving surgeries at home without any additional pressures from a health crisis such as another pandemic.

The nation's responsibilities applied to the context of war are covered in the following three chapters. The intent is not to be comprehensive so much as illustrative, so senior leaders can be aware of the national side of the continuous civil-military negotiation with the military.

Chapter 9 is about the legal framework. *Government preparedness* comprises the structural and procedural requirements for a government to perform crisis response. The chapter addresses various authorities that should be in place its various crisis response agencies can operate, responsibilities for managing emergency resources are clear, and there are continuity of governance plans in the event of catastrophe. It follows with a discussion of agency preparedness as an analog to the defense enterprise's internal preparedness requirements. Finally, the nation has responsibilities for establishing a strategic communication architecture that should activate in times of emergency but also serves as a general purpose means for official information.

Chapter 10 is about resources. *Resource preparedness* is the measure of how much stuff that the nation has in immediate reach. Critical resources that the nation must manage include people, raw materials, real property, data, and funding. The nation must have the resources to provide the initial response to the crisis where and when it happens and the mechanisms in place to generate additional resources to replenish those stocks and continue the response effort under the situation concludes.

Chapter 11 concerns the safety of the public. *Homefront preparedness* is about the will of the people manifesting into support for the front so that service members can continue to fight without worrying about their homeland. The preparedness of civil society and the establishment of civil defense capabilities are vital considerations. How civil society furthers official communications through communication synchronization will be discussion. Finally, there is the matter of sacrifice. Unpopular actions like rationing and other austerity measures may be needed but are very challenging to implement.

9. Government Preparedness: The Legal & Moral Foundations of Crisis Response

National preparedness begins with the nation's legal framework that defines authorities, responsibilities, and the distribution of resources necessary to perform emergency response. It also defines the framework for differentiating national and local responsibilities and any levels in between such as US states). It also sets protocols for bridging those levels such as when a local problem must be elevated to a national emergency or when national responsibilities must transfer back to local governments. The framework also establishes the roles and responsibilities granted to agencies along with the necessary coordinating instructions so that responses are unified, efficient, and effective.

Every nation organizes its response infrastructure differently, but generally the military is vested with authorities and responsibilities for crises related to national defense, and a separate agency (or multiple agencies) establishes and maintains response frameworks for other emergencies.[343] Operative terms may differ (for example, the US uses the term *emergency management* while the UK uses *resilience*) but the purposes are the same. Agencies under the framework then develop some sort of emergency response plan or strategy that establishes activities and procedures for identifying risks, planning and testing potential responses, providing guidance to supporting agencies, distributing resources, and establishing the mechanisms of command, control, and information flow.

The question is not whether a nation has a framework, it is to what extent the framework is sufficient to handle the combination of fighting wars and addressing other concurrent emergencies that may occur, including internal strife brought on by an adversary's agents, enemy sympathizers or frustrated citizens. Various international organizations use the term *governance* to convey the need for national policies and legislation to be integrated with planning and implementation of emergency response.[344] I will thus use the term *government preparedness*

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[343] In the US, it is the Federal Emergency Management Agency. In New Zealand, it is the National Emergency Management Agency. The UK distributes its responsibilities among its member states under a Lead Government Department (LGD) model where England, Scotland, Wales, and Northern Ireland maintain separate agencies and one would be designated as LGD as an emergency occurs depending on its location (UKG Resilience Framework document).

[344] World Health Organization, *A strategic framework for emergency preparedness* (Geneva, CH: World Health Organization, 2017), ix, https://apps.who.int/iris/bitstream/handle/10665/254883/9789241511827-eng.pdf

as it assigns responsibilities best served by government leaders that cannot realistically be outsourced or delegated. The resilience that a prepared government provides is essential as war tears at the nation's social fabric, causing disruption even if the fighting is far overseas and there is no clear domestic threat. However, war consumes resources, including those potentially necessary to respond to hurricanes, earthquakes, food and water insecurity, epidemics, civil unrest, and other problems. The inability or incapacity to provide such a response may be justifiable but is unlikely to be accepted by a war-weary and nervous populace.

The currency of government preparedness is therefore trust, which can turn fragile in times of war. Trust must exist across echelons of government so national and local leaders share responsibilities and do not shirk them. At echelon, agencies must trust each other to hold up their part of the response framework. And above all, the public must trust the government to provide a coherent, coordinated response that alleviates suffering and provides hope for the emergency's end and a return to some form of normalcy. It is therefore obvious that the defense enterprise is an essential part of a national framework. Whether it is war or other emergencies short of war that the nation assigns to the military, defense enterprise leaders require the help of others in the emergency framework and sometimes must provide help to the agency responsible for a given crisis.

9.A. What legal structures should be in place?

Because each nation organizes its emergency responses differently, developing structural measures is not helpful. Citing the lack of an agency assigned responsibilities for a specific category of emergencies does not alone constitute inabilities to provide appropriate responses. Instead, principles that are commonly suggested for national emergency frameworks will be presented. Each nation (or state or locality) then determines to what extent the principles need to apply to their frameworks. The following are not intended to be comprehensive but are reflective of common themes found among national and international emergency response literature.

Standing emergency management framework

Assessing the efficacy of an emergency response framework is tricky as there are numerous models and tools that describe stages of emergency response from pre-event to post-event. Each stage entails authorities and responsibilities vested in agencies, but the stages themselves tend to differ from nation to nation and among categories of emergencies. Thus, at one level, preparedness measures can pursue gap

identification in types of crises that might overtake the government's planned response system. The second level is capacity—is the response aligned against each anticipated crisis expected to be adequate?

The below represents a four-stage model used by both the U.S. Department of Homeland Security [345] and the World Health Organization [346] that represents common activities among national and local frameworks. These are provided for illustration purposes as each nation may define the stages differently. Alignment with military requirements for individual and unit readiness will be useful. Some common variations of these stages are also included. The descriptions also incorporate crisis management strategies from the North Atlantic Treaty Organization to show generalization across defense enterprises. [347]

Prevent. Provide resources and establish authorities and responsibilities to identify risks and, to the best extent possible, preclude them from manifesting as crises. In matters of public health and individual military readiness, prevention activities include those that promote physical and mental fitness and hygiene and provide protection against disease, such as vaccinations. Prevention also includes identification of potential threats to bases and capabilities, proper vetting of personnel to reduce risk of intrusion by adversarial actors and insider threats, and dispersion of assets to mitigate the effects of any single attack.

Prepare and mitigate. Provide resources and establish authorities and responsibilities to maintain trained and ready capabilities to respond when needed (*prepare*) and a sufficient steady-state guard and watch operations capabilities to show presence to deter or dissuade small-scale threats and reduce the immediate effectiveness of their attacks (*mitigate*). Prepare and mitigate are sometimes treated as separate stages. [348] Training and readiness activities prepare response teams capable of confronting a threat or immediately providing care to those injured or sick during a health emergency. Mitigation can also include acts of visible

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[345] Department of Homeland Security, *National response framework*, 3rd ed. (Washington, DC: Department of Homeland Security, 2016), 1, https://www.ready.gov/sites/default/files/2022-05/national_response_framework.pdf

[346] World Health Organization, "Emergency cycle," https://www.who.int/europe/emergencies/emergency-cycle

[347] North Atlantic Treaty Organization, "NATO's assessment of a crisis and development of response strategies," May 10, 2011, https://www.nato.int/cps/en/natohq/official_texts_75565.htm

[348] City Emergency Management Agency of St. Louis, Missouri, "Steps of emergency management," https://www.stlouis-mo.gov/government/departments/public-safety/emergency-management/about/Steps-of-Emergency-Management.cfm; Wisconsin Technical College System, "18.3 Emergency preparedness, response, and recovery," https://wtcs.pressbooks.pub/nursingmhcc/chapter/18-3-emergency-preparedness-response-and-recover/

deterrence such as patrols or posted signs warning of remote surveillance capabilities.

Respond. Provide authorities and responsibilities to respond to a crisis when one is declared. This can include the establishment of gradations of crisis whereby agencies can respond independently versus those requiring a national declaration of emergency, for example. Timely access to emergency services and timely confrontation to stop adversarial actions and minimize harm to personnel and damage to property are the aims.

Recover. Provide authorities and responsibilities to return to a state of normalcy following the crisis. This may include the stand down and redeployment of external assets, although this may need to be phased if there are lingering concerns that the crisis could resume, such as fear of renewed hostilities.[349] Recover and transition may mean different activities in military conditions as the military may remain committed to perform post-conflict stabilization, for example, until a transition to a newly legitimate civil authority can be made with continued support to that authority potentially being required afterwards.

Standing pools of funding and resources

A vital part of the framework is the necessary programming and budgeting for the resources to ensure sufficient capacity in peacetime. Compared to the defense enterprise, emergency management frameworks will rely more heavily on structural preparedness vice operational preparedness. In other words, while there will be operationally prepared capabilities on hand, there will be significant reliance on capabilities that are active only during emergencies that otherwise would be working other jobs or missions (inside or outside government) during non-crisis periods. Like their military counterparts, mobilization preparedness is critical to ensure the timely assembly, deployment, employment, and potential expansibility of response capabilities. This is clearly expensive and therefore the provisioning of adequate funds reserved for crisis response, along with legislative procedures to issue additional funds when needed, are critical to a nation's preparedness posture.

Standing emergency legal authorities

The legal framework also requires the establishment of emergency authorities solely for us in emergency situations. These laws may bypass or modify ordinary legal and regulatory procedures to facilitate the

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[349] Galvin, *Two case studies*, 25-74 covers the case of the Stabilization Force in Bosnia that faced this issue.

mobilization and employment of response capabilities, and therefore may be inappropriate for use outside crisis situations. Because of such infrequent use, the authorities may be poorly understood among national and military leaders. They may also be subject to misuse or expansion beyond their original intent. Thus, it is important that government agencies maintain knowledge and expertise on their proper application[350].

Obviously, this is nation-dependent and ideally these authorities are interoperable with the national emergency management framework for ease of implementation. Some examples in the US system are offered here and how they connect to the US national preparedness framework. The "Stafford Act" is a law that grants authorities to federal agents when an emergency grows beyond the capacity of local or state authorities and requires federal assistance. Once the President has declared a national emergency, the law's provisions require the naming of a Federal Disaster Recovery Coordinator (FDRC) who leads the federal effort to provide assistance. Potential FDRCs must be ready to assume the duties, so the emergency management framework includes the preparedness requirements for such individuals, but otherwise there is no legitimate reason to them to have such authorities in advance of an emergency declaration.[351]

Another example is the Defense Production Act. While named as a "defense" act, this law can be applied to any emergency affecting homeland defense and security. It provides authorities to speed and increase materiel production from the U.S. industrial base during an emergency such as in response to the COVID-19 pandemic.[352]

These legal authorities are typically created or modified when response to a specific crisis proves inadequate or poorly implemented. Sometimes the name of the disaster is incorporated into the law as a signal conveying why the law was created. For example, the US's Sandy Recovery Improvement Act modified Stafford Act provisions because of the massive suffering and damage caused by Hurricane Sandy in 2012. Provisions included new authorities for Native American tribal governments to request federal assistance directly rather than go through

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[350] With acknowledge to Bert Tussing for this insight.
[351] Federal Emergency Management Agency, "Stafford Act," June 6, 2023, https://www.fema.gov/disaster/stafford-act
[352] Federal Emergency Management Agency, "Defense Production Act," April 19, 2023, https://www.fema.gov/disaster/defense-production-act

the state, streamlining the process for requesting individual assistance, and focusing resources to reduce suffering by children.[353]

Continuity of governance plans

Prolonged conflict may bring about the worst-case scenario where physical attack on or other catastrophic disruption to the operations of a national government are possible. Continuity of governance planning was critically important during the Cold War, as evidenced by the enactment of the 25th Amendment to the U.S. Constitution that established clear and unambiguous lines of Presidential succession. The threat of nuclear strike caused the government to set up secret alternate command posts outside of the nation's capital.[354] The possibility of targeted attacks against national leaders is also a possibility. It is important to remember that the U.S. was successful in conducting Presidential elections during times of war in the past. But continuity of governance is not to be assumed as a given, and the military may need to be prepared to support continuity operations to both reassure the public of the nation's stability during war and to enforce the Constitution at times when it is most vulnerable.

Government preparedness therefore includes considerations for: (a) sustainment of alternative facilities or infrastructure for continuity purposes, (b) implementation of evacuation and re-establishment plans, (c) augmented support to the security of national and state officials, and other requirements. Details are beyond the scope of this monograph, but planners should assume that execution of these plans until the duress of war will be complex and risky, and therefore may require more means than allocated in the plans.

The simultaneity challenge

Of course, nations do find themselves addressing or having to be prepare multiple crises at once. The U.S. fought on two fronts in World War II and its Cold War preparations included the potential threat of having to fight two wars simultaneously. Different national strategies since have incorporated potential scenarios involving multiple crises at once, such as planning to deter ("hold") or delay war in one theater while

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[353] Names redacted, *Analysis of the Sandy Recovery Improvement Act of 2013*, R42991 (Washington, DC: Congressional Research Service, March 11, 2013), https://www.everycrsreport.com/files/20130311_R42991_4e84b222699b9f08701f7221cf820e88ab26df3e.pdf

[354] Richard A. Paulsen, *The role of U.S. nuclear weapons in the post-Cold War era* (Maxwell Air Force Base, AL: Air University Press, 1993), 6., https://www.airuniversity.af.edu/Portals/10/AUPress/Books/b_0058_paulsen_role_nuclear_weapons.pdf.

fighting a war in a second theater.[355] As the introduction to Part III indicated, there is also a *simultaneity challenge* associated with fighting a war while having to also commit military resources to another national emergency such as natural disaster response, cyberattack, terrorism, or other crisis. The legal framework may grant conflicting authorities and responsibilities that create confusion or that the government lacks the ability to mobilize sufficient resources to handle the unique needs of each crisis. The implication is that governments should consider the possibility of multiple simultaneous crises of different forms to uncover such conflicts.

9.B. WHAT DOES PREPAREDNESS MEAN FOR OTHER AGENCIES?

Given the roles, authorities, and responsibilities, to what extent is each agency capable of carrying them out? In effect, each agency must establish its own equivalents of the military's enterprise readiness (Chapter 4). It must have the ability to maintain and sustain its corporate knowledge of crisis response through outreach; must have access to the necessary sensors to analyze the environment; must have a robust set of doctrine to guide training and conduct response; and must have the needed skills in designing organizations that fulfill the requisite needs.

This is difficult and numerous studies show that agencies, especially below national level, tend to be deficient in resources and capacity. A 2023 summit with federal and state emergency response agencies identified five common concerns in ensuring agency-level preparedness: (1) insufficient staff, resources, and expertise to plan and invest in emergency response capabilities (including being able to apply for resources through federal programs), (2) insufficient data relevant for planning, (3) inconsistent or insufficient funding levels, (4) bureaucratic barriers, and (5) tendencies to reactively invest in recovery actions rather than invest proactively during pre-crisis.[356] Other cited challenges include communication and coordination difficulties pre- and during crises due to interoperability problems[357] and the potential for conflict with dual-use capabilities (e.g., those simultaneously serving both warfighters and civilians who needs may overwhelm available

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[355] Michael J. Mazaar, *Defense without dominance: Accelerating the transition to a new U.S. defense strategy* (Santa Monica, CA: RAND Corporation, 2023), 9.

[356] Mathew Sanders and Kristiane Huber, "5 disaster resilience challenges facing State and Federal officials," Pew Charitable Trusts, January 31, 2023, https://www.pewtrusts.org/en/research-and-analysis/articles/2023/01/31/5-disaster-resilience-challenges-facing-state-and-federal-officials

[357] Razia V. N. Oden, Laura G. Militello, Karol G. Ross, and Christen E. Lopez. "Four key challenges in disaster response." In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* 56, no. 1, (2012): 488-492, https://journals.sagepub.com/doi/abs/10.1177/107118131256105

capacity.[358] Therefore, bringing in appropriate agencies in the emergency management planning process is essential for uncovering and addressing such challenges so to avoid compounding disasters during crisis.[359]

It is beyond the scope of this book to address these deficiencies in detail for any given agency. Suffice to say that resource constraints between crises may mean that only militaries and national response agencies are granted sufficient capacity to conduct deliberate planning, and that all other agencies must rely on augmentation, which is subject to the same structural and mobilization readiness challenges discussed in Part Two.[360] Moreover, the simultaneity challenge also applies at agency level given the general lack of resources available.

9.C. What are the roles of strategic communication?

The importance of government communication in war cannot be overstated. Communication plays a critical role in a government's ability to demonstrate its will and resolve, manage the inevitable setbacks and emergencies that will occur, recover from the war at its conclusion, and establish a better (hopefully) peace for the future. The government's messages are some among many in the environment, so the government must be perceived as believable, trustworthy, and knowledgeable about what is going on that the people and the fighting forces care about.

I will group the government's communication responsibilities into multiple categories because different agencies have different roles to play at each phase of the war. From a government preparedness perspective, the government must have access to sufficient information services such as maintaining robust and redundant networks to convey information. It also must have sufficient capacity to generate and disseminate objective, truthful information through those networks. Collecting information, analyzing it, providing direction to the defense enterprise and others, and keeping the public informed and among the responsibilities and each are time-consuming and complex. There are also responsibilities to identify and combat misinformation and disinformation that could be harmful to the government's narrative and sow distrust among the people. In Chapter 11, the responsibilities during crisis for communication synchronization will be discussed that includes the processes of activating state, local, and public networks and ensuring the flow of

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[358] Jorie S. Klein and John A. Weigelt, "Disaster management. Lessons learned," *The Surgical clinics of North America* 71, no. 2 (1991): 257-266, https://europepmc.org/article/med/2003249

[359] Klein and Weigelt, "Disaster management: Lessons learned."

[360] With acknowledge to Bert Tussing for this insight.

objective and truthful information nested within the government's narrative.

Narrative development & dissemination

In today's communication environment it is difficult to control the narrative compared to wars past. Communicating information and instructions among response and relief agencies is always difficult during crisis, but the advent of social media and the potential for misinformation (i.e., misunderstandings, bad rumors, misrepresentations of events) and disinformation (i.e., deliberately deceptive or factually wrong information) makes keeping the public informed incredibly challenging. Governments simply cannot transmit their messages on all available channels – broadcast television and radio, social media, news organizations, and many others – at once and guarantee receipt to most of the public.

But the narrative is vitally important. It connects the government's activities to the war aims and related strategies. It connects the public to fighting forces and explains the need for commitment and solidarity behind the government. It assures the public of the nobility of both the aims and the strategies and campaigns being executed, so that the public knows the government's position on where, how, and why the war is being fought. It explains the threat that adversarial actors and the illegitimacy of their actions.

Communicating the narrative involves themes and messages that appropriate authorities within the government and the defense enterprise prepare. Themes are components of the narrative aimed at specific audiences – for example, the public, friends and allies, adversaries, neutral parties, military members and their families, defense industrial base, etc. Each theme is then delivered as messages which are the specific and tangible communications given to an audience. In a war aim is to eject an aggressor nation from captured territory, such as Iraq during the Persian Gulf War, a theme might be the justification for the war that the public needs to hear (e.g., the importance of maintaining an international order and punishing countries that attack other countries). The messages are the words of leaders and the actions of the fighting force that demonstrate that the war is being fought so to restore international order, such as being focused on the stated mission and nothing more (e.g., this is not about oil).

Responsibilities for maintaining the narrative must be assigned at the appropriate level, and that agency should build a communication campaign that ensure the themes and messages are nested within the established narrative. As needed, mechanisms should be established to monitor the information environment and identify opportunities to

spread the messages while detecting and appropriately countering alternate ones.

Preparedness for collaboration

This is analogous to the outreach responsibilities of the military explained in Chapter 4 that foster the shift from peacetime environments to war and back. All government agencies have similar needs to maintain and sustain networks across federal, state, local and private entities to support their day-to-day missions. When conventional crises occur related to those day-to-day missions, agencies should naturally have been prepared to activate their standing networks and respond.

The onset of war may induce significant disruption, both to day-to-day services and operations and by requiring agencies to collaborate with others that they are unaccustomed to working with. Agencies may have to follow new rules, adhere to different constraints or protocols, or address new demands for support that they are not organized or equipped to address. This may induce uncertainty and confusion at first. Simultaneity of crises is also a potential problem as agencies may only be resourced to provide a robust administrative response for one crisis at a time.

Preparedness for collaboration involves more than passive reliance on the national preparedness framework for crisis response. Agencies, like the military, needs cultures and climates oriented for outreach and taking initiative to avoid becoming reactive as the war unfolds. Such climates will also mitigate the challenges of maintaining the war footing over a long period of time. Otherwise, agencies will be prone to treating war like routine day-to-day crises, as disruptions to be resolved followed by a speedy return to the *status quo ante*, especially should other domestic priorities lose resources and attention (the public side of this issue will be discussed in Chapter 11). The potential for wars to become prolonged and indeterminate in length suggests that agencies may need to prepare for potential (and likely unwanted or difficult) enduring changes to their operations, their structures, and their networks. Otherwise, the gravitation back toward pre-war ways may contribute to the weakening of the overall war effort.

The will to sustain the war effort is enacted in continued support from the government, through the provision of resources and the effectiveness and efficiency of collaboration.

Proper use of classified and controlled networks and systems

The physical infrastructure of government systems is a critical part of the equation and is subject to attack both in peace (e.g., terrorism,

cyberattacks) and during war. While good governance naturally involves transparency and the use of communication means available to the public, governments ordinarily maintain closed or semi-closed systems and protocols that protect classified and controlled information from improper access and dissemination by either external actors or insider threats. Resource preparedness (Chapter 10) includes the physical devices, facilities, and real property that provides these systems. On the other hand, government preparedness is a measure of the availability, suitability, and compliance with system protocols and practices, especially as the usage of such systems and networks adapt to the onset of war. The subsection illustrates some of possible measures of preparedness, some of which naturally propagate to individual military readiness. These categorizations are based on U.S. regulations and may vary by nation.

Personnel security systems manage protocols and procedures regarding individual access to controlled materials. They include establishing requirements for access controls such as designating positions as requiring particular security clearance and conducting of background checks and investigations. In peace, such systems are often stable and reliable because the demand fluctuates little and agencies often use permanent facilities dedicated to the task. However, the onset of war could create conditions for a spike (sudden, massive increase) in requirements for security clearances at times of significant uncertainty and volatility. Therefore, such systems must have effective means of expediting the process or granting waivers as needed.

Information security systems govern the definition and content of the controlled materials themselves. This includes managing classification systems that can include security classifications (e.g., top secret or unclassified, personally identifiable information (PII), personal protected health information (PHI), and others at the discretion of the nation. It also includes management of encryption protocols, cover sheets, and other transmission protection systems that simultaneously provide protection to information in transit or shield it from casual viewing. Systems of controlled area accreditations, compliance with regulations on the use of secure containers, after-hours/secure area inspections, and procedures for security incidents should also be included.

Information security is a challenge in war for two reasons. First, the systems are likely to extend forward in the theater where the capacity to store and manage controlled information could be limited. Second, access may have to be granted to foreign entities or others who are unaccustomed to US information security systems.

Physical security systems protect government facilities, property, information, and personnel assets from unauthorized access or destruction by external or internal actors.[361] These can include access control systems such as fences, gates, checkpoints, keypads, security checkpoints, intrusion detection systems and alarms, and video surveillance systems. In peace, these are typically built into permanent facilities which can be certified for use under controlled circumstances. However, the targeting of such facilities and the potential for deploying military and civilian personnel to locations where such facilities are impossible to construct means that the government should be prepared to develop hasty or temporary configurations of physical security measures to foster mission accomplishment.

Finally, *operational security systems* supplement the above three and focus on preventing the possible disclosure of sensitive or controlled information through inference applied to information that is uncontrolled. In effect, allowing an enemy to deduce friendly actions through observation and casual engagement.

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[361] For example, Michael Cobb, "Physical security," TechTarget, https://www.techtarget.com/searchsecurity/definition/physical-security but also see LBMC, "Three categories of security controls," LMBC.com, May 23, 2022, https://www.lbmc.com/blog/three-categories-of-security-controls/

[362] Cobb, "Physical security."

checkpoints, intrusion detection systems and alarms, and video surveillance systems. In peace, these are typically built into permanent facilities which can be certified for use under controlled circumstances. However, the targeting of such facilities and the potential for deploying military and civilian personnel to locations where such facilities are impossible to construct means that the government should be prepared to develop hasty or temporary configurations of physical security measures to foster mission accomplishment.

Finally, *operational security systems* supplement the above three and focus on preventing the possible disclosure of sensitive or controlled information through inference applied to information that is uncontrolled. In effect, allowing an enemy to deduce friendly actions through observation and casual engagement. These are quite familiar to military organizations who value operational security as a matter of course, but other government agencies might not be.

10. Resource Preparedness: Providing Assets for the Fight

Resource preparedness addresses three simple but challenging questions. First, does the nation have enough stuff—people, materials, and property—to give to the fight? Second, can it convert that stuff for military use? The first question is simpler to answer as it is a purely a matter of examining a nation's resources. The second is not so simple because the nation may have what they need but cannot access it so easily because it lacks capacity to collect and distribute it. Or, the nation must rely on others, such as partner nations or international and intergovernmental organizations, to get the resources they need. Third, are the nation's resource pools resilient against potential adversarial attack or other loss, such as demonstrated by supply chain issues during the COVID-19 pandemic?

Resource preparedness is essential for all levels of military readiness. At a minimum, the nation must be capable of providing sufficient resources for the organic forces it has structured to provide for its national security. However, the organic force requires regeneration as it consumes its own readiness, and benign neglect through insufficient attention will erode the force and risks rendering it incapable of conducting large-scale operations. To enter into a prolonged fight, the military should be confident in the nation's ability to expand, even when the nation's government and people affirm their disinterest in doing so. It should be considered healthy for a nation to not wish for war, but unhealthy to wish it away by hollowing out its military.

10.A. What is resource preparedness?

In a sustained conflict, the pressures on national budgets can become extensive as nations try to avoid decisions that could have long-term consequences for post-war economic recovery. Meanwhile, the defense enterprise is under pressure to ensure adequate funding for force generation and regeneration as the conflict ensues but may face difficulties in providing detailed requirements and justifications, accurately and comprehensively reporting on expenditures, or establishing reversibility to a new post-war steady-state. Examples include the extensive costs accrued from demobilizing after World War II,[363] difficulties in separate base budget from contingency expenditures

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[363] John C. Sparrow, *History of demobilization in the United States Army*, Department of the Army Pamphlet 20-210 (Washington, DC: U.S. Army War Office, 1952), https://history.army.mil/html/books/104/104-8/CMH_Pub_104-8.pdf.

in Iraq and Afghanistan,[364] and the rapid emergence of emergency operational needs procurements.[365] Being prepared from a resource perspective means not only having assets at the immediate ready or generating them when needed, it means having sufficient resiliency as national blood and treasure is expended during war and the demands for additional resources continue. The nation must also show resiliency as the demands for war personnel, materiel, and supplies will be unpredictable or irregular, creating confusion and disruption among supplier, and anxiety among the warfighters who need it *now*.

Resource preparedness is the capacity of the nation to provide the resources needed to prosecute military operations to serve its strategy and the capacity to convert those resources for military or homeland defense use. The resources of resource preparedness can be listed in the following broad categories: (1) the recruiting pool, (2) raw materials, (3) real property, (4) data, and (5) funding. Each has its own conversion mechanisms such that a nation's people are recruited and on-boarded to become service members, raw materials converted into materiel, and so on. In steady-state or peacetime, these mechanisms may not belong to the government and are only activated when needed (see Structural Preparedness, Chapter 9).

Therefore, resource preparedness is measured at two levels. The first level is when the resources are uncommitted and therefore essentially fungible. People in the recruiting pool could join the military or not; funding can be allocated to any other government program. Here, the measures are largely quantitative and inform leaders about how much is available to be converted to military use in comparison to the anticipated demand based on warplans. The second level is the capacity of the respective conversion processes. Some capacity will be organic to the military such as recruiting offices and individual entry-level training. Most capacity, however, will come from assets belonging to other government agencies or the private sector and therefore the ability to nationalize and mobilize those assets in times of war becomes critical (Chapter 9).

A significant drag on resource preparedness is the potential simultaneity challenge as competition emerges for access to those resources between the war effort and the nation's own people. Many military capabilities are potentially (if not already) dual-use. The seaports

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[364] "Overseas Contingency Operations funding: Background and status," CRS Report #R44519 (Washington, DC: Congressional Research Service, September 6, 2019), https://crsreports.congress.gov/product/pdf/R/R44519/12.

[365] Defense Science Board, *Report of the Defense Science Board Task Force on the fulfillment of urgent operational needs* (Washington, DC: Office of the Under Secretary of Defense, 2009), https://dsb.cto.mil/reports/2000s/ADA503382.pdf.

used to transport military goods to forward fighting forces may also be needed for the people to continue their daily lives and contribute to the homefront. National leaders must reconcile any tensions that arise and optimize the flow of resources based on the situation. Decisions over the prioritization of dual-use capabilities should be expeditious, but reasoned and well communicated to help reassure the public of what needs to be diverted to the war effort, why, and under what conditions.

10.B. WHAT IS PREPAREDNESS TO PROVIDE PEOPLE?

Any nation must have sufficient personnel in society available with the skills, knowledge, and attributes needed to serve in times of war while also having enough people to contribute to the nation's economy or serve the nation in other ways. When a nation establishes the organic size of its standing military forces, it enacts a social contract with the people of the nation of how many need to serve at any given time in exchange for upholding national security. National leaders, with the help of the military, establishes criteria for determining which personnel are eligible for service, with the aim being to incentivize those criteria and maximize the size of the pool. In theory, doing so allows for wider burden-sharing among the population. For those who do join, whether voluntarily or through conscription, the military bears the responsibility to train and equip the service members and assign them to the force where needed. The military would also hope to retain enough personnel to serve as field-grade officers or noncommissioned officers and provide leadership to the force.

In practice, the military would naturally prefer to minimize its expenditure of resources converting raw recruits into trained and ready service members. Recruits who are already physically, mentally, and spiritually fit are highly desired, while those who are unfit may require special considerations to join, extra time or attention to correcting their shortcomings, and ultimately are at higher risk of either failing entry-level training or having disciplinary issues once assigned to a unit. However, militaries often have little choice but to accept less qualified recruits to fill operational readiness shortfalls in units.

Three systems associated with personnel identification and conversion to military service as discussed below, followed by implications on the nation's populace.

Service criteria & screening functions

At its simplest, national and military leaders must negotiate on what constitutes the minimal qualifications for military service. There is no requirement for such criteria, as in the past some militias have required all able-bodied men of the state to participate. However, this often results

in poor trained and equipped militias that prove combat ineffective and risks to themselves. Hence, especially for professional militaries, the establishment and use of screening criteria is a must.

The criteria can be universal, meaning applicable to all service members, or targeted to particular specialties. Common universal criteria include demographics such as ages of eligibility or citizenship or other affiliation with the state such as a "Green Card" for legal permanent residents to the United States; being in an acceptable state of physical fitness and good health; and completing some level of education. The criteria indicate those who likely require only the standard levels of entry-level training and would be capable of following orders. There may be also universal disqualifiers that would render someone ineligible such as permanent or on-going medical conditions that would interfere with one's service,[366] and criminal records and other character issues (e.g., convictions for violent crimes, substance abuse, extremism) that indicate poor moral standing and likelihood of future disciplinary problems while serving. Although universally applied, militaries ordinarily establish systems of waivers that allow those with disqualifiers to join should they provide evidence that the concern is remedied or would have no bearing on military service.

Targeted screening criteria can either enhance or loosen universal criteria depending on the specialty that a recruit is being considered for. Often, the targeted criteria are stronger or unique to the specialty. Consider recruits desiring to enter cyber, intelligence, signal, and other informational fields where the potential to handle classified material or systems is greater, recruits may require satisfaction of eligibility requirements for security clearances that most recruits would not require. The weakening or removal of universal criteria may be considered when they unnecessarily interfere with access to populations with needed special skills. This surfaced in the discussions over establishing cyber capabilities in the military service, as those with the needed skills were unlikely to satisfy the minimum physical fitness requirements and more likely to have committed cybercrimes.

Most of the above criteria are among those that nations would desire to incentivize among their populations, not solely because of the possibility of military service but more generally to produce stronger labor forces that support their national economies. Physical and mental fitness, high standards of conduct, and adherence to national values are commonly desired attributes of employers as well as militaries.

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[366]For a list of medically disqualifying conditions, see Department of Defense, *Medical standards for military service: Appointment, enlistment, or induction*, DOD Instruction 6130.03, Volume 1 with Change 4 (Washington, DC: Department of Defense, 2022), 13-54.

Therefore, defense leaders have a vested interest in government programs designed to promote these criteria such as through education programs, health and human services, and sustainment of the labor force such as retraining programs. Defense leaders also have particular interest in relations with employers of those serving in reserve components, as those service members often assume employment risk when activated and desire confidence in their abilities to re-enter their jobs when their service is completed.

There are several challenges to the use of screening criteria across the recruiting pool, mostly about the practical relevance of the criteria and consistency in application. On the former, there has been considerable work done in developing qualifying exams and tests that are objective and consistent, such as the DoD's Armed Forces Qualifying Test, or AFQT, that categorizes recruits based on academic and career potential as determined by the test results. Low scores would be considered disqualifying, as the results would indicate insufficient cognitive abilities to serve in the armed forces.[367] However, while such tests may be useful for screening candidates, they are not necessarily perfect in their abilities to forecast one's success in the military. For example, there are questions regarding which portions of the AFQT are most predictive of service members' abilities to perform their duties and adapt to the military;s warfighting culture.[368]

Consistency in application is also difficult given fluctuations in the balance of prospective recruits showing willingness to serve and the demands from units facing personnel shortages due to attrition. In general, defense leaders in democratic societies have limited true impact on the state of the recruiting pool. Nonetheless, national leaders have been concerning over studies showing that only 25-29% of the U.S. population between ages 17 and 24 meet the health, education, and moral requirements for military service.[369] These potential recruits are also sought after by civilian firms as the market for talent is highly competitive.

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[367] "Understanding ASVAB Scores," *OfficialASVAB.com*, https://www.officialasvab.com/applicants/scores/.

[368] David Z. Hambrick, Alexander P. Burgoyne, Erik M. Altmann, and Tyler J. Matteson. "Explaining the validity of the ASVAB for job-relevant multitasking performance: The role of placekeeping ability," *Journal of Intelligence* 11, no. 12 (2023): 225.

[369] Heather Maxey, Sandra Bishop-Josef, and Ben Goodman, *Unhealthy and unprepared: National security depends on promoting healthy lifestyles from an early age* (Washington, DC: Council for a Strong America, 2018), 4-7, https://strongnation.s3.amazonaws.com/documents/484/389765e0-2500-49a2-9a67-5c4a090a215b.pdf

Accession strategies – conscription & volunteerism

The nation's military accession strategy is a significant and controversial topic. The strategy chosen is a national policy decision with military and economic implications. Most nations establish a multitude of paths to military service, of which recruitment into the peacetime force is but one form. At the onset of war, when the nation must mobilize and fill a much larger end strength, the recruitment mechanisms may change. Such is the case in the U.S. which ordinarily operates under an *all-volunteer force* construct but also retains a conscription option, called *selective service*, reserved for times of national emergency.

From an enterprise standpoint, both conscription and volunteer models have advantages and disadvantages. Conscription promises raising large quantities of soldiers rapidly, but potentially sacrificing quality as conscripts may vary greatly in their skills, desire to serve, and commitment to the nation. Methods of conscription also vary. The U.S. used a draft board system in the Civil War that employed local groups of officials tasked with administering conscription in a geographic region. In World War I and II, lottery systems were used whereby potential draftees entered into a central lottery pool from which numbers were drawn to determine who was drafted or not. Volunteer systems require a different infrastructure that includes recruitment offices where recruiters encourage prospects to interview and commit to military service through a contract. A centralized accessions command oversees the recruitment program, including setting target numbers for contracts over a set period of time.

The challenges for any accession strategy are often ones of fairness and efficacy. The experience in the U.S. has shown that implementing conscription can be risky depending on how well the public supports the war. While the draft in World War II was generally well-supported,[370] there was strong opposition by various ethnic groups and roughly twenty percent of those drafted simply failed to appear before the designated draft boards![371] Drafts in other wars were implemented poorly and were decried as improper and unfair. Policies such as substitution (draftees paying someone to take their place) and commutation (paying a fee to avoid the draft) led to service avoidance

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[370] "What the U.S.A. Thinks," *Life*, July 29, 1940, 140, https://books.google.com/books?id=xz8EAAAAMBAJ&pg=PA20; "Survey shows what youth is thinking," *Life*, November 30, 1942, https://books.google.com/books?id=RkEEAAAAMBAJ&pg=PA110. Both cited in Wikipedia, s.v. "Conscription in the United States."

[371] Peter Levine, "Draft evasion during the Civil War," *The Journal of American History* 67, no. 4 (March 1981): 816-834.

largely by the wealthy or well-connected.[372] Racial and ethnic minorities were disproportionately drafted during the Vietnam War while college deferments were decried as unfair.[373] Enforcement of draft evasion laws was also problematic as it diverted resources away from prosecuting the war.

Voluntary accessions are not without their own risks, including the requirements for the armed forces to "meet mission," quotas of recruiting contracts signed during a given period. This is already challenging for maintaining an all-volunteer force in peacetime, but in times of war the pool of volunteers may shrink. For example, during World War I, the U.S. established a target of one million volunteers needed for military service but only got 73,000; President Wilson subsequently implemented a draft.[374]

Education and development

The best opportunity to influence the recruitment pool is in youth, and there have been various initiatives pursued in this regard. The 1958 National Defense Education Act is an example where Congress passed legislation aimed at improving American education in the science and technology arenas following the launch of *Sputnik* by the Soviet Union.[375] A modern-day outgrowth of this is the "DoD STEM" program that encourages students, educators, and current workforce to engage in "cutting-edge projects" alongside DoD scientists and engage in competitions.[376] Outreach programs sponsored by DoD agencies include student site visits, sponsorship of science fairs and competitions, national school-age essay contests, and other activities to promote national pride and encourage interest in either military service or defense-related careers.[377] Also, because physical fitness barriers to military service are significant in the U.S., the enterprise is also involved in initiatives to prevent childhood obesity and promote healthy eating habits,[378] avoid

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[372] Levine, "Draft evasion," 820.

[373] Kathleen Weldon, "Suppose they gave a war and nobody came: Changing opinions on the draft," *Roper Center for Public Opinion Research* (blog), Cornell University, July 24, 2017, https://ropercenter.cornell.edu/blog/suppose-they-gave-war-and-nobody-came-changing-opinions-draft

[374] Howard Zinn, *People's history of the United States* (Harper Collins, 2003): 134

[375] Encyclopedia Brittanica, s.v. "National Defense Education Act: United States [1958]," https://www.britannica.com/topic/National-Defense-Education-Act.

[376] Department of Defense, "DoDSTEM," https://www.dodstem.us/participate/opportunities/?type=Competition.

[377] U.S. Missile Defense Agency, "[Missile Defense Agency] STEM supported activities," Department of Defense, https://www.mda.mil/about/STEM_supported_activities.html.

[378] Military Community & Family Policy, "Fact sheet: Keeping children healthy & active," Department of Defense, https://dod.defense.gov/Portals/1/features/2015/0415_military-child/docs/FactSheet-Keeping-Children-Healthy.pdf.

involvement in drugs or engage in criminal activity,[379] and enhance general education.

Implications

For present purposes, there are two challenges worth noting as nations invest in and shape their labor forces ostensibly to prepare for war while maintaining economic strength during peace. One is brought about by the simultaneity challenge that war requirements may induce personnel crises on the domestic front. High-demand, highly-specialized professionals such as medical personnel (especially surgeons), engineers, cyber specialists, and others may face significant demands for their services. Mitigation strategies may include increased use in technology or lowering barriers to entry for individuals to perform such tasks on a limited or interim basis.

The second challenge regards general uncertainties about the labor force that war may induce. While a detailed treatment of this subject is beyond present scope, past and contemporary wars highlight several challenges that nations may face when prosecuting future wars. These include but are not limited to the potential for labor unrest such as strikes and lockouts due to wage stagnation,[380] workers volunteering for military service on little or no notice to their employers,[381] challenges of re-skilling workers to support wartime production of new or different goods,[382] and for those pressed into wartime service, persistent fears of losing job stability or economic security when their services are no longer needed or the war ends.[383]

10.C. What is preparedness to provide materiel?

Abundance of national resources is blessing all its own, but it is also the conversion of resources to military use that contributes to one's competitive advantage. No nation is assured of having sufficient national resources for prolonged military operations, therefore strategic planners must consider the possibilities and risks of relying on outside support

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[379] Maxey, Bishop-Josef, and Goodman, *Unhealthy*, 5

[380] Stephanie Hinnershitz, "The Smith-Connally Act and labor battles on the homefront," The National WWII Museum, June 22, 2023, https://www.nationalww2museum.org/war/articles/smith-connally-act-and-labor-battles-home-front

[381] Alina Krupianyk, "The labor market during wartime: What changes are needed," *Vox Ukraine* (blog), February 16, 2024, https://voxukraine.org/en/the-labor-market-during-wartime-what-changes-are-needed

[382] Christopher J. Tassava, "The American economy during World War II," EH.net Encyclopedia, ed. Robert Whaples, Economic History Association, February 10, 2008, https://eh.net/encyclopedia/the-american-economy-during-world-war-ii/

[383] Boris Shishkin, "Problems affecting labor," *Law and Contemporary Problems* 10, no. 4 (Spring 1944): 613-632.

such as grants or sales from partners and allies, resources found in captured territories, or from untapped sources.

Types of raw materials

There is no consensus on how to characterize national resources, so I will choose two perspectives that may be useful for considering whether one has adequate resources or not to prosecute a war. One perspective comes from the Department of Agriculture that sorts resources into four broad categories of minerals & geology, water, air, and soil. Minerals & geology relate to the exploration, extraction, and reclamation of "estates" that produces metals, ores, minerals, petroleum and natural gas, and other materials used to produce materiel or construct real property. Water, air, and soil contribute to the promotion and sustainment of plant and animal life, which in turn foster production of food, clothing, medicine, and other products.[384]

The other perspective is that of environmental science that divides resources into exhaustible and inexhaustible or renewable and nonrenewable.[385] *Renewable* and *inexhaustible* are synonymous term and mean that, to a reasonable extent, one can reconstitute the resource and use it again. One example of a renewable resource is trees, which can be replanted and regrown. However, renewability is no assurance that the resource cannot become depleted due to excessive deforestation, for example.[386] *Nonrenewable* or *exhaustible* resources are those that cannot be replenished such as minerals and oil.[387] Some nonrenewable resources can be conserved, however, as it is possible to recycle metals and plastics to reduce the need for more raw materials being extracted.[388]

Resource preparedness can be negatively affected by dependence or foreign sources for nonrenewable resources.[389] For example, the United

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[384] U.S. Forest Service, "National resources," U.S. Department of Agriculture, https://www.fs.usda.gov/managing-land/natural-resources

[385] "Renewable and nonrenewable resources," PennState Extension, June 23, 2006, https://extension.psu.edu/renewable-and-nonrenewable-resources

[386] "Causes of deforestation: Direct causes," NASA Earth Observatory, March 30, 2007, https://earthobservatory.nasa.gov/features/Deforestation/deforestation_update3.php

[387] "Fossil," Department of Energy, https://www.energy.gov/fossil

[388] "Benefits of recycling," National Institutes of Health (NIH) Environmental Management System, https://nems.nih.gov/environmental-programs/pages/benefits-of-recycling.aspx

[389] Andrew Eversden, "Pentagon awards $30 million contract to boost processing of rare earth elements," *C4ISRNet*, February 1, 2021, https://www.c4isrnet.com/battlefield-tech/it-networks/2021/02/01/pentagon-awards-30-million-contract-to-boost-processing-of-rare-earth-elements/.

States is dependent on foreign sources for important strategic minerals [390] to produce electronics and reusable batteries. [391] Changes in allegiance by partners and adversaries could affect the availability of such resources, and therefore constitute vulnerabilities in the nation's posture. Another concern is about the ability to ramp-up the supply chain to meet substantially higher demands during war. [392] As it is, 27 percent of critical suppliers would expect to face significant shortages during ramp-up. [393]

Industrial base and wartime production capacity

The *industrial base* is the primary source of this conversion, and it generally consists of industries of two forms. Using the U.S. terminology, these are: (1) the *defense industrial base* (DIB) that comprises industrial firms from the private sector that provide goods and services to the government and military on a contractual basis, and (2) the *organic industrial base* (OIB) that comprises industrial firms wholly owned and operated by the government. It is beyond the scope of this Primer to judge the strategic merits of employing a DIB or an OIB to produce a particular good or service. It is sufficient to note that employing a DIB means that the industrial firms in question might not be producing militarily-relevant goods during peace and would therefore have to convert their lines of production to potentially new, unfamiliar products. [394] Meanwhile, the OIB may be operating at peacetime productive levels and face difficulties scaling up to a wartime posture. Therefore, the materiel portion of resource preparedness includes indicators of confidence that national and military leaders have industry's capacity to assume the roles of wartime production regardless of how the firms are postured during peace.

The shift to wartime production is significant and has seismic impacts on the firm. Simply put, industry cannot be flipped like a switch and see war materiel immediately flowing off the assembly lines.

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[390] Tobin Hansen, "Securing U.S. Access to rare earth elements," *Defense360* (March 2020), http://defense360.csis.org/wp-content/uploads/2020/03/Hansen_Rare-Earth_v1.pdf.

[391] *An overview of rare earth elements and related issues for Congress*, CRS Report #R46628 (Washington, DC: Congressional Research Service, November 2020), https://crsreports.congress.gov/product/pdf/R/R46618.

[392] Wesley Hallman (ed.), *Vital signs 2021: The health and readiness of the defense industrial base* (Arlington, VA: National Defense Industrial Association, 2021), https://content.ndia.org/-/media/vital-signs/2021/vital-signs_2021_digital.ashx.

[393] Wesley Hallman and Christopher Smith, "Defense industrial base's report card reveals 'C' grade," in Stew Magnuson (ed.), *National Defense: Defense industrial base vitality outlook* (special report, Arlington, VA: National Defense Industrial Association, 2021), 7, https://www.nationaldefensemagazine.org/media/sites/magazine/ebook/vitalsigns_ebook_final.ashx

[394] Alfred Sloan, *My years at General Motors*, Chapter 20.

Factories are generally not equipped with excess capacity to devote to military requirements and switching production from civilian to military goods may involve the activation of different supply chains. If the supply chain involves a different country, there can be delays in the event of political differences over the war with that country. The defense industrial base would have to switch production lines or build new ones and must be provided assurances and protections from risk when doing so. [395]

Measuring the preparedness of the industrial base is difficult even for those firms already manufacturing end items, ammunition, weapons, and other goods that are solely used by the military and therefore face no commercial competition. It is conceivable that the actual war being fought renders extant materiel obsolete or vulnerable to enemy capabilities, necessitating new materiel or its variants to be designed, developed, and produced quickly.

There is also a general problem of aggregation. It is difficult to assess preparedness of one firm, let alone a whole industry. So then, how does one answer what seems to be a simple question – *what does it mean that the industry base is prepared*? Can one aggregate all the militarily-relevant industries together and produce a meaningful metric? Or must the answer flow one industry at a time? It is beyond the scope of this paper to take sides on that issue, but there are common factors cutting across industries that leaders can consider regarding conversion and expansibility of production. These are proposed below based on reviews of several reports attempting to "measure" industry's preparedness during steady-state operations or during a potential wartime surge:

- *Stability of demand*. Industry depends on predictable and reliable demand signals. Uncertainty from budget constraints, changes in national policies, and legal restrictions such as the 2013 Budget Control Act can make it difficult for industry and the suppliers and subcontractors under them, maintain efficiency. It cannot be assumed that the onset of war and national mobilization would result in greater demand stability (but national efforts to acquire COVID-19 vaccines indicate a strong willingness to create stable demand in times of crisis.

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[395] Department of Defense, *Assessing and strengthening the manufacturing and defense industrial base and supply chain resiliency of the United States* (Washington, DC: Department of Defense Industrial Policy Board, 2018), 19-44, https://media.defense.gov/2018/Oct/05/2002048904/-1/-1/1/ASSESSING-AND-STRENGTHENING-THE-MANUFACTURING-AND%20DEFENSE-INDUSTRIAL-BASE-AND-SUPPLY-CHAIN-RESILIENCY.PDF. Hereafter *DIB Report 2018.*

- *Cost and availability of skilled labor*. Industry relies on skilled labor for production of modern military equipment. The good news for the U.S. is that the overall talent pool for workers with a science or technical background is high, although there are shortages in some areas and the overall skilled workforce is aging.[396] The DIB also depends on workers able to acquire security clearances, which have historically been slow in coming although DoD has worked to streamline the process in recent years.

- *Security and protection afforded to defense firms.* By virtue of their association with DoD, Industry firms are high-value targets for cyberthreats and intellectual property theft.[397] It is likely that once the U.S. declares war or substantially mobilizes for operations, industry firms would be targeted very aggressively. The risks posed by successful attacks are significant and include denial of use of key military capabilities or their exploitation by the enemy.

- *Bureaucratic efficiency.* As previous U.S. wars and military operations have shown, existing defense acquisition and joint processes and systems will likely stay intact and may even intensify as the nation mobilizes. Should the government be unable to surge its capacity to manage the ballooning relationship with the DIB, risks could include severe lags in undergoing the acquisition process, providing investment in research and development, or pursuing needed innovations to combat adaptive threats.[398]

Expanded production would also require a commensurate ability to accept, transport, and distribute the goods once produced. This places a premium on DoD's sustainment infrastructure as discussed in Chapter 8.

Nationalizing industry

If the U.S. were to go on a war footing, there may be a requirement to nationalize industries and require them to produce goods and services specifically for defense use. *Nationalization* is the process of a state assuming control over a private asset.[399] It is not uncommon for state and local governments to claim private assets for the construction of roads or

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[396] Hallman, *Vital signs 2021*, 22.
[397] Hallman, *Vital signs 2021*, 10.
[398] Hallman, *Vital signs 2021*, 10-11.
[399] Encyclopedia Brittanica, s.v. "Nationalization," https://www.britannica.com/topic/nationalization.

other infrastructure. In the U.S., such instances normally serve a recognizable public good, and many states have laws requiring some level of compensation. [400] At the federal level, the U.S. has a history of nationalizing industrial production when responding to economic and social crises, such as the railroads during World War I and Korea; countless industries during World War II including shipbuilding, aviation, textiles, and wood; [401] and the recent COVID-19 pandemic. [402]

Unlike during World War II, there are comparatively few factories producing goods in the U.S. that could theoretically be nationalized. Moreover, there are very few factories building large systems like airframes, ships, or submarines. In short, scaling up production beyond existing industrial capacity could require substantial construction of new factories. But while capacity metrics exist for some factories may not exist in others. [403]

While nationalization as an economy policy, in opposition to privatization, is beyond the scope of this work, it is an important tool for responding to wartime needs. [404] In the U.S., the current avenue is the Defense Production Act of 1950 (DPA), a law that allows the President to establish control of materials, services, and facilities for nation use. [405] Title III of the DPA establishes the authorities of the President to nationalize assets when needed for expanding capacity and supplies for the national defense. There are also provisions in Titles I and VII that preclude private citizens from hoarding "designated scarce materials" of federal interest, limit authorities for gasoline rationing, and prohibit

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[400] Encyclopedia Brittanica, s.v. "Nationalization."

[401] Thomas M. Hanna, *A history of nationalization in the United States* (The Next System Project, 2019), 1-3, https://thenextsystem.org/sites/default/files/2019-09/A_History_of_Nationalization_in_the_US-Hanna-NSP.pdf.

[402] Aidan Lawson and June Rhee, "Usage of the Defense Production Act throughout history and to combat COVID-19," Yale School of Management, June 3, 2020, https://som.yale.edu/blog/usage-of-the-defense-production-act-throughout-history-and-to-combat-covid-19

[403] Industrial Policy Office, Assessing and strengthening the manufacturing and defense industrial base and supply chain resiliency of the United States (Washington, DC: Department of Defense, 2018), 45-52.

[404] Nationalization is frequently given as a response to various social or economic problems brought about by market forces. For an example, see Fran Quigley, "Tell me how it ends: the path to nationalizing the US pharmaceutical industry," *University of Michigan Journal of Law Reform* 53 (2019): 755, https://repository.law.umich.edu/cgi/viewcontent.cgi?article=2512&context=mjlr as applied to the question of nationalizing pharmaceuticals, which may occur in the event of a combatant force requiring a stable flow of medicines.

[405] *The Defense Production Act of 1950, as Amended*, available at the Federal Emergency Management Agency website, https://www.fema.gov/sites/default/files/2020-03/Defense_Production_Act_2018.pdf. Hereafter *DPA of 1950*.

firms designated as defense contractors from purchase or control by foreign governments. [406]

Invoking DPA is not risk-free and there are potential implications for the defense enterprise. It is an assumption that executive orders will translate into action to provide goods or services where and when needed. It is also an assumption that nationalized industries will be able to ramp up adequate quality controls at the same time. This assumption did not necessarily hold during World War II. [407] There is also the concern that industry is properly postured to respond. The goods called for may differ from what industry currently produces or the quantities and periods required may not be feasible. [408]

Resource preparedness measures would therefore include the capacity of the defense enterprise to enact DPA provisions and integrate nationalized assets into enterprise activities. The measures should provide the extent to which the enterprise is postured to expand the necessary oversight and management functions to ensure the quality and timely provision of new goods to the warfighter. To this end, DoD sustains a standing program, called the Defense Production Act Title III Office, to help DoD oversee projects related to DPA invocation and more generally mitigate shortfalls in the defense industrial base. [409] An example of this Office's efforts is in the execution of five Presidential Determinations using DPA Title III authorities for the strengthening the supply chain of critical rare earth minerals in 2019. [410]

10.D. What is preparedness to provide real property, facilities & infrastructure?

Even in the best of circumstances, would there be 'room to grow'? The existing mobilization infrastructure would certainly be used to the maximum extent possible to receive, process, train, and prepare forces for employment. However, unlike in the early 20th century when the U.S.

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[406] *DPA of 1950,* sections 102, 105, 721.

[407] Holbrook Working, "Statistical quality control in war production," *Journal of the American Statistical Association* 40, no. 232 (1945): 425-447, https://www.jstor.org/stable/2280214?seq=10#metadata_info_tab_contents

[408] For example, Anshu Siripurapu, "What is the Defense Production Act?" policy brief, *Council of Foreign Relations*, January 21, 2021, https://www.cfr.org/in-brief/what-defense-production-act analyzes both the Trump and Biden administration's use of the Act during the COVID-19 pandemic.

[409] Industrial Policy Office, "Defense Production Act (DPA) Title III," Department of Defense, https://www.businessdefense.gov/Programs/DPA-Title-III/.

[410] Industrial Policy Office, "Defense Production Act Title III Presidential Determinations to strengthen the domestic industrial base and supply chain for rare earth elements," Department of Defense, July 23, 2019, https://www.businessdefense.gov/News/News-Display/Article/1913110/defense-production-act-title-iii-presidential-determinations-to-strengthen-the/.

was able to increase its footprint rapidly and create new bases as required, real estate is now at a premium and the already significantly reduced post-Cold War and post-BRAC defense footprint faces significant problems of encroachment. Adding training areas, particularly for large-scale collective training, will be challenging with the existing force posture alone. However, readiness for total mobilization must consider the throughput requirements beyond that of the extant facilities and infrastructure. Modern technologies may be able to address some of these shortfalls but would have to be planned for.

The management of *real property* – including real estate, the facilities available on them, and the services they enable[411] – is already complex in peacetime. It becomes even more so in times of war. Although the operations and maintenance of a single facility may seem rather tactical in scope, collectively the sustainment of DoD's facilities and infrastructure constitutes a massive investment of resources.

DoD real property management has distinct qualities that separate it from the private sector and other government activities. First, many DoD capabilities are unique, such as tanks, submarines, and military aviation, and therefore require specialized facilities for stationing, transportation, and employment of those assets. Second, despite advances in simulation technologies, DoD entities still require the use of large amounts of real estate for training. Preservation efforts ensure the land is sustained for such training purposes. Third, critical capabilities such as classified information networks place special demands on facilities housing them.[412]Thus, many DoD organizations require special-purpose facilities which might not ordinarily exist. Putting it simply, a rapid expansion of the armed forces may require a commensurate effort to construct defense facilities and expand the DoD real property inventory:

- Adequate facilities must be available as new weapons systems are fielded, otherwise sustainment can be difficult.[413]

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[411] Merriam-Webster, s.v. "Real property."

[412] These bullets are referenced in the Department of Defense's Unified Facilities Criteria series of documents. The main document is U.S. Department of Defense, *Unified Facilities Criteria (UFC): DoD Building Code (General Building Requirements)* with Change 2 (Washington, DC: Office of the DUSD(Energy, Installations, and Environment), November 2018), 17, https://www.wbdg.org/FFC/DOD/UFC/ARCHIVES/ufc_1_200_01_2016_c2.pdf.

[413] For example, see Defense Acquisition University, *Defense acquisition guidebook* (Fort Belvoir, VA: Defense Acquisition University), Chapter 4, paragraph 3.3.1.9.

- Adequate facilities must be available to receive re-stationed units, otherwise the units cannot sustain readiness.[414]

- Closure of facilities and transfer to the private sector or other government organizations can be slow and difficult which may necessitate DoD's continued ownership for longer than planned, incurring additional funding requirements for operations and maintenance.[415]

10.E. What is data preparedness?

Data is raw fact without context, while *information* adds context, meaning, and purpose.[416] Converting data to information for military use requires the tools of structural preparedness discussed in Chapter 9. The resource preparedness implications stem from encoding observations; storage and recall of data in repositories; and the sustainment of such repositories to ensure preservation of accurate and useful data and elimination of bad data.

The availability of decision support networks, processes, and systems is essential for national leaders to make rational and sound decisions about declarations of war, the employment of military forces, and communication with the populace. However, the existence of such networks does not guarantee the accuracy and relevance of the data flowing over it. As much as data can be a force multiplier, its inaccuracy can weaken, nullify, or cripple friendly capabilities; reduce confidence in any information generated, negatively impact; and grant the adversary an advantage. Below is a limited treatment of data and data systems and how they can impact preparedness. A more in-depth understanding of the design and engineering of military data systems is beyond the scope of this book.

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[414] Consider the relocation of Human Resources Command under the 2005 BRAC process. See Government Accountability Office, *MILITARY BASES: DoD should address challenges with communication and mission changes to improve future base realignment and closure rounds*, GAO Report #GAO-18-231 (Washington, DC: Government Accountability Office, 2018), 14, https://www.gao.gov/assets/700/691163.pdf (retrieved January 22, 2019).

[415] Garrett Hatch, *The Federal Assets Sale and Transfer Act of 2016: Background and key provisions*, Report #R44999 (Washington, DC: Congressional Research Service, October 2017), https://fas.org/sgp/crs/misc/R44999.pdf (retrieved January 23, 2019).

[416] Harry D. Tunnell, "Network-centric warfare and the data-information-knowledge-wisdom hierarchy, *Military Review* (May-June 2014): 43-50. For present purposes, knowledge management is relevant but beyond the scope of this monograph because what constitutes knowledge at a national level is outside the military's purview.

Observations and encoding

For present purposes, there are two distinct approaches to the collection and storage of data that impact preparedness—automated and manual-entry. *Automated* data-entry systems involve technological sensors designed to convert observations to data continuously. Well-designed automated data systems can generate massive amounts of data and accuracy is generally high, however the data collected is limited to that which the sensors are designed to observe. Manual-entry systems rely on inputs from humans in which the data entry is slower, potentially tedious and time-consuming, and subject to observer bias and premature interpretation. Manual-entry systems may also constrain the user's ability to enter the observation clearly because of the underlying structures imposed by the data collection system that does not align with the observer's views of events.

A component of resource preparedness is therefore rooted in: (a) the capacity to collect necessary observable data, (b) the capacity to encode the data into the system, and (c) the risks associated with data that cannot be collected or can only be collected episodically or slowly. The latter is aligned with the insufficiency of data entry ports built into decision support systems (e.g., limited access due to classification of the facility or the observers being in locations isolated from the network).

Storage and recall of data

Storage and recall of data had changed from times past as technological improvements has exponentially increased data storage and interconnectivity, and therefore requires today's organizations to establish structures and processes to manage it.[417] One estimate from 2021 claimed that the amount of data generated in the world that year was 79 zettabytes (79 followed by 21 zeroes) and the quantity was forecasted to double by 2025.[418] The capacity of flash drives (also known as thumb drives and memory sticks) increased dramatically from 1 gigabyte in 2009 to 2 terabytes in 2022.[419]

Data requires an architecture that allows it to be accessible where needed. In the past, data flowed hierarchically up the chain of command, converted to information and decisions, and flowed back down.

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[417] For example, Office of the Assistance Secretary of Defense, "Data analytics," https://www.acq.osd.mil/asda/ae/ada/data-analytics.html

[418] Ogi Djuraskovic, "Big data statistics 2023: How much data in the world?" First Site Guide (blog), https://firstsiteguide.com/big-data-stats is a blog post that aggregated a number of big data information from other sites.

[419] Hallam Stevens, "Who really invented the thumb drive? The ubiquitous USB gadget is the brainchild of an unsung Singapore inventor," *IEEE Spectrum* 60, no. 2 (February 2023): 26-31, https://ieeexplore.ieee.org/abstract/document/10040548

Contemporary conceptions of data view it as a ubiquitous resource as cloud-style computing provides a more equitable and world-wide capability to enter, store, and retrieve data. While vetting processes persist, with good reason (Chapter 9), that does not necessitate restrictions to data entry.

Data quality is also recognized as important, but measuring it is complex because it is dependent on so many factors. Among them are the following which anyone designing a data architecture must consider:[420]

- *Data gathering challenges*. There may be barriers to collecting data beyond the physical difficulties of observing and encoding it. Data may need to be protected from disclosure or restricted for only certain uses due to laws, regulations, or ownership. The impact of collecting data on the performance of the system or process being observed is also a concern.

- *Dependability challenges.* While individual data could be measured for quality, it is hard to measure quality of an integrated picture based on multiple (conflicting) data sources.

The following are measures of data quality generally found in the literature but there may be others and their relative importance often depends on the context:[421]

- *Visible*. Data is visually discoverable to authorized users, which also implies withheld from those unauthorized (see *Secure*)

- *Accessible*. Accessibility to data is only though appropriate means, using specified and controlled mechanisms

- *Understandable*. This measures the data's utility, that it can be readily understood to foster effective decision making

- *Linked*. All appropriate environments of data can be interconnected

- *Trustworthy*. Integrity of the data is secure, the data reflects the phenomenon observed, and stakeholders perceive this to be so

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[420] Jingran Wang, Yi Liu, Peigong Li, Zhenxing Lin, Stavros Sindakis, and Sakshi Aggarwal. "Overview of data quality: Examining the dimensions, antecedents, and impacts of data quality," *Journal of the Knowledge Economy* (2023): 1-20. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9912223

[421] Wang et al., "Overview of data quality."

- *Interoperable*. Data is compatible and consistent across output systems

- *Secure*. Security protocols and strict and adhered to[422]

Sustainment of repositories

Data collection and storage can be imperfect and result in the accumulation of corrupted, incorrect, wrongly formatted, incomplete, or duplicated data. These problems are difficult to detect without the proper data management tools, but the impact is straightforward – bad data risks bad decision making. Preparedness measures may also include the capacity of data architectures to identify and fix data quality issues such as: (1) locating redundancies in the data, (2) locating missing data or its components, and (3) addressing statistical outliers or structural errors that could indicate the improper encoding of an observation.[423]

Implications

The above suggests a need for a constructive data culture. Although the military will need to sustain its own internal information systems, it relies on data provided by other government agencies or societies and therefore risks disadvantage if the data provided from above is unusable.

10.F. WHAT IS PREPAREDNESS TO PROVIDE FUNDING?

One of Collins' original principles of preparedness was *financial sufficiency* whereby the military was provided with adequate funding to conduct preparedness activities such as training and modernizing the force. However, more funding is not necessarily better as there is always the possibility of waste or abuse. Beyond the legal framework that establishes the processes of authorizing and appropriating funds for military use is the flow of those funds from the legislating body to the enterprise. Characteristics of this flow influencing resource preparedness relate to its predictability, stability, and reliability such that the enterprise is better postured to expend the funds efficiently and demonstrate how those expenditures achieved their intended purposes.[424] Disruptions to

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[422] Rob Kitchens, "Joint Munitions Command implements new analytical techniques," Army.mil, June 27, 2023, https://www.army.mil/article/267949/joint_munitions_command_implements_new_analytical_techniques

[423] "Guide to data cleaning: Definition, benefits, components, and how to clean your data," *Tableau* (blog), https://www.tableau.com/learn/articles/what-is-data-cleaning

[424] *Auditability* is a key goal in the U.S. Department of Defense. See DoD Inspector General, "Understanding the results of the audit of the FY2022 DoD financial statements,

the flow or resources may have deleterious effects on military readiness. [425]

Report DODIG-2023-070," May 17, 2023, https://www.dodig.mil/reports.html/Article/3397962/understanding-the-results-of-the-audit-of-the-fy-2022-dod-financial-statements/

[425] Disruptions can come in many forms. In the US, these include delays in the passing of appropriations laws without which the defense enterprise has little to no ability to spend money [for example, Stephanie Young and J. Michael Gilmore, *Operating under a Continuing Resolution: A limited assessment of effects on defense procurement contract awards* (Santa Monica, CA: RAND Corporation, 2019).] and constraints put in place to protect the federal government from overexpenditure, abuse, and waste.

11. Homefront Preparedness: Providing Will & Defending the Homeland

A total of 16 million Americans donned the country's uniform in the course of the war, out of a total US population of 132 million (according to the 1940 Census).

An impressive number, to be sure! But what of the other 116 million Americans, the ones who remained behind? They played a crucial role in the fight, and their story, too, deserves to be told. Global war placed great demands on the American people, requiring a level of involvement, commitment, and sacrifice unknown in previous conflicts. Without the steadfast support of the "Home Front"—the factory churning out weapons, the mother feeding her family while carefully monitoring her ration book, the child collecting scrap metal for the war effort—US soldiers, sailors, and airmen could not have fought and defeated the Axis. [426]

During times of war, the *homefront* is the segment of society outside of the defense enterprise and the armed forces or "the people who stay in a country and work while that country's soldiers are fighting in a war in a foreign country." [427] While the definition confines the term to those in nation's home territories, civilians clustered in groups located in foreign lands such as overseas military communities will be considered in this chapter due to their potential supporting roles to a war effort and toward the protection of national security interests and property. However, individuals located outside the home territories will not be considered part of the homefront.

In the United States, World War II is fondly remembered in part because of the level of national commitment to the war effort as described above. In contrast, during the Vietnam War the American homefront was divided because of uncertainty and ambivalence over the war's purpose and ongoing discord over civil rights and the draft. [428] These contrasting episodes illustrate the important connections between the fighting forces and the societies that war aims to protect. A strong homefront enables the force; a weak one saps its energy and will.

But just how unified was the homefront during World War II? There were strong pacifist movements that opposed U.S. participation in the

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[426] "The home front," The National WWII Museum, https://www.nationalww2museum.org/war/articles/home-front

[427] Merriam-Webster, s.v. "homefront," https://www.merriam-webster.com/dictionary/home%20front

[428] Jeff Wallenfeldt, *Encyclopedia Brittanica*, s.v. "Vietnam war."

war, suspected Communist activities among American citizens, and the infamous interment camps for Japanese-descended citizens and German and Italian immigrants. [429] Racial tensions were high, and censorship was institutionalized. [430]

The key lesson is that a unified homefront may be ideal but is unrealistic. The strength of the homefront will be greatly influenced by the extent to which the population agrees with and supports the war, but there will normally be detractors. Key is that the nation must be prepared to establish a homefront, especially in the contemporary age where adversarial and domestic misinformation and disinformation campaigns, cyberattacks, and other activities could occur in the homeland, potentially influencing the sustained will of the people. This while the government seeks to maintain support for the war as it continues to tap into national resources to regenerate or surge capabilities to achieve victory.

Because the character of the war and perceptions of its necessity drive societal reactions to the war, it is difficult to forecast how society would respond to the initiation of conflict or how it would change over time. A good illustration is how the United States appeared to swiftly unite in the wake of the 9/11 terrorist attacks in New York and Washington, DC and support Operation ENDURING FREEDOM against the perpetrators. Yet, there was more division as discussions shifted toward the possibility of conducting operations against Iraq afterward. [431]

A detailed treatment of homeland defense is beyond the scope of this book. Rather, the following is a set of common factors that differentiate the successful enactment of a homefront from the less successful. The four factors presented here are: (1) civil society in peacetime, (2) mobilization of the civil defense enterprise, (3) communication synchronization, and (4) austerity measures.

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[429] Allan M. Winkler, "The World War II home front," Gilder Lehrman Institute of American History, https://ap.gilderlehrman.org/essays/world-war-ii-home-front; "92: Organizational Secrecy," *Talking about organizations podcast*, August 9, 2022, https://www.talkingaboutorganizations.com/92-organizational-secrecy-case-of-the-manhattan-project/ covers in part the history in Winkler, "The World War II home front"; "92: Organizational Secrecy – Case of the Manhattan Project," *Talking about organizations podcast*, August 9, 2022, https://www.talkingaboutorganizations.com/92-organizational-secrecy-case-of-the-manhattan-project/ covers in part the history of J. Robert Oppenheimer and his relationships with suspected Communists prior to World War II.
[430] Louis Fiset, "Return to sender: U.S. censorship of enemy alien mail in World War II," *Prologue Magazine – Quarterly of the National Archives* 33, no. 1 (Spring 2001): 21-3; *Talking about organizations podcast,* "92: Organizational Secrecy."
[431] Pew Research Center, "Two decades later, the enduring legacy of 9/11," September 2, 2021, https://www.pewresearch.org/politics/2021/09/02/two-decades-later-the-enduring-legacy-of-9-11/

11.A. What roles do civil society play?

This factor is presented first because establishing a successful homefront is incredibly difficult without a pre-established and vibrant civil society. Civil society is "like a social fabric that provides stability to a society … where people talk, create, engage, and support each other." [432] It works to harmonize the government with the private sector and provide voices to individual members of society that may not otherwise be available. It also instills common values and builds empathy among citizens that translates more readily into unified action in war. [433]

Definition of civil society and civil society organizations

Civil society is defined here as the set of formal and informal organizations that are neither directly associated with the governance of society nor driving private enterprise but can serve as vital sources of information and services for society's members. Types of civil society organizations (CSOs) include the following (although some of these may appear to contradict the above definition[434]): (a) academia, schools, and other educational institutions, (b) professional associations (e.g., state bars for the legal profession), (c) churches and religious organizations, (d) volunteer organizations and charities, (e) community groups and clubs, (f) labor unions, (g) foundations, (h) non-governmental organizations, and (i) advocacy groups.[435] Society's members may also come together informally or spontaneously around a temporary cause such as raising funds for someone's cancer treatment or helping out neighbors who lost their homes to fire or floods.

Specific roles commonly associated with civil society include, but are not limited to:[436]

- Monitor government policies and actions and hold government and private firms accountable such as exposing corruption and

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[432] Joachim Schwarz, "Why is civil society important?" Civil Society Academy, https://www.civilsocietyacademy.org/post/why-is-civil-society-important

[433] Robert D. Putnam, *The upswing: How America came together a century ago and how we can do it again* (New York: Simon & Schuster, 2021).

[434] George Ingram, "Civil society: An essential ingredient of development," Brookings, April 6, 2020, https://www.brookings.edu/articles/civil-society-an-essential-ingredient-of-development/

[435] "Civil society," World Economic Forum, https://www.weforum.org/communities/civil-society; Ingram, "Civil Society."

[436] Ingram, "Civil society."

lobbying for reforms[437]

- Engage in advocacy and offer alternative policies for government, the private sector, and other institutions

- Provide volunteer services for the poor, underserved, underrepresented, or others in need

- Defend citizens' rights

- Uphold social norms and behaviors that are constructive to society such as tolerance, moderation, compromise, and respect for human dignity[438]

- Prepare members to be active participants and leaders in government and the private sector[439]

- Resolving or adjudicating conflicts on behalf or in lieu of governmental involvement or intervention[440]

Characteristics of civil society

It is important to note that CSOs often provide venues for tackling difficult or controversial topics. They may mobilize grass-roots support for or against specific legislation, seek fair and equitable treatment for select groups, or demand justice to right a wrong or address a grievance. This may mean that some CSOs may find themselves confronting other CSOs supporting the opposing side of an issue. It is thus important to characterize CSOs according to norms that separate them from other entities. Such norms include the following:

- *Engagement*. While CSOs often comprise individuals sharing a common perspective or narrow interest, they should be otherwise open in their membership to find strength by transcending traditional or persisting demographic and cultural groups.[441]

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[437] Larry Diamond, "What civil society can do to develop democracy," presentation to non-governmental organization leaders, Stanford University, February 10, 2004, https://diamond-democracy.stanford.edu/speaking/speeches/what-civil-society-can-do-develop-democracy
[438] Diamond, "What civil society can do."
[439] Diamond, "What civil society can do."
[440] Diamond, "What civil society can do."
[441] Stanford Encyclopedia of Philosophy, s.v. "Antonio Gramsci," https://plato.stanford.edu/entries/gramsci/

- *Independence*. CSOs should not take over the roles of government or the private sector nor deny or interfere with their performance. In instances where CSOs step into such roles, it should be temporary and accompanied by efforts to return those roles to the proper authorities as soon as possible.[442]

- *Policies of civility and non-violence*. CSOs must never advocate violence against persons or property or the exercise of indignity (e.g., unwarranted *ad hominem* attacks) toward members or other parties with whom they disagree.[443]

- *Accountability*. CSOs must demonstrate their effectiveness in achieving the organizations' aims, appropriate use of resources, and responsibilities toward relevant sectors of the public who are underrepresented. They must also police their membership to remove or sanction those who violate civil society norms such as inflicting harm or personally profiting off their memberships.[444]

Assessing civil society's contributions to preparedness

A contemporary example of the importance of civil society is the collective response by CSOs to the COVID-19 pandemic. CSOs worldwide aided in the distribution of facemasks, hand sanitizers, vaccines, and water; advocated for the protection of human rights and dignity in the face of excessive use of force and unnecessary restrictions on travel and assembly; provision of technological solutions and services to support the continued education of children kept home due to lockdowns; and combating misinformation and disinformation about the coronavirus.[445] In the words of one researcher who studies how CSOs were able to deliver aid faster than government action, CSOs provided the "social glue" for the successful response to the pandemic.[446] The same was true in the United States that, like all nations, initially struggled to respond to the pandemic. In addition to the services that global CSOs

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[442] Diamond, "What civil society can do."

[443] For example, United Nations, "Civil society," Office on Genocide Prevention and the Responsibility to Protect, https://www.un.org/en/genocideprevention/civil-society.shtml

[444] L. David Brown, *Civil society legitimacy and accountability: issues and challenges*, Working Paper no. 32 (Cambridge, MA: John F. Kennedy School of Government, 2007), https://cpl.hks.harvard.edu/files/cpl/files/workingpaper_32.pdf

[445] United Nations, "Stories from the civil society COVID-19 response," Department of Global Communications, https://mailchi.mp/un/civilsocietycovid-19

[446] Nampoothiri, Niranjan J., and Filippo Artuso. "Civil society's response to coronavirus disease 2019: patterns from two hundred case studies of emergent agency." *Journal of Creative Communications* 16, no. 2 (2021): 203-212, https://journals.sagepub.com/doi/10.1177/09732586211015057

provided, American CSOs advocated for stronger workplace safety policies and requirements to prevent the spread of the disease, established field hospitals to care for the massive influx of cases overloading hospitals, provided aid to undocumented immigrants otherwise shut out from support, and leveraged transnational networks of diaspora in the U.S. to channel help overseas.[447]

However, CSOs by their nature are vulnerable entities. Because many lack reserves of resources and rely on volunteers, they may succumb to criticism or retaliation by opponents and may not be able to handle abuses or mistakes perpetrated by its members. This was apparent during the COVID-19 pandemic that saw increases of government repression toward CSOs due to advocacy against certain government policies or more generally the freedom to assemble.[448]

These suggest that assessing civil society's contributions to national preparedness is complex and further research is likely needed. However, the characteristics of such assessments would seem straightforward based on the above arguments. The following are some factors derived from contemporary conflicts that could be explored further and developed into measures for assessing the capabilities and preparedness of a nation's civil society for war: (a) maintaining moral support for the war effort,[449] (b) helping sustain political stability,[450] (c) encouraging active support such as volunteering or enlisting in the military or joining other groups supporting the war effort,[451] (d) countering corruption, war profiteering, and other problems,[452] and (e) providing advocacy for groups suffering as consequences of the war or losses of government capacity to provide services.[453]

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[447] David Wong (ed.), *An increased role for civil society in the United States* (Washington, DC: Carnegie Endowment for International Peace, 2020), https://carnegieendowment.org/2020/12/07/increased-role-for-civil-society-in-united-states-pub-83149

[448] Felix S. Bethke, "Lockdown of expression: Civic space restrictions during the COVID-19 pandemic as a response to mass protests," *Democratization* 30, no. 6 (2023): 1073-1091.

[449] Lena Leonchuk, Rossana Zetina-Beale, and Eric M. Johnson, "A study of Ukraine civil society during the war," RTI International, February 22, 2023, https://www.rti.org/impact/examining-role-civil-society-ukraine-during-wartime

[450] David O'Regan, *Civil society and civil war onset: What is the relationship?* (working paper, Center for International & Security Studies at Maryland, 2018).

[451] Leonchuk, et al., "A study of Ukraine."

[452] Emma Landi, "The role of civil society in Ukrainian reconstruction," Center for Strategic & International Studies, June 30, 2023, https://www.csis.org/blogs/development-dispatch/role-civil-society-ukrainian-reconstruction

[453] "Civil society and media," U.S. Agency for International Development, April 27, 2023, https://www.usaid.gov/ukraine/fact-sheets/may-16-2022-civil-society-and-media

11.B. WHAT IS PREPAREDNESS TO MOBILIZE THE CIVIL DEFENSE ENTERPRISE?

Civil defense began with the desire to involve Americans in the protection of their fellow citizens and critical infrastructure... DHS [454]

Civil defense is related to, but distinct from, other defense missions related to the protection of the homeland. It is defined as "the system of protective measures and emergency relief activities conducted by civilians in case of hostile attack, sabotage, or natural disaster." [455] It is a complex topic since its implementation is dependent on perceptions of the threat imposed by one's war enemies. The question becomes to what extent can the national government communicate the threat and therefore validate the need to mobilize civil defense? This is a persistent national responsibility as perceptions about the threat are likely to change over time, especially should the war become prolonged and the nation's citizens grow war-weary.

Civil defense has not been and should not be considered solely a war construct. Civil defense involves the formal or informal activation of non-members of the defense enterprise to address domestic security concerns outside the scope and capabilities of the defense enterprise. For example, aerial bombardments of European cities during World War II led to the establishment of air-raid shelters and accompanying sirens and drills for civilians. [456] This included the use of the newly-formed Civil Air Patrol to patrol coastlines and conduct search and rescue missions, and the Civil Defense Corps who recruited millions of volunteers to perform first-responder type services such as first aid medical care and firefighting. [457] Cold War-era threats of Soviet nuclear strikes drove the implementation of robust civil defense programs in the U.S. Fear was a significant motivator. [458] Fallout shelters and "duck and cover" training in schools were measures to enhance the survivability of those located outside the

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[454] National Preparedness Task Force (NPTF), *Civil defense and homeland security: A short history of national preparedness efforts* (Washington, DC: Department of Homeland Security, 2006), 29, https://training.fema.gov/hiedu/docs/dhs%20civil%20defense-hs%20-%20short%20history.pdf.

[455] Merriam-Webster, s.v. "Civil defense," https://www.merriam-webster.com/dictionary/civil%20defense

[456] Encyclopedia Brittanica, s.v., "Civil defense," https://www.britannica.com/topic/civil-defense.

[457] "SEMP Biot #243: What is civil defense? World War I through the Eisenhower Administration," Suburban Emergency Management Project, August 1, 2005, archived at the *Wayback Machine*, https://web.archive.org/web/20060127102534/http://www.semp.us/biots/biot_243.html.

[458] NPTF, *Civil defense and homeland security*, 6.

immediate blast radius of nuclear weapons.[459] They also helped nations reassure and engage with their populaces.[460]

Civil defense has historically played a significant role in a nation's abilities to sustain war efforts by fostering resilience in the homeland against external threats. This in turn enhances the will of the fighting force and precludes the risks of diverting attention away from the mission.

Three classes of capabilities will be described based primarily on the US system, but many other nations have similar constructs. The first are *volunteer service organizations* where the civilian sector provides assets and volunteers, often of a dual-use nature, to provide capabilities outside the military chain of command. The second class is *emergency management groups* in which civilians, especially those without first-responder training, assume collateral responsibilities for planning and implementing first response-style missions.[461] The third class are *militias* who are groups of ordinary citizens performing military service. The U.S. recognizes two forms of militia – *organized* militia that consists of the National Guard, and *unorganized* militia consisted of able-bodied citizens who can be activated and perform military type missions to defend the state at the behest of the governor. These epitomize the ideal of the "soldier-citizen" prominent in U.S. history.[462]

Auxiliaries & other volunteer service organizations

The term *auxiliaries* describe individuals or groups who assist military or law enforcement organizations but may lack the full training of those professions, operate at lower levels of responsibility, or perform functions not fully integrated into the work of those other professions.[463] Many developed nations around the world have auxiliaries and common missions include augmenting coast guards, aviation, and police forces.[464]

The U.S. has a long history of using auxiliaries, such as the establishment of women's auxiliary organizations in World War II prior

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[459] Glenn H. Reynolds, "The unexpected return of duck and cover," *The Atlantic*, January 4, 2011, https://www.theatlantic.com/national/archive/2011/01/the-unexpected-return-of-duck-and-cover/68776/.

[460] Sarah Pruitt, "How 'duck-and-cover' drills channeled America's Cold War anxiety," *History.com*, March 26, 2019, https://www.history.com/news/duck-cover-drills-cold-war-arms-race.

[461] The term appears in various FEMA and civil defense/emergency management texts but is not consistently defined but can be described as like volunteer service organizations but focused on incident management from a non-military perspective.

[462] 10 U.S.C. §246.

[463] Wikipedia, s.v. "Auxiliaries," https://en.wikipedia.org/wiki/Auxiliaries.

[464] A comprehensive list of auxiliaries around the world with links can be found in Wikipedia, s.v., "Auxiliaries," https://www.wikipedia.org/Auxiliaries

to their activation. For example, the Women's Army Auxiliary Corps, prior to the establishment of the Women's Air Corps, provided switchboard operators, mechanics, and bakers for the war effort.

Contemporary auxiliary organizations in the U.S. perform important civil defense missions. Two auxiliaries are worth mentioning for present purposes and both are incorporated under Title 36 of the U.S. Code. The Civil Air Patrol is an auxiliary of the Air Force and plays important roles in search and rescue operations, disaster relief, and aviation training. The U.S. Merchant Marine is an auxiliary of the Navy and provides sealift support in both peace and wartime.[465] While its primary mission is blue-water shipping, it also conducts logistics in domestic waterways and also conducts training for mariners.[466]

Emergency management groups

The traditional conception of civil defense narrowly focuses on these types of groups that act in a similar auxiliary role but supplementing law enforcement as much as or more than the military. During wartime and the Cold War, these groups comprised normally unpaid volunteers to perform law enforcement missions that do not necessarily require regular police certifications. Here, these will be called *emergency management groups* to distinguish them from other organizations performing civil defense that were not formally titled as "Civil Defense" elements.[467]

Emergency response groups serve to protect civilian personnel and assets from all forms of emergencies include those induced by enemy action. There are referred to here as 'groups' rather than 'units' due to their predominantly informal and volunteer structures although they can be constructed more formally.

The functions performed by these groups depends on the threat situation. For example, in response to fears of potential air raids during World War II, U.S. civil defense *wardens* enforced blackouts and nighttime curfews and assisted law enforcement during actual air raids

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[465] Brent C. Backus, "Volunteer military organizations: An overlooked asset," *Joint Force Quarterly* 43 (4th Quarter 2006): 29-32.

[466] See "Civil Air Patrol: U.S. Air Force Auxiliary," https://www.gocivilairpatrol.com/; United States Merchant Marine Academy, "About the Academy," https://www.usmma.edu/; U.S. Coast Guard Auxiliary, "AuxHome," Department of Homeland Security, https://www.cgaux.org/.

[467] The definition used here is a combination from two FEMA sources. "Emergency support function annexes: Introduction," *National response framework* (Washington, DC: FEMA, 2014) and *Emergency management guide for business and industry* (Washington, DC: FEMA, 1993), 27.

to move civilians to shelter or conduct evacuations. [468] In the U.K., roles also included medical first aid services, rescue services, gas decontamination, emergency command and control, firefighting, and welfare services to bombing victims. [469] As previously mentioned, the Cold War added requirements for educating and training the public against threats of nuclear war. In present day, the potential exists for emergency management services to handle mass internal displacement in the event of having to evacuate a major city or large geographic region.

The need for formal command and control at a national level may necessitate the establishment of offices of civil defense or organized civil defense corps. These headquarters organizations would provide staff and administration services across federal, state, or local levels to share information, set policies and procedures, recruit volunteers, address fiscal and legal matters associated with civil defense. These structures can change as the security situation changes. For example in the U.S., the Office of Civil Defense was the lead agency through World War II and during the early years of the Cold War. In 1979, the functions were transferred to the Federal Emergency Management Agency under a broader "all hazards" mandate that included natural disasters. [470]

Under a sustained war, it is likely that civil emergency management assets could be overtaxed, therefore relying more on noncombatants to perform emergency management functions similar to civil defense forces in the past. This would be especially important should enemy forces target emergency services. Preparedness measures would therefore involve the operational and structural readiness of emergency management capabilities across national and local levels; the mobilization readiness of local agencies; and the overall spirit of volunteerism needed to generate and regenerate civil defense capabilities as they are consumed.

Militias

Militias -- armed civilians either joining the military or serving in paramilitary capacities -- have long and controversial histories. In the U.S., the American Revolution was initially fought with militias before

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[468] For example, "Our WWII story: Civil defense in a time of war," The American Legion, May 27, 2020, https://www.legion.org/honor/249120/our-wwii-story-civil-defense-time-war.

[469] Tim Essex-Lopresti (ed.), *A brief history of civil defence* (Derbyshire, UK: Civil Defence Association, 2005), http://www.civildefenceassociation.org.uk/HistCDWebA4V7.pdf.

[470] National Governors' Association Center for Policy Research, *Comprehensive emergency management: A governor's guide* (Washington, DC: Defense Civil Preparedness Agency, 1979), https://training.fema.gov/hiedu/docs/comprehensive%20em%20-%20nga.doc.
Comprehensive emergency management is the current all-hazards philosophical approach taken by FEMA.

the Continental Congress was able to fund a semi-professional army. However, militias have also endured difficult periods without resources or public support, and some so-called 'militias' exist and operate in opposition to their nation's government.[471] Therefore, the discussion of militias for present purposes will be limited to the context of a sustained war effort where the military components require augmentation by noncombatants serving to protect a nation's home territory.

The US construct recognizes two forms of militia – organized and unorganized. *Organized militia* are defined as specific formal organizational entities recognized within the defense enterprise, usually providing structural and mobilization readiness to a nation's military and law enforcement organizations. The *unorganized militia* constitutes all other able-bodied individuals who by virtue of citizenship or residence are eligible for military service.[472]

Many nations have organized militia. The U.S. National Guard, for example, is one of the nation's organized militia (the U.S. Naval Militia the other) and their missions include augmenting active military forces in combat operations, supporting domestic emergency response, and supporting federal law enforcement activities such as counterdrug.[473] France re-established its National Guard in 2016 following a series of terrorist attacks and therefore performs largely counter-terrorism missions.[474] Poland's Territorial Defense Force provides additional deterrence against external aggression and conducts low-intensity operations against unconventional threats.[475]

Although the term unorganized militia is American, other nations like Argentina, Spain, Portugal, and Poland use a similar *de jure* registration process whereby conscription laws are enacted but not exercised, such that in times of peace registration alone fulfills the obligation. The pools of potential draftees in such nations constitute their equivalents of unorganized militia.[476] In US law, the unorganized militia is all "able-bodied males" between 17-45 years of age who are citizens or

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[471] Angry Staff Officer, "A short history of the military in the United States," *Angry Staff Officer* (blog), March 20, 2017, https://angrystaffofficer.com/2017/03/20/a-short-history-of-the-militia-in-the-united-states/.

[472] 10 U.S. Code § 246 - Militia: composition and classes. Emphasis added. Note the age and gender limitations specified in subsection (a). One can argue that in a sustained fight, such age and gender specifications could be officially (or unofficially) waived.

[473] Army National Guard, "Our History," https://nationalguard.com/guard-history.

[474] Garde Nationale, "La Garde Nationale" [The National Guard], trans. Google Translate, https://garde-nationale.gouv.fr/la-garde-nationale

[475] Ministry of National Defense, "Territorial Defense Forces," http://www.gov.pl/web/national-defence/territorial-defence-forces

[476] World Population Review, "Countries with mandatory military service 2024," https://worldpopulationreview.com/country-rankings/countries-with-mandatory-military-service

intend to become citizens. This is based on the importance given to having the general citizenry armed and equipped to fight and defend a nation when needed and not cede their rights or responsibilities entirely to the nation's standing military.[477] In times of war or other crisis, members of an unorganized militia who are not immediately conscripted into service have various options available to support the effort. For example, they can join the military voluntarily, serve in auxiliaries or other service organizations, mobilize into organized or ad hoc civilian resistance groups targeting threat actors, or perform individual acts of resistance such as sabotage, protests, or acts of non-cooperation.[478]

A contemporary illustration of the last is the collective response of Ukrainian citizens to the 2022 Russia invasion. Civil resistance groups formed to confronted Russian forces in Kherson and contributed to their withdrawal that November.[479] Other civilians across the nation (most prevalently in the south, including Kherson) organized and conducted acts of nonviolent resistance. Covering the period February through June 2022, one study identified 148 protests and demonstrations; 51 acts of non-cooperation including mass resignations by educators, worker strikes and walk-outs, and local officials refusing *en masse* to cooperate or collaborate with occupying forces; and 36 nonviolent interventions such as anti-tank blockades, manipulation of road signs, and construction of alternative communication systems and channels.[480]

Measuring readiness of an organized militia is straightforward because the formal organizational structures lend themselves to direct measurement as an active force. By their nature, organized militia provide structural and mobilization readiness more than operational, however the simultaneity challenge could mean that the organized militia can become double-tapped for both operational and domestic security challenges which could consume readiness faster than expected.[481]

Readiness of the unorganized militia is probably unmeasurable as the willingness of the citizenry to mobilize voluntarily may be situation dependent. For example, many Ukrainians engaged in resisting the Russian invasion were not previously interested in military service and

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[477] The Heritage Foundation, *The Essential Second Amendment* (Washington, DC: The Heritage Foundation, 2022), 6 https://www.heritage.org/secondamendment

[478] Felip Daza Sierra, *Ukrainian nonviolent civil resistance in the face of war* (Barcelona, Spain: International Catalan Institute for Peace and International Institute for Nonviolent Action, 2022), 11-13, https://www.icip.cat/wp-content/uploads/2022/10/ENG_VF.pdf

[479] Scott Pelley and Aliza Chasan, "How Ukrainian civilians fought Russia's occupation in Kherson for months," *60 Minutes Overtime*, December 10, 2023, https://www.cbsnews.com/news/ukrainian-civilians-kherson-fight-russia-60-minutes/

[480] Sierra, *Ukrainian nonviolent civil resistance*, 17-24.

[481] Dalton and Granieri, "A Conversation with."

did not imagine themselves becoming resistors. Moreover, any officially designated unorganized militia may not represent the total numbers of civilians who might become actively involved in the conflict. Among the resistance movement were men and women too old or too young to enlist or who were otherwise disqualified from military service.[482] Tangible assessments of the readiness of individual members of the "recruiting pool" provide insights as to the structural readiness of militia to augment the military or serve as replacements.[483] Otherwise, further research may be needed to develop useful indicators to support peacetime assessments of a nation's preparedness to undertake civil action. Such research may operationalize lessons from Ukraine that showed the importance of various qualities demonstrated by its citizens individually and collectively, such as levels of community resilience, national and local governance, national and regional social cohesion, and propensity for holding individuals and leaders accountable for their actions.[484]

Implications

Defending and securing the homefront is an important part of war planning, particularly in the face of the simultaneity challenge. The potential exists for national resources dedicated to the war efforts may reach a state of exhaustion, and commentators believe that threat actors are finding attrition warfare to be an attractive way of achieving their objectives.[485] Overall, the nation must appreciate the potential need to incorporate the full civilian population into the war effort when necessary.[486]

11.C. What is communication synchronization?

As with the military, the homefront does not have the same communication authorities and responsibilities as the government, rather it participates in and expands established networks. Moreover, because the homefront comprises numerous disparate government, commercial, and civil society organizations, there is great risk of

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[482] Pelley and Chasan, "How Ukrainian civilians fought"; Sierra, *Ukrainian nonviolent civil resistance*,

[483] Objective measures include formal qualification standards against which the unorganized militia are deemed eligible, for example Nora Bensahel and David Barno, "Addressing the U.S. military recruiting crisis," *War on the Rocks* (blog), March 10, 2023, https://warontherocks.com/2023/03/addressing-the-u-s-military-recruiting-crisis/.

[484] Sierra, *Ukrainian nonviolent civil resistance*, 4-5.

[485] For example, Brian Kerg, "There will be no 'short, sharp' war. A fight between the US and China would likely go on for years," *The New Atlanticist* (blog), March 19, 2024, https://www.atlanticcouncil.org/blogs/new-atlanticist/there-will-be-no-short-sharp-war-a-fight-between-the-us-and-china-would-likely-go-on-for-years/

[486] For example, Department of Defense, *2023 Homeland Defense Policy Guidance fact sheet* (Washington, DC: Department of Defense, 2023).

unintended miscommunication and misunderstandings. Consequently, the roles of strategic communication rest with the national government and the remainder of the homefront plays supporting roles to help with coordinating and disseminating national messages. This is described as *communication synchronization* previously described in Chapter 8 under Long-Term Sustainability Readiness.

Challenges to synchronizing communications in the homefront are more complex than for the military alone because of the many disparate organizations comprising it. Whereas military culture favors greater uniformity in delivering messages, homefront organizations are likely to prioritize furthering of those messages that befit their chosen identity and platform rather than follow all national talking points.[487] Moreover, organizations and individuals with direct ties to soldiers fighting in the war or committed units may become more emotionally reactive to news from the battlefield and possibly more susceptible to misinformation or disinformation. Emotions may also heighten in the advent of direct threats to the homeland such as foreign invasions, sabotage or terrorist acts, natural disasters, economic or social turmoil, individual and family crises, and other mishaps.

Public support for the military is never universal and cannot be taken for granted, especially in times of war. Military efforts must be seen as being purposeful in support of national aims while also adhering to international norms and the laws of land conflict. Support from the homefront has a significant impact on the soldiers' willingness to fight. Winning helps, of course, but how one fights is also important. The people can withdraw their support precipitously when the military does something dishonorable or embarrassing, as seen in the wake of the Abu Gharaib scandal.[488]

The defense enterprise has a responsibility to contribute to the development of national messages and help keep the public informed, but this is challenging in today's information environment where reaching all public audiences is difficult. Anti-war and anti-military groups, such as those operating in the US during the Vietnam War, may become active at the onset of the war and gain strength and membership as a conflict prolongs.[489] They may grow very quickly using separate

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[487] Thomas P. Galvin, *Communication campaigning: Primer for senior leaders* (Carlisle, PA: Department of Command, Leadership, and Management, 2019), chapter 1.

[488] Dean Bland, *The Abu Gharaib scandal: Impact on the Army profession and the intelligence process* (strategy research project, Carlisle, PA: U.S. Army War College, 2005), https://apps.dtic.mil/sti/pdfs/ADA434475.pdf.

[489] Oussema Othmeni, "The 60s antiwar movement in the US and how it can inspire us today," IVolunteer International, June 3, 2021, https://www.ivint.org/60s-antiwar-us-inspire-us-today/

media channels, including social media platforms and other means inaccessible by government or defense information channels.[490] Countering potential misinformation and disinformation while respecting first amendment rights can be especially difficult, as they have been shown to be effective at sowing confusion and raising questions in the target's minds about social realities.[491] Hence, misinformation and disinformation will remain persistent features of future conflicts.

There are also potential firewalls within a nation's legal framework that are intended to preserve societal norms or individual rights but can make communications difficult or inconvenient for the homefront during war. One example is anti-propaganda laws in the United States that restricts defense leaders from disseminating information intended for foreign audiences physically located within U.S. borders.[492] The burden of communication may therefore shift to other actors who may not be expert in military matters or as informed about the purposes behind transmitting the message.

Like Chapter 8, preparedness to synchronize communication can only be estimated based on established norms and practices of communication in peacetime. To what extent are members of society vulnerable to misinformation or disinformation? To what extent do perverse incentives exist that contributes to members in society pushing disinformation campaigns on fellow citizens? To what extent might government, commercial, civil society, or other actors suspend their own messages during peacetime in favor of acknowledging and promoting national messages that they may not necessarily agree with during war, ostensibly to promote unity in the homefront? Conversely and to reinforce the measures related to CSOs discussed earlier, to what extent would homefront actors be permitted to maintain their own identities and not feel undue pressure to promote messages they disagree with or that would potential harm commitment to the homefront?

11.D. HOW DOES THE HOMEFRONT SHOW RESILIENCE?

It is common for a nation at war to ask for significant sacrifices among non-serving citizens. In the past, nations have taken steps to curb consumption and redirect critical supplies and materials from the private

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[490] For example, Leander Kahney, "Internet stokes anti-war movement," *WIRED*, January 21, 2003, https://www.wired.com/2003/01/internet-stokes-anti-war-movement/ on the pre-emptive anti-war movements preceding the US invasion of Iraq in 2003.

[491] Nathalie Van Raemdonck and Trisha Meyer, "Why disinformation is here to stay. A socio-technical analysis of disinformation as a hybrid threat, in L. Lonardo (ed.), *Addressing Hybrid Threats: European Law and Policies* (Edward Elgar, 2024), 57-83.

[492] U.S. Information and Educational Exchange Act of 1948 (also known as the Smith-Mundt Act), Public Law No. 80-402, 62 Stat. 6 (1948), https://govtrackus.s3.amazonaws.com/legislink/pdf/stat/62/STATUTE-62-Pg6.pdf.

sector to the war front.[493] In the U.S. during World War II, President Roosevelt established a Supply Priorities and Allocation Board[494] and the Office of Price Administration, or OPA, to impose systems of rationing on goods such as gasoline, butter, sugar, and canned milk.[495] Since World War II the U.S. has generally not had to impose such programs for later war efforts, however this does not mean that such measures will never again be necessary.

In general, *austerity measures* are policies used to manage the balance of revenues and expenditures in times of difficulty, such as ballooning debt or budget deficits. They come in three broad forms: (1) increasing taxes and other sources of revenue, (2) lowering spending, or (3) a combination of both.[496] Each of these impact a nation's citizens by requiring them to pay more to the government than they may be accustomed or by realizing reduced quantities or quality of government services. Examples include wage and hiring freezes, curtailing or cessation of programs, or enhanced restrictions on access to services.[497] For war specifically, the problem is one of priorities. Lowering spending is normally not an option, rather the war effort may become extremely expensive and the nation must reallocate its resources toward it or risk resource preparedness (Chapter 10), and those services not related to the war effort become lower priority.

"Sacrificing for the common good"[498] is the general theme of austerity measures during wartime. In World War II, there were two different reasons for rationing, which suggests two different kinds of readiness measures. The first regards products that can be made entirely within the U.S., such as food. The nation's readiness is just a matter of national capacity to purchase or acquire such indigenous products and redirecting them forward. The second regards the national capacity to respond when raw materials or supplies generated outside the U.S. are disrupted. A prominent example from World War II was the disruption

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[493] U.S. Bureau of the Budget, *The United States at war: Development and administration of the War Program by the federal government* (Washington, DC: Committee of Records of War Administration, 1946), https://www.ibiblio.org/hyperwar/ATO/Admin/WarProgram/index.html.

[494] Franklin D. Roosevelt, "Executive Order 8875—Delegation and coordination of priority authority, August 28, 1941, https://www.presidency.ucsb.edu/documents/executive-order-8875-delegation-and-coordination-priority-authority.

[495] "Sacrificing for the common good: Rationing in WWII," National Mall and National Parks, National Park Service, September 16, 2021, https://www.nps.gov/articles/rationing-in-wwii.htm.

[496] Encyclopedia Brittanica Money, s.v. "Austerity," https://brittanica.com/money/austerity

[497] Daniel Kurt, "Austerity measures," *Investopedia* (blog), September 14, 2023, https://investopedia.com/ask/answers/12/austerity-measures.asp

[498] "Sacrificing for the common good."

of the world's supply of rubber due to the Japanese conquest of the Dutch East Indies.[499] In this case, other sources of rubber were available on the world market but not enough to preclude the need for rationing. At the extreme, a critical resource that is constrained to suppliers in particular geographic regions could cause a nation to substitute with materials that may be inferior or simply do without the resulting capability.

Rationing systems

Austerity measures are situation dependent and come in many forms. The U.S. experiences in World Wars I and II provide an excellent contrast. In World War I, the approach used was an information campaign to encourage voluntary rationing. Through the U.S. Food Administration led by Herbert Hoover, the U.S. campaigned for "Meatless Mondays," "Wheatless Wednesdays," and planting so-called War Gardens to encourage self-sufficiency without the need for mandatory rationing. This strategy was successful as food shipments to forces in Europe were able to double as a result.[500]

In World War II, however, a formal mechanism for rationing was required as the variety of goods impacted was significantly greater. Thus, the information campaign was supplemented with a bureaucratic system for implementation and enforcement. In World War II, food and gasoline rationing was done via ration cards printed and distributed to the populace. Food items were rationed by quantity – i.e., forty stamps allowed the purchase of forty items. Gasoline rations were by classification – i.e., certain officials or professionals were classified as being allowed higher amounts of gasoline than ordinary citizens. Medicines and vaccines were rationed by hospitals.[501]

The risks of such programs at the time included: (a) illegal re-selling, trading, or redistribution of cards, (b) improper acquisition of cards that one was not entitled to, or (c) the production of counterfeit cards. In contemporary times, rationing would likely be automated and therefore be subject to concerns over online-based acts of fraud, waste, and abuse; susceptibility to domestic or foreign cyberattack; and potential complexity or confusion over implementation of the program such as unclear eligibility requirements, programming or database errors, or

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[499] Paul Wendt, "The control of rubber in World War II," *Southern Economic Journal* (1947): 203-227.

[500] "Years of compassion 1914-1923," *Herbert Hoover Presidential Library and Museum*, National Archives, https://hoover.archives.gov/exhibits/years-compassion-1914-1923.

[501] David Herold, "Food is a weapon: The rationing of goods in the US During WWII," *War History Online*, June 10, 2017, https://www.warhistoryonline.com/world-war-ii/wheres-share-gasoline-sugar-rationing-goods-us_wwii-m.html.

reliance on other forms of identification and verification (e.g., drivers' licenses, passports, etc.) that themselves could be subject to disruption.

Recycling and "scrap drives"

Mining and imports were not the only ways to generate raw materials. So-called scrap drives in World War II provided means for reclaiming metals, rubber, cloth, and paper for re-use.[502] Americans would come to view the collection of scrap materials as part of their patriotic duties and participation was enthusiastic (though some would say it was overzealous).[503]

Recycling scrap is different from utilizing fresh raw materials, however. Scrap must be processed before re-use.[504] While the U.S. may have established a modern recycling industry that generates more than $230B in revenues,[505] there is a potential misalignment between industry capabilities and capacity in peace and the demands for recycled materials that meet military specifications in war. Metal and electrical/electronic equipment element recycling is complex, specialized, and generally not as economically viable as paper or plastic recycling, absent government intervention. There are also additional environmental hazards that the recycling process must address.[506] While a scrap drive for electronic equipment could be an efficient way for a population to contribute to a war effort, it may not be effective if the recycling industry is not postured to exploit the influx.

Implications for preparedness

It is difficult to know in advance what types and intensities of austerity measures would be needed in a protracted conflict, however general requirements are probably not difficult to calculate. On the other hand, discovery learning is not much of a plan. Going into World War II, the U.S. benefitted from being conditioned for austerity due to the

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[502] Karen Fishman, "Scrap for victory!" *Now See Hear* (blog), Library of Congress, January 15, 2015, https://blogs.loc.gov/now-see-hear/2015/01/scrap-for-victory/.

[503] Ronald H. Bailey, "Iron will: Scrapping history," *HistoryNet* (blog), August 2010, https://www.historynet.com/iron-will-scrapping-history.htm.

[504] Neil Seldman, "Brief history of the post-WWII US recycling movement," Institute for Local Self-Reliance, June 6, 2012, https://ilsr.org/history-post-ww-ii-recycling-movement/.

[505] "Recycling basics," Environmental Protection Agency, https://www.epa.gov/recycle/recycling-basics.

[506] Markus A. Reuter and Ilkka V. Kojo, "Challenges of metals recycling," *Materia* (February 2012): 50-57, https://www.researchgate.net/publication/270048511_Challenges_of_Metal_Recycling/link/5b925c84a6fdccfd541fe8b0/download.

Depression.[507] U.S. prosperity since then, along with efforts to shield the U.S. populace from the economic effects of recent conflicts in the All-Volunteer Force era, may mean that the contemporary population is not so well conditioned for the same levels of sacrifice, nor may the national enterprise be postured to leverage the benefits of austerity. Therefore, actual readiness to implement austerity is probably low.

This presents an important implication. Leaders must convey to the populace when all is not well and austerity measures are necessary. This is not easy as applying austerity measures against peacetime economic challenges can be politically unpalatable or perceived as unfair or inequal.[508] Successful implementation of austerity measures may depend in part on the degree of trust that citizens have in their national leaders.[509]

Objective indicators of austerity readiness can probably be identified, and measures developed to help guide campaign planning. What types of supplies and raw materials could be generated through recycling that the military could use? To what extent could the nation overcome the loss of access to critical materials such as rare earth elements through recycling? What are the requirements to *rapidly* establish and implement a rationing system that is appropriate, safe, secure, fair, and equitable, and aligned with the requirements of the fighting forces? To what extent are civil leaders (federal, state, and local) and law enforcement postured to implement and enforce austerity programs in ways that sustain support for the war effort over its duration?

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[507] Christopher J. Tassava, "The American economy during World War II," *EH.net*, February 10, 2008, https://eh.net/encyclopedia/the-american-economy-during-world-war-ii/.

[508] Ignatio Saiz and Luke Holland, "Under the knife: Human right and inequality in the age of austerity," Center for Economic and Social Rights, July 14, 2016, https://cesr.org/under-knife-human-rights-and-inequality-age-austerity

[509] Georgios Melios, *Europe in crisis: Political trust, corruption, and austerity* (London: Institute for Global Prosperity, 2020).

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