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Innovation and Military Strategy Shifting to Decentralized and Dispersed Approaches

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ABSTRACT

In an era marked by rapid technological and geopolitical shifts, conventional military strategies founded on large, centralized acquisition programs are increasingly misaligned with the exigencies of modern warfare. Using case studies from the withdrawal from Afghanistan in 2021 and the evolving conflict in Ukraine, this paper explores emergent trends—namely decentralization, dispersal, and privatization—that are reshaping the defense sector. The analysis argues that the future of military operations lies in embracing a more heterogeneous ecosystem comprising state and non-state actors, leveraging commercially available technologies, and rethinking traditional financing models. Ignoring these transformations risks not just tactical failures but strategic obsolescence. This paper serves as a clarion call for both policymakers and military leaders to reconsider the paradigms that underpin military capability development in an increasingly complex and innovative environment.



INTRODUCTION

Conventional wisdom in developing and deploying military capability tends to focus on cutting-edge sensors, shooters, and communications systems to meet the perceived needs of frontline operators. Such capabilities are generally acquired through large, deliberate, and bespoke acquisition programs by nation-states and all too often the result is yesterday's technology delivered tomorrow at next week's prices. Today, with the rise of new disruptive technologies, military capability programs must be increasingly intertwined with non-traditional defense companies, such as those specializing in artificial intelligence, autonomy, and robotics. Given the sheer scale of commercial capital being invested in these areas dual-use innovations are likely to originate from the private sector. Indeed, integrating private sector innovation within the defense framework, combining both public and private investment, has become a well-trodden argument informed by the realities of warfighting. These insights are not new, and this author has written about them at length (Murray, 2020).

However, in an era marked by accelerating (exponential) technological advancements and geopolitical flux, traditional models of military capability development—predicated on large, centralized acquisition programs—increasingly seem misaligned with the exigencies of modern warfare. The operational dynamics witnessed in both Afghanistan and Ukraine serve as compelling signposts, pointing toward a future defense landscape that may render our existing military paradigms obsolete. As conventional wisdom faces disruption, are we on the cusp of a wholesale reimagination of how military forces are developed, deployed, and utilized? This paper aims to scrutinize this pressing question through a lens that is both historical and forward-looking. Beginning with an analysis of the withdrawal from Afghanistan in 2021 and those evolving strategies in Ukraine, it examines the implications of those operational shifts for future military planning. While acknowledging the merits and limitations of established practices, this analysis primarily focuses on emergent trends—namely decentralization, dispersal, and privatization—that stand to reshape the defense sector fundamentally. The objective is to delineate alternative pathways for both policymakers and military leaders as they navigate an increasingly complex and innovative environment to develop and deploy future military capabilities.

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THE SHIFTING LANDSCAPE FOR MILITARY OPERATIONS

Operational command and control have long operated on a model that centralizes decision-making while allowing for decentralized execution. More recently, this has evolved into a nuanced structure that combines centralized command, distributed control, and decentralized execution (Mulgund, 2021). However, as we stand on the cusp of a new era marked by disruptive technologies and diversified actors, the adequacy of these traditional models comes into question. Recent conflict theaters offer telling insights, suggesting that we are in the midst of a reconfiguration in the utilization of military force. While still in their infancy, emerging trends point toward a shift—from a state-dominated paradigm of centralized control to one characterized by decentralization and a multiplicity of involved actors. This dispersion takes place across a significantly more heterogeneous ecosystem and heralds changes in three crucial dimensions: front-line decision-making, the role of private corporations in defense, and financing models that redefine how military capabilities are acquired and sustained.

Observations from Afghanistan, 2021

During the Allied withdrawal from Afghanistan in 2021, a shift in military operations became evident. Ad-hoc alliances sprang into existence, comprising an unlikely mix of politicians, philanthropists, private military companies, and state officials, among others. Remarkably, this cohort interfaced directly with military decision-makers, thanks in part to open-access digital platforms commonly used across society (Phillips, 2023; McLeary, 2022). Enabled by commercially sourced space imagery and instant messaging applications, these civilian consortia assisted in the delivery of air operations alongside military units. This collaborative model transcends the traditional understanding of military-led activities as a monolithic, hierarchical enterprise. Instead, it suggests the emergence of a more diffuse and potentially resilient operational ecosystem. Here, the ‘military evacuation operation’ gives way to a diversified network of stakeholders who collectively assisted in the operational burden. This networked approach is more than a mere tactical expedient; it suggests a strategic realignment. As hierarchical command structures yield to these more flexible and adaptive networks, a newfound agility can be harnessed—permitting quicker adaptations to rapidly changing operational realities.

Observations from Ukraine, 2022

Amid the conflict in Ukraine, a canvas of innovation and adaptability has also come to the fore. At the crux are a series of partnerships that have emerged, including individuals, tech behemoths



such as Amazon Web Services and Microsoft, as well as pioneering firms like SpaceX (Starlink) who between them are providing ‘white hat’ cyber and infrastructure support (Gralla, 2023; Moore, 2022). Like Afghanistan in 2021, Ukraine is demonstrating that no longer is defense comprised solely by centralized government agencies; it is becoming a polycentric sphere where ad-hoc, purpose-driven collaborations are in the ascendency. One standout example lies in Ukraine’s nimble deployment of commercial drones, which frontline troops procure and adapt through additive manufacturing techniques (Times, 2023; Ross, 2023). The financial implications are stark. Commercial drones, such as the DJI Mavic 3 available at around \$2,000 per unit, offer a sharp contrast to their military-grade counterparts, like the \$5 million Bayraktar TB2 or the \$30 million MQ9 Reaper (MIT Technology Review, 2023). While one cannot simply equate these drones on cost alone—each has distinct operational attributes—the ability to rapidly deploy cost-efficient capabilities speaks volumes about the new defense landscape.

This shift further extends to the financial realm, where Ukraine exemplifies emerging trends that challenge traditional defense financing models. Crowdfunding is no longer the preserve of startups and social causes; it is infiltrating the military arena. Citizens are contributing to the acquisition of armaments,¹ effectively decentralizing financial support traditionally provided by national governments. This transformation, while still embryonic, holds implications far beyond Ukrainian borders, with the potential to alter the arms trade through the creation of secondary markets, arms control norms, and even the citizen-state relationship. In a digital age infused with cryptocurrencies, the adaptability and reach of such financing models are likely to proliferate, particularly given the often inherent dual-use nature of new technologies making them easier to invest in.

DECENTRALIZATION, DISPERSAL AND PRIVATIZATION

At the heart of what was seen in Afghanistan in 2021 and what is being seen in Ukraine is a potential paradigm shift characterized by decentralization, dispersal, and the privatization of capability. This evolution is evidenced in areas ranging from national infrastructure management by private corporations to the intermingling of state and non-state actors in conflict zones (Capoot, 2022; Lough, 2023). Importantly, these developments are not just tactical diversions; they mark a transformation of state-centric warfare, weaving it tightly with dual-use technologies and global capital flows (Sabbagh, 2023). Contrary to this ongoing transformation, many in the corridors of

1 In Spring 2022 Ukrainian pilots launched a campaign to crowdfund the purchase of aircraft. See <https://buymeafighterjet.com/en>

power view such developments with preliminary caution.² This thinking, while comforting, may risk strategic myopia. Afghanistan and Ukraine, highlight that future warfare will transcend tactical adjustments, which requires a recalibration of strategy. A confluence of factors—technological decentralization, the democratization of military capability, and changing capital flows—is contributing to this complex tapestry resulting in a *kaleidoscope of conflict* (Bowden, 2021).

In this context, what we are seeing is not just a transformation but perhaps the start of a new model. Decision-making is becoming more localized, and the industrial base dispersing.³ Traditional demarcations separating the state, commercial sectors, and civil society are blurring. In this brave new world, the velocity of innovation and the accessibility of cost-effective armaments will be defining parameters. If we misconstrue these shifts as merely episodic, we risk not just tactical failures but strategic obsolescence. In today's rapidly evolving geopolitical landscape, an in-depth comprehension of decentralization and dispersal is not merely academic—it's an imperative. These twin concepts are in a reciprocal relationship with the contemporary theater of military operations; they both influence and are influenced by the strategic realities on the ground.

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At its core, decentralization pertains to the devolution of decision-making authority. By distributing control across various nodes, military organizations stand to gain from enhanced adaptive capacities, more robust collaboration, and accelerated rates of innovation. Dispersal, meanwhile, deals with the physical and functional allocation of assets and responsibilities, effectively serving as the spatial counterpart to decentralization. It emphasizes how the placement of assets—be it personnel, technology, or capital—can complement decentralized decision-making. When combined, decentralization and dispersal forge a robust, intricate operating environment. Such a framework enables militaries to harness a more eclectic array of actors, technologies, and strategic doctrines. Importantly, this is not merely a theoretical construct but a practical one, marked by the presence of diverse stakeholders—ranging from state entities and the private sector to individual contributors.

² https://www.eeas.europa.eu/eeas/lessons-war-ukraine-future-eu-defence_en

³ Centralized production of equipment is likely to be complemented by dispersed, forward deployed manufacturing facilities driven by software designs and advanced additive manufacturing capabilities. The US Company Firestorm represents an example of this (see <https://www.launchfirestorm.com>)

In such a landscape, militaries can pivot to new operational paradigms characterized by agility and adaptability. Imagine a coalition of forces enriched by the capabilities of technology firms and specialists—each contributing unique skills and resources. Such synergy can catalyze rapid responses to fluid, unpredictable challenges, thus transcending traditional models as witnessed in Kabul in 2021. To elucidate this further, *Figure 10.1* delineates three salient characteristics that define how decentralized and dispersed operational frameworks could revolutionize military efficacy.



Figure 10.1: Characteristics of Decentralized and Dispersed Ways of Working

In essence, decentralization leads to more responsive and innovative military structures. *Collaborative autonomy* empowers individual units to make decisive actions with various stakeholders. *Resilience through diversity* ensures a robust and adaptable ecosystem involving a wide array of players. *Flexibility for innovation* fosters an environment that nurtures creativity and technological advancement. Conversely, dispersal focuses on the spatial and functional distribution of not just assets but also roles and responsibilities across both governmental and non-governmental entities. It operates across three key verticals: *Protection through Complexity, Mobility and Agility, and Leveraging Technology and Finance*.

In the realm of *Protection through Complexity*, dispersal enhances deterrence by diversifying roles and responsibilities, thus reducing vulnerabilities. *Mobility and Agility* facilitate quicker, more autonomous responses by enabling militaries to operate across larger areas. *Leveraging Technology and Finance* engages non-traditional partners like technology firms to foster collaboration and add capabilities swiftly, while access to private capital creates alternative financing methods for those assets rapidly needed by frontline operators. Deepening collaboration through dispersal can expedite innovation cycles for militaries. However, aligning these practices with high-level strategy and creating new regulatory frameworks become essential to manage the risks associated with reduced control and oversight.

IMPLICATIONS

The exponential technology advances we are currently witnessing, combined with those signposts from both Afghanistan and Ukraine present an urgent question: How can military organizations accelerate innovation in today's disruptive landscape? One strategic answer lies in embracing decentralization and dispersal. This shift enables military entities to be more agile and responsive, unlocking the potential gains from technological innovation. Commercial suppliers, such as SpaceX, already provide critical infrastructure, and technology firms deliver essential cybersecurity solutions. Yet, these collaborations could merely be the prelude of a new era of military-industrial partnerships. Further diversifying these collaborations and adopting non-traditional financing models can offer militaries the agility required to adapt to rapidly evolving competitive dynamics. Emerging financing avenues that link militaries with private entities—ranging from corporations and investors to global communities—hold enormous potential. However, the integration of these new models with traditional funding streams necessitates careful planning. Standardization, coordination, and security must be prioritized to ensure alignment with overarching strategic objectives, as illustrated in *Figure 10.2*.



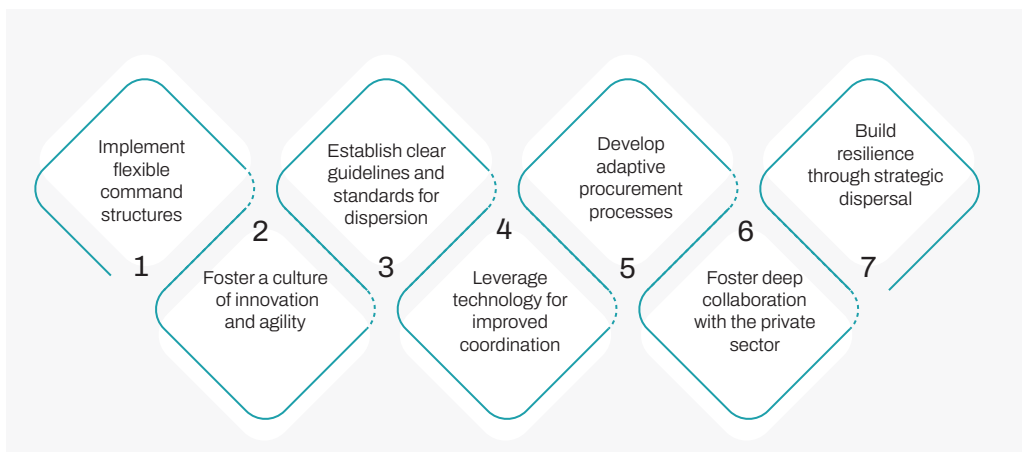


Figure 10.2: Gaining Agility and Adaptability Coherently

CONCLUSION

In the rapidly evolving geopolitical landscape, the agility to adapt and innovate is not just a tactical necessity but a strategic mandate. One cannot afford the luxury of awaiting bespoke technologies and centralized government interventions when operational needs must be met within days or weeks. To navigate these taut timelines effectively, it is instructive to remind ourselves of Britain's "Shadow Scheme" of 1935 as an example of visionary defense strategy (Kennedy, 2013). Through a decentralized industrial framework, Britain not only outpaced Germany in aircraft production but this tactical dispersal mitigated potential vulnerabilities to concentrated attacks and catalyzed technological advancements, such as radar, and the development of pivotal aircraft like the Hurricane, Spitfire, and Lancaster bomber. By June 1940, this intricate web of decentralized production had enabled Britain to eclipse Germany in aircraft output—a crucial lead that remained unchallenged, while also transforming Britain's socio-economic fabric by integrating skilled female labor into the workforce (Lindley-French, 2023).

However, the defense ecosystem of today has shifted dramatically from that of the Second World War, with governance now an intertwined venture between state actors and private enterprise. This is not a mere tactical evolution; it is perhaps the start of a strategic revolution that sees new financing models and agile command structures. Decentralization and dispersal should not be viewed merely as tactical countermeasures but as cornerstones for a broader strategic framework that encompasses public-private collaborations. As we navigate the evolving landscape of military operations and national security, it becomes increasingly clear that decentralization and dispersal are significant

factors to consider. They herald a potential broadening of roles and responsibilities far beyond traditional state actors. This new environment invites a host of diverse contributors—technology firms, private investors, and even individual citizens—to participate in various aspects of military operations. From on-the-ground activities to technological acquisitions and financial backing, the implications of this shift are profound yet nuanced. While crowdfunding and private capital are offering alternative models of military financing, they also raise intricate questions about governance, control, and the democratization of force. This complexity does not demand a wholesale upheaval of existing systems but rather calls for a reimagined, agile approach to leadership—one capable of balancing strategic vision with a wide array of operational details across a plethora of actors. By taking account of these emerging factors, we may better prepare for a future that is not just complex but also rich with opportunities for innovation and collaboration.

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